

# Rotary Drive Products

## Gears, Bearings, Couplings and Shaft Accessories



# Boston Gear

Boston Gear offers the industry's largest line up of reliable speed reducers, gearing and other quality drivetrain components.

With more than 125 years of frontline experience, Boston Gear is recognized globally as a premier resource for extremely reliable, high-performance power transmission components. Boston Gear offers the industry's most comprehensive product array featuring more than 30,000 standard products combined with the ability to custom engineer unique solutions when required. Product lines include standard enclosed gear drives, custom speed reducers, AC/DC motors, DC drives and Centric brand overload clutches and torque limiters.

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**BOSTONGEAR.COM**



# Altra Industrial Motion

Altra is a leading global designer and manufacturer of quality power transmission and motion control products utilized on a wide variety of industrial drivetrain applications. Altra clutches and brakes, couplings, gearing and PT component product lines are marketed under the industries most well known manufacturing brands. Each brand is committed to the guiding principles of operational excellence, continuous improvement and customer satisfaction. Highly-engineered Altra solutions are sold in over 70 countries and utilized in a variety of major industrial markets, including food processing, material handling, packaging machinery, mining, energy, automotive, primary metals, turf and garden and many others.

Altra's leading brands include **Ameridrives**, **Bauer** Gear Motor, **Bibby** Turboflex, **Boston** Gear, **Delroyd** Worm Gear, **Formsprag** Clutch, **Guardian** Couplings, **Huco**, **Industrial** Clutch, **Inertia** Dynamics, **Kilian**, **Lamiflex** Couplings, **Marland** Clutch, **Matrix**, **Nuttall** Gear, **Stieber**, **Stromag**, **Svendborg** Brakes, **TB Wood's**, **Twiflex**, **Warner** Electric, **Warner** Linear and **Wichita** Clutch.

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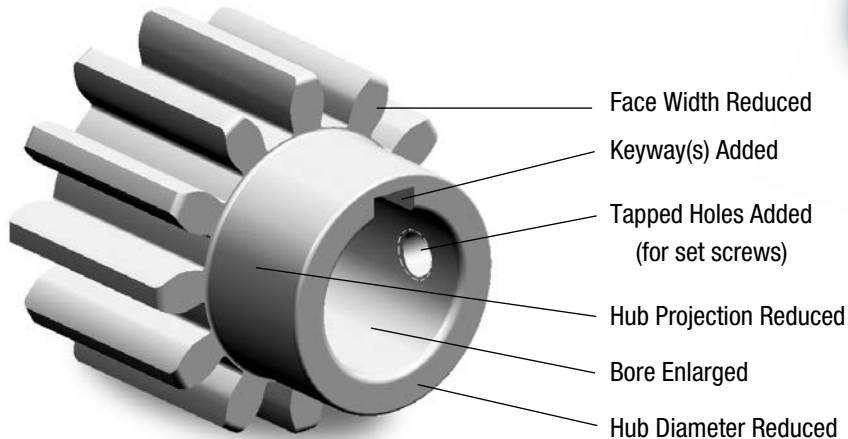
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## Modified Stock Gearing

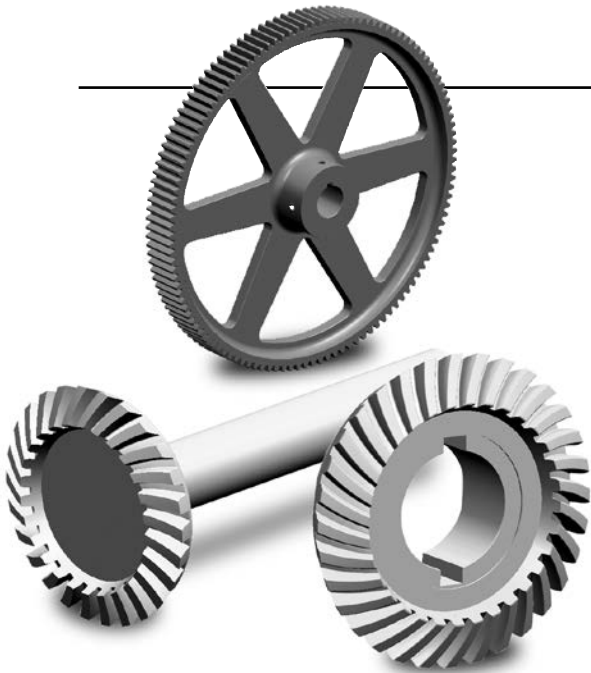
With thousands of stock gears available, chances are we've got just what you're looking for. If you find a stock gear that's close to what you need, but not precisely right, that's not a problem. We can modify most stock gears to meet your requirements and ship it within 24 hours. The full range of modifications we can provide are shown below.



Keyways and bores available in common metric sizes.

**24 HOUR  
MODIFIED STOCK GEARING  
SHIPMENT**

With Boston Gear, stock gear modifications are quick and easy. Give us a call at **800-825-6544**.



## Custom Gearing

Not every job is alike and not every job requires the same solution. That's why Boston Gear will configure a custom gear to suit you. Even though we have built our reputation on supplying a breadth of standard products for virtually any industry, we have forged a name for ourselves as makers of quality custom gears. Custom doesn't have to mean expensive and it doesn't have to mean that it requires long lead times.

Depending on the amount of tooling required and the complexity of the job, your custom gear solution can be delivered in days, not weeks. No matter how small or how large your job is, contact our custom engineering team for a customized quote.

To request a quote for a custom gear solution from Boston Gear, simply fill out the "Request For Quotation Form" on page 5, and **FAX to 800-387-0130**. Or give us a call at 800-816-5608.

# Custom Gearing Capabilities

## Gear Types

- Spur
- Helical
- Miter & Bevel
- Worm & Worm Gear

## AGMA Classes

**AGMA 9** Non-Heat Treated,  
Spur & Helical Gears only

**AGMA 8** Heat Treated & Non-Heat Treated,  
all other gears

Note: Worm & Worm Gears do not have AGMA Class listings, however Boston Gear manufacturing tolerances relate to AGMA 8.

## Capabilities

| Gear Type     | Diametral Pitch     | Pitch Diameter | Face Max. |
|---------------|---------------------|----------------|-----------|
| Spur          | 64DP-3DP            | .250"-36.000"  | 5.000"    |
| Helical       | 64DP-3DP            | .337"-24.000"  | 5.000"    |
| Internal Spur | 64DP-3DP            | 1.000"-24.000" | 5.000"    |
| Bevel & Miter | 64DP-3DP            | .500"-24.000"  | 3.000"    |
| Worm          | 48DP-3DP            | .333"-4.000"   | 12.000"   |
| Worm Gear     | 48DP-3DP            | .420"-24.000"  | 5.000"    |
| Splines       | Consult Engineering |                |           |

| Module | Diametral Pitch | Circular Pitch (in.) |
|--------|-----------------|----------------------|
| .4     | 63.500          | .0495                |
| .5     | 50.800          | .0618                |
| .6     | 42.333          | .0742                |
| .8     | 31.750          | .0989                |
| 1      | 25.400          | .1237                |
| 1.25   | 20.320          | .1546                |
| 1.5    | 16.933          | .1855                |
| 2      | 12.700          | .2474                |
| 2.5    | 10.160          | .3092                |
| 3      | 8.467           | .3711                |
| 4      | 6.350           | .4947                |
| 5      | 5.080           | .6184                |
| 6      | 4.233           | .7422                |
| 8      | 3.175           | .9895                |

Note: Circular Pitch (.0491"-1.0472") or Module Pitch (.4mm-8mm) within the Diametral Pitch Limits are optional (refer to page 309).

## Tolerances

| Features      | ≤ 2" Diameter | ≥ 2" Diameter |
|---------------|---------------|---------------|
| Bore Diameter | .0005"        | .0010"        |
| Ground O.D.   | .0005"        | .0010"        |
| Turned O.D.   | .0020"        | .0020"        |
| Bore Length   | .0020"        | .0020"        |
| Keyway Width  | .0020"        | .0020"        |
| Keyway Depth  | .0100"        | .0100"        |
| Tapped Holes  | 2B Thread     |               |

## Geometric Dimensioning

| Features         | ≤ 2" Diameter | ≥ 2" Diameter |
|------------------|---------------|---------------|
| Perpendicularity | .0010"        | .0010"        |
| Parallelism      | .0010"        | .0010"        |
| Circular Runout  | .0010"        | .0010"        |
| Flatness         | .0010"        | .0010"        |
| Concentricity    | .0005"        | .0010"        |

## Backlash

Refer to Engineering Information found on pages 310 and 309.

Refer to engineering for backlash related to helical and worm gearing.

## Lot Sizes

**25 pcs** Minimum Quantity on 6" OD and less

## Finishes

**63 RMS** Minimum on gear teeth

**32 RMS** Minimum on Bores, Shaved Gear Teeth, Ground Worms, and Machined Surfaces

## Material

| Description                | Designation                        |
|----------------------------|------------------------------------|
| Low Carbon Steels          | 11L17, 12L14, 12L15                |
| Medium Carbon Steels       | 11L41, 1045                        |
| Low Carbon Alloy Steels    | 86(L)20* (*86L20 or 8620)          |
| Medium Carbon Alloy Steels | 41(L)30, 41(L)40, 41(L)50          |
| Preheat Treated Steels     | 4140, 4150                         |
| Stainless Steels           | 17-4PH, 303, 304                   |
| Cast Iron                  | Grade 25, Grade 30                 |
| Brass                      | Free Cutting, Half Hard            |
| Bronze                     |                                    |
| Non-Metallic               | Phenolic (NEMA "C"), Delron, Nylon |

# Custom Gearing “Request For Quotation” Form

Company Name \_\_\_\_\_

Date \_\_\_\_\_

Address \_\_\_\_\_

Ref. \_\_\_\_\_

City/State \_\_\_\_\_ Zip \_\_\_\_\_

Quantity Req. \_\_\_\_\_

Tel. No. \_\_\_\_\_ Fax No. \_\_\_\_\_

P.O. No. \_\_\_\_\_

Contact Name \_\_\_\_\_

email \_\_\_\_\_

|                        | Gear Type                                                                         |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |
|                        | Spur                                                                              | Helical                                                                           | Miter                                                                             | Bevel                                                                              | Worm                                                                                | Worm Gear                                                                           |
| No. of Teeth           |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Pitch (DP, CP MOD)     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Pressure Angle         |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Helix Angle            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Hand (LH, RH)          |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Material               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Face Width             |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Length Through Bore    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Hub Diameter           |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Hub Projection         |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Bore Diameter          |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Keyway                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Setscrew(s)            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Teeth in Mating Gear   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Center Distance        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Mounting Distance      |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| No. of Starts (Thread) |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Outside Diameter       |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Heat Treat — Yes/No    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| Depth of Hardness      |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |

Special Information \_\_\_\_\_

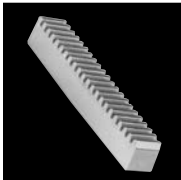
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**FAX to 800-387-0130.** Or give us a call at 800-816-5608.

# Gear Selection

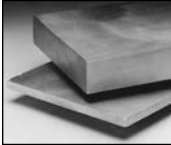
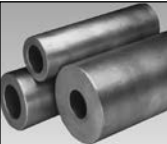
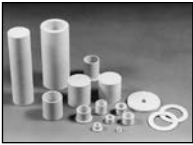
| Stock Gears           |                                                                                     |                      |                                          |                     |                          |                                            |                            |
|-----------------------|-------------------------------------------------------------------------------------|----------------------|------------------------------------------|---------------------|--------------------------|--------------------------------------------|----------------------------|
|                       |                                                                                     | Description          | Application                              | Pressure Angle (PA) |                          | Material                                   |                            |
| Spur Gears            |    | Pinions and Gears    | Parallel Shafts                          | 14-1/2°             | 20°                      | Brass<br>Brass<br>Steel<br>Delrin          |                            |
|                       |                                                                                     | Pinions and Gears    | Parallel Shafts                          | 14-1/2°             | 14-1/2°                  | Non-Metallic<br>Steel, Iron<br>Steel, Iron |                            |
|                       |    | Change Gears         | Parallel Shafts                          | 14-1/2°             |                          | Steel, Iron                                |                            |
|                       |                                                                                     | Stem Pinions         | Parallel Shafts                          | 14-1/2°             |                          | Steel                                      |                            |
|                       |    | Drawn Pinion Wire    | Parallel Shafts                          | Brass<br>14-1/2°    |                          | Steel                                      |                            |
|                       |    | Rack                 | Use with Spur Gears                      | 14-1/2°             | 14-1/2°                  | Nylon<br>Steel<br>Steel                    |                            |
|                       |   | Internal Gears       | Parallel Shafts                          | 14-1/2°             | 20°                      | Brass<br>Brass                             |                            |
| Helical Gears         |  | Helical Gears        | Parallel and 90° Non-Intersecting Shafts | 14-1/2°             |                          | Steel<br>Bronze                            |                            |
|                       |  | Straight Miter Gears | 90° Intersecting Shafts                  | 20°                 |                          | Nylon<br>Brass<br>Steel<br>Iron            |                            |
| Miter and Bevel Gears |  | Spiral Miter Gears   | 90° Intersecting Shafts                  | 20°                 |                          | Steel                                      |                            |
|                       |  | Straight Bevel Gears | 90° Intersecting Shafts                  | 20°                 |                          | Brass<br>Steel<br>Iron                     |                            |
|                       |  | Spiral Bevel Gears   | 90° Intersecting Shafts                  | 20°                 |                          | Steel                                      |                            |
|                       |                                                                                     |                      |                                          |                     |                          |                                            |                            |
| Worms and Worm Gears  |  | Worms/ Worm Gears    | 90° Non-Intersecting Shafts              | (PA)                | Thread                   | Worm                                       | Gear                       |
|                       |                                                                                     |                      |                                          | 14-1/2°             | Single                   | Acetal<br>Nylon                            | Acetal<br>Minlon<br>Bronze |
|                       |                                                                                     | Worms/ Worm Gears    | 90° Non-Intersecting Shafts              | 14-1/2°             | Single<br>Double<br>Quad | Steel                                      | Bronze                     |
|                       |                                                                                     | Worms/ Worm Gears    | 90° Non-Intersecting Shafts              | 14-1/2°             | Single<br>Double<br>Quad | Steel                                      | Iron                       |

# Reference Guide

| Diametrical Pitch                                        | Pitch Diameter                                                        | Face Width                                                         | Gear Catalog Reference Pages  |                                |                                          |
|----------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------|--------------------------------|------------------------------------------|
|                                                          |                                                                       |                                                                    | Selection Procedure           | Horsepower and Torque Ratings  | Catalog Number Selection                 |
| 48DP – 16DP<br>64DP – 24DP<br>32DP – 24DP<br>48DP – 24DP | .208" – 5.000"<br>.250" – 6.000"<br>.500" – 6.000"<br>.375" – 2.500"  | .062" – .313"<br>.125" – .250"<br>.187" – .250"<br>.125" – .250"   | 49<br>49<br>49<br>49          | 50 – 52<br>–<br>50<br>–        | 18 – 21<br>37 – 42<br>19 – 20<br>37 – 42 |
| 16DP – 8DP<br>20DP – 3DP<br>20DP – 5DP                   | 1.000" – 3.500"<br>.750" – 36.000"<br>.600" – 36.000"                 | .500" – 1.250"<br>.500" – 3.000"<br>.500" – 2.500"                 | 49<br>49<br>49                | 52 – 55<br>51 – 57<br>58 – 62  | 22 – 24<br>20 – 27<br>42 – 46            |
| 20DP – 8DP                                               | 1.000" – 12.500"                                                      | .375" – 1.250"                                                     | 49                            | 51 – 55                        | 28 – 32                                  |
| 20DP – 6DP                                               | .287" – 1.750"                                                        | 1.125" – 3.000"                                                    | 49                            | 51 – 56                        | 33                                       |
| 48DP – 24DP<br>48DP – 24DP                               | .125" – .667"<br>.125" – .667"                                        | 48" Lengths<br>48" Lengths                                         | 49<br>49                      | 50<br>50                       | 34<br>34                                 |
| 48DP – 24DP<br>48DP – 3DP<br>20DP – 4DP                  | .104" – .208"<br>.104" – 1.167"<br>.450" – 1.750"                     | .125" – .250"<br>.125" – 3.000"<br>.500" – 3.500"                  | 49<br>49<br>49                | 50<br>50 – 57<br>58 – 62       | 35<br>35<br>47                           |
| 48DP – 16DP<br>64DP – 24DP                               | 1.000" – 6.000"<br>1.000" – 6.000"                                    | .125" – .312"<br>.125" – .250"                                     | 49<br>49                      | 50<br>–                        | 36<br>48                                 |
| 24TDP – 6TDP<br>8TDP – 6TDP                              | .333" – 6.000"<br>1.000" – 6.000"                                     | .250" – 1.250"<br>.750" – 1.250"                                   | 66<br>66                      | 67 – 68<br>68                  | 64 – 65<br>65                            |
| 48DP – 16DP<br>48DP – 24DP<br>48DP – 4DP<br>8DP – 4DP    | .312" – 2.000"<br>.312" – 1.500"<br>.375" – 7.000"<br>3.500" – 8.000" | .070" – .390"<br>.080" – .230"<br>.080" – 1.430"<br>.750" – 1.333" | 79<br>79<br>79<br>79          | 80<br>80<br>80 – 81<br>80 – 81 | 70 – 71<br>70<br>70 – 72<br>72           |
| 18DP – 5DP                                               | 1.000" – 5.000"                                                       | .220" – 1.150"                                                     | 79                            | 83                             | 73                                       |
| 48DP – 24DP<br>20DP – 6DP<br>16DP – 4DP                  | .250" – 2.000"<br>.500" – 6.000"<br>1.000" – 9.000"                   | .090" – .260"<br>.180" – 1.070"<br>.420" – 1.400"                  | 79<br>79<br>79                | 82<br>82<br>82                 | 74<br>74 – 77<br>75 – 77                 |
| 30DP – 8DP                                               | .430" – 4.250"                                                        | .140" – .710"                                                      | 79                            | 83                             | 78                                       |
| 48DP – 32DP<br>24DP<br>48DP – 24DP                       | <b>Worm</b><br>.333" to 1.500"                                        | <b>Gear</b><br>.417" to 4.167"                                     | <b>Worm</b><br>.562" to .812" | <b>Gear</b><br>.156" to .219"  | 96                                       |
| 48DP – 4DP                                               | .333" to 3.000"                                                       | .417" to 6.000"                                                    | .562" to 5.250"               | .156" to 1.500"                | 96                                       |
| 16DP – 3DP                                               | .625" to 4.000"                                                       | 1.250" to 18.000"                                                  | 1.000" to 5.250"              | .312" to 2.000"                | 96                                       |

| Tooth Gauge                                                                                     |                                                                                                 |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 20°P.A.                                                                                         | 14½°P.A.                                                                                        |
| <br>64 D.P.  |                                                                                                 |
| <br>48 D.P.  | <br>48 D.P.  |
| <br>32 D.P.  | <br>32 D.P.  |
| <br>24 D.P.  | <br>24 D.P.  |
| <br>20 D.P.  | <br>20 D.P.  |
| <br>16 D.P.  | <br>16 D.P.  |
| <br>12 D.P.  | <br>12 D.P.  |
| <br>10 D.P.  | <br>10 D.P.  |
| <br>8 D.P.  | <br>8 D.P.  |
| <br>6 D.P. | <br>6 D.P. |
| <br>5 D.P. | <br>5 D.P. |
| <br>4 D.P. | <br>4 D.P. |
| Tooth Gauge Chart is for Reference Purposes Only.                                               |                                                                                                 |
|                                                                                                 | <br>3 D.P. |

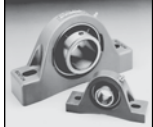
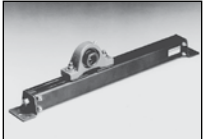
# Product Selection / Reference Guide

|                                                                    |                                                                                                                                                |                                                                                                                                       |                                                                                                                                        |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>BOST-BRONZ®<br/>OIL<br/>IMPREGNATED<br/>SINTERED<br/>BRONZE</b> | PLAIN CYLINDRICAL<br><br>Pages 138–140                        | FLANGED TYPE<br><br>Pages 141–142                   | THRUST TYPE<br><br>Page 143                         |
|                                                                    | PLATE STOCK<br><br>Page 143                                   | CORED BARS<br><br>Page 144                          | SOLID BARS<br><br>Page 144                          |
| <b>BEAR-N-BRONZ®<br/>660 CAST<br/>BRONZE</b>                       | PLAIN CYLINDRICAL<br><br>Pages 146–150                        | CORED BARS<br><br>Pages 151–153                     | SOLID BARS<br><br>Page 153                          |
| <b>BRONZE<br/>EMERGENCY<br/>BEARING BANKS</b>                      | BOST-BRONZ & BEAR-N-BRONZ<br><br>Page 154                    | <b>BOSTONE® F-1<br/>GLASS FILLED<br/>TEFLON</b>                                                                                       |                                                                                                                                        |
| <b>BOSTonE® F-1<br/>GLASS FILLED<br/>TEFLON</b>                    | FLANGED<br><br>Page 156                                     | THRUST TYPE<br><br>Page 157                       | SOLID BARS<br>(EXTRUDED)<br><br>Page 157          |
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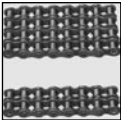
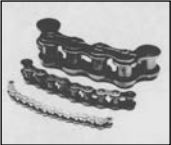
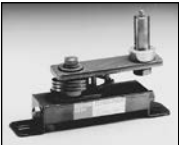
# Product Selection / Reference Guide

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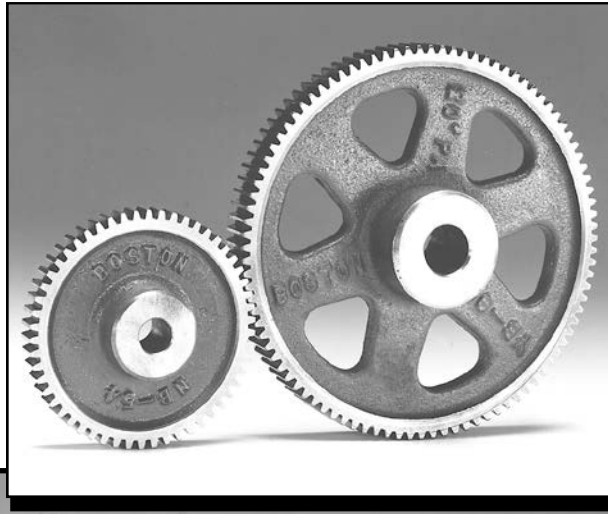
# Product Selection / Reference Guide

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|                                  | CLAMP<br><br>SCC Type – Page 104              | MULTI-JAW<br><br>FA Type – Page 105 |                                                                                                                                | RIGID<br><br>CR Type – Page 105 |                                                                                                                                           | SLEEVE<br><br>FCP Type – Page 106     |
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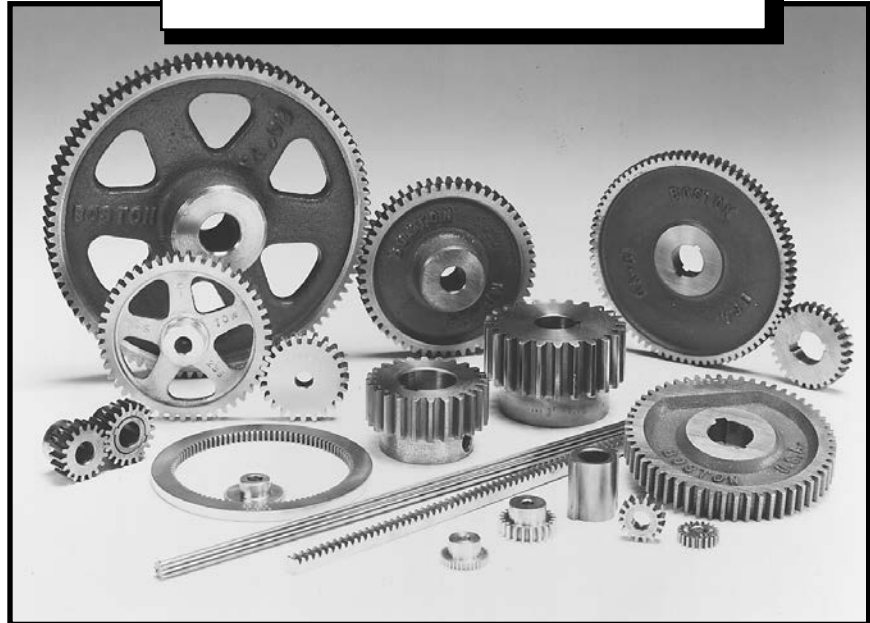
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|                                   | SCREW/SPRING ADJUSTABLE SHAFT MOUNTED DRIVE TENSIONS                                                                                  |                                                                                                                            |                                                                                                                                               |                                                                                                                       |
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| DRIVE<br>TENSIONERS               |                                                                                                                                       |                                                                                                                            |                                                                                                                                               |                                                                                                                       |

- Parallel Shaft Applications
- Reliability from Steel, Cast Iron and Brass
- More Cost Effective, Quieter Running and Corrosion-Resistant Operation from Non-Metallic Options
- Higher Load Carrying Capacity with 20° PA (Pressure Angle)
- Higher Contact Ratio for a Smoother, Quieter Operation with 14-1/2° PA



### Selections From Stock

- Pinions and Gears (Steel, Cast Iron, Brass, Non-Metallic)
- Change Gears (Steel or Cast Iron)
- Stem Pinions (Steel)
- Drawn Pinion Wire (Brass, Steel)
- Rack (Steel, Nylon)
- Internal (Brass)
- Diametral Pitch 64 DP to 3 DP
- Pitch Diameter .208" to 36.000"
- Diametral Pitch System Standardized on Stock Gears
- 14-1/2° and 20° Pressure Angles



*Boston spur gears are designed to transmit motion and power between parallel shafts. Configurations include spur, rack, pinion wire, stem pinions and internal gears; most with a selection of bores, keyways and set screws. Fine-pitch gears are available in plastic, brass, stainless steel and steel. Heavier pitch spurs are available in steel and cast iron. Styles include plain, web, web with lightening holes or spoked. Change gears have consecutive numbers of teeth for a variety of ratios.*

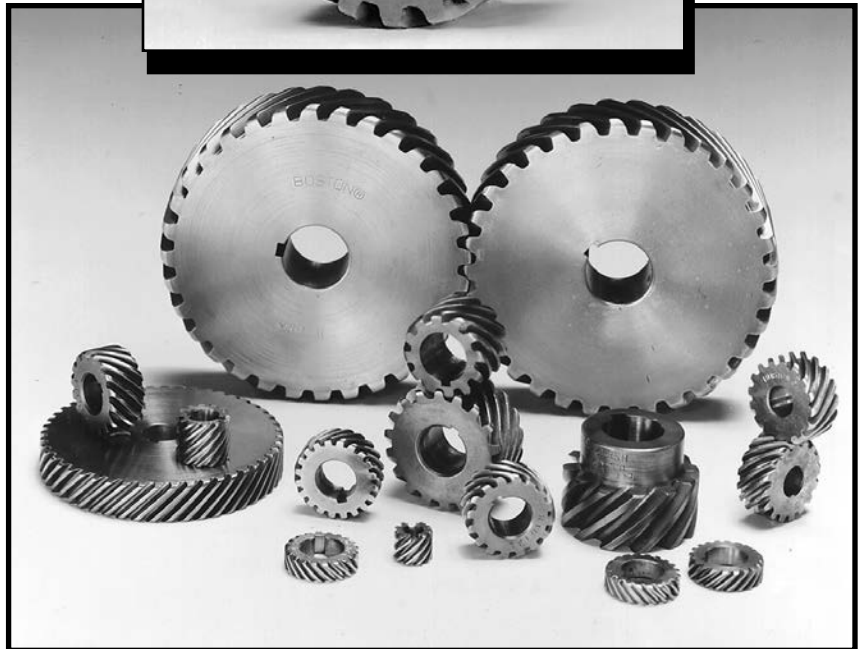
*Boston Gear manufactures both 14-1/2° and 20°PA, involute, full depth system gears. While 20°PA is generally recognized as having higher load carrying capacity, 14-1/2°PA gears have extensive use. The lower Pressure Angle results in less change in backlash due to center distance variation and concentricity errors. It also provides a higher contact ratio and is consequently a smoother, quieter operation provided that the undercut of the teeth is not present.*

## Helical Gears

- Parallel and 90° Non-Intersecting Shaft Applications
- Improved Tooth Strength
- Greater Load Carrying Capacity
- Increased Contact Ratio
- Smoother Operating Characteristics

### Selections From Stock

- Helicals, 45° Helix Angle
- Transverse Diametral Pitch (TDP) System
- Hardened Steel (24 TDP – 6 TDP)
- Bronze (8 TDP – 6 TDP)
- Pitch Diameter .333" to 6.000"
- 14-1/2° Pressure Angle



*Boston helical gears are stocked both right and left hand, made with a 45° helix angle. They are designed to transmit motion and power between non-intersecting shafts which are positioned either parallel (opposing hand) or at 90° to each other (same hand). Because these gears are top-hobbed, there is extremely close concentricity between the pitch diameter and the outside diameter.*

*Helical gears offer additional benefits relative to Spur Gears, those being:*

- *Improved tooth strength due to the elongated helical wrap-around.*
- *Increased contact ratio due to the axial tooth overlap.*
- *Helical Gears tend to have greater load carrying capacity than Spur Gears of similar size.*
- *Because of the above, smoother operating characteristics are apparent.*

*All Boston Helicals are cut to the Transverse Diametral Pitch System, resulting in a higher Normal Diametral Pitch Number.*

## Miter and Bevel Gears

- 90° Intersecting Shaft Applications
- Coniflex® Tooth Form for Increased Life and Smoother, Quieter Operation
- Spiral Miter and Bevel for Higher Speed, Greater Torque Load, and Quieter Operating Applications
- Miter Gears for 1:1 Ratio Applications
- Bevel Gears for 1.5:1 to 6:1 Ratio Applications
- Soft Bores for Customized Alterations

### Selections from Stock

- Straight Miter Gears
  - Nylon (48 DP – 16 DP)
  - Brass (48 DP – 24 DP)
  - Steel (48 DP – 4 DP)
  - Iron (8 DP – 4 DP)
- Spiral Miter Gears (35° Spiral Angle)
  - Steel (18 DP – 5 DP)
- Straight Bevel Gears
  - Brass (48 DP – 24 DP)
  - Steel (20 DP – 6 DP)
  - Iron (16 DP – 4 DP)
- Spiral Bevel Gears (35° Spiral Angle)
  - Steel (30 DP – 8 DP)
- Diametral Pitch – 48 DP to 4 DP
- Pitch Diameter – 0.250" to 9.000"
- 20° Pressure Angle
- Hardened or Unhardened Teeth (Steel)
- Made in Accordance with AGMA Specifications for the Basic Tooth Form



*Boston miter and bevel gears are designed for transmission of motion and power between intersecting shafts positioned at a right angle. Straight tooth miter and bevel gears are cut with a generated tooth form having a localized lengthwise tooth bearings known as the "Coniflex"® tooth form. The superiority of these gears over straight bevels with full length tooth bearing lies in the control of tooth contact. The localization of contact permits minor adjustment of the gears in assembly and allows for some displacement due to deflection under operating loads, without concentration of the load on the end of the tooth. This results in increased life and quieter operation.*

*Spiral tooth form miter and bevel gears are suited for higher speed and larger torque applications.*

®Registered trademark of The Gleason Works.

## Worms and Worm Gears

- 90° Non-Intersecting Shaft Applications
- Smoothest, Quietest Form of Gearing
- High Ratio Speed Reduction
- Minimal Space Requirements
- Resistance to Back Driving with Some Ratios
- Increased Efficiency with Lower Ratios

### Selections from Stock

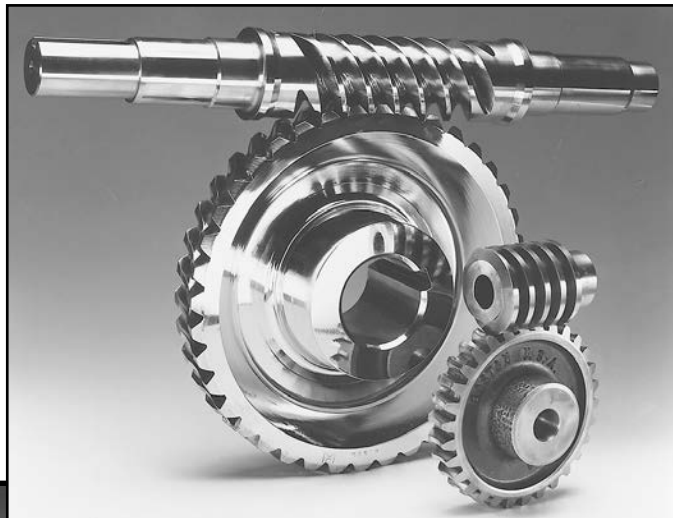
- Worms
  - Acetal (48 DP – 24 DP)
  - Steel (48 DP – 3 DP)
- Worm Gears
  - Acetal (48 DP – 24 DP)
  - Bronze (48 DP – 4 DP)
  - Cast Iron (16 DP – 3 DP)
- Pressure Angle
  - 14-1/2°, 20°, 25°
- Thread
  - Single, Double, Quadruple
- Diametral Pitch – 48 DP to 3 DP
- Center Distances – 0.375" to 11.000"

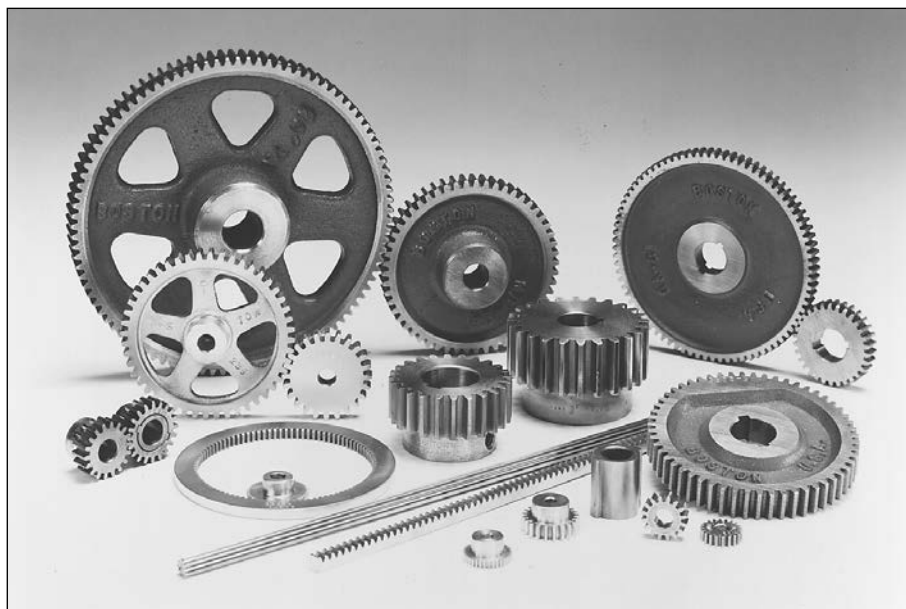
### California Proposition 65 Warning:

The Bronze worm gearing contains lead, a chemical known to the state of California to cause cancer, birth defects or other reproductive harm.

*Boston Gear worms and worm gears provide an effective answer for such power transmission applications as high-ratio speed reduction, limited space, right-angle shafts and non-intersecting shafts. When properly applied, they are the smoothest and quietest form of gearing. Steel worms and cast iron or bronze worm gears having throated teeth are available in single or multiple threads, 48 to 3 diametral pitch or up to 85" pitch diameter. Acetal worms and worm gears are available in 48, 32 and 24 diametral pitches.*

*The efficiency of a worm gear drive depends on the lead angle and number of starts on the worm. The angle generally decreases with increasing ratio and worm pitch diameter. For increased efficiency the ratio should be kept low.*





### 14-1/2° PRESSURE ANGLE – CATALOG NUMBER / DIMENSIONS

|                         |       |
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| Change Gears .....      | 28-32 |
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| Drawn Pinion Wire ..... | 34    |
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| Internal Gears.....     | 36    |

### 20° PRESSURE ANGLE – CATALOG NUMBER / DIMENSIONS

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| Internal Gears..... | 48    |

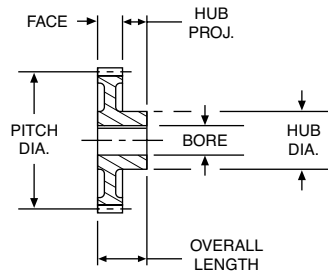
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| Spur Gear Engineering Information..... | 306-311 |

# Spur Gears

## 48 and 32 Diametral Pitch (Brass)

14-1/2° Pressure Angle (will not operate with 20° spurs)

A



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



### REFERENCE PAGES

Alterations — 322  
Lubrication — 322  
Materials — 323

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

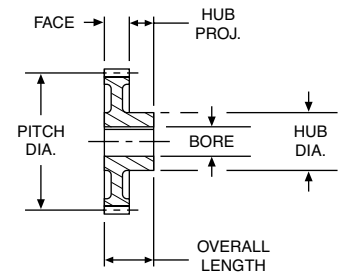
| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore  | Hub   |       | Style<br>See<br>Page<br>323                                                             | Without Keyway<br>or Setscrew |              |       |
|-------------------------------|---------------|-------|-------|-------|-----------------------------------------------------------------------------------------|-------------------------------|--------------|-------|
|                               |               |       | Dia.  | Proj. |                                                                                         | Catalog<br>Number             | Item<br>Code |       |
| <b>48<br/>DIAMETRAL PITCH</b> |               |       |       |       | Face = .125"<br>Outside Dia. = Pitch Dia. + .042"<br>Overall Length = .125" + Hub Proj. |                               |              |       |
| BRASS                         |               |       |       |       |                                                                                         |                               |              |       |
| 10                            | .208          | .0935 | —     | —     | A                                                                                       | G127                          | 09322        |       |
| 12                            | .250          | .125  | —     | —     |                                                                                         | G129                          | 09324        |       |
| 14                            | .292          |       |       |       |                                                                                         | G130                          | 09326        |       |
| 15                            | .312          |       |       |       |                                                                                         | G131                          | 09328        |       |
| 16                            | .333          |       |       |       |                                                                                         | G132                          | 09330        |       |
| 18                            | .375          |       |       |       |                                                                                         | G133                          | 09332        |       |
| 20                            | .417          |       |       |       |                                                                                         | G134                          | 09334        |       |
| 22                            | .458          | .1875 | —     | —     |                                                                                         | G135                          | 09336        |       |
| 24                            | .500          |       |       |       |                                                                                         | G136                          | 09338        |       |
| 26                            | .542          |       |       |       |                                                                                         | G137                          | 09340        |       |
| 32                            | .667          |       |       |       |                                                                                         | G138                          | 09342        |       |
| 36                            | .750          |       |       |       |                                                                                         | G139                          | 09344        |       |
| 40                            | .833          |       |       |       |                                                                                         | G140                          | 09346        |       |
| 44                            | .917          |       |       |       |                                                                                         | G141                          | 09348        |       |
| 48                            | 1.000         | .250  | .50   | .25   | G142                                                                                    | 09350                         |              |       |
| 54                            | 1.125         |       |       |       | G143                                                                                    | 09352                         |              |       |
| 60                            | 1.250         |       |       |       | G144                                                                                    | 09354                         |              |       |
| 66                            | 1.375         |       |       |       | G145                                                                                    | 09356                         |              |       |
| 72                            | 1.500         |       |       |       | G146                                                                                    | 09358                         |              |       |
| 84                            | 1.750         |       |       |       | G147                                                                                    | 09360                         |              |       |
| 96                            | 2.000         |       |       |       | G148                                                                                    | 09362                         |              |       |
| 100                           | 2.083         |       |       |       | .3125                                                                                   | .62                           | .31          | D     |
| 120                           | 2.500         | G149  | 09366 |       |                                                                                         |                               |              |       |
| 144                           | 3.000         | G150  | 09368 |       |                                                                                         |                               |              |       |
| 192                           | 4.000         | G151  | 09370 |       |                                                                                         |                               |              |       |
| <b>32<br/>DIAMETRAL PITCH</b> |               |       |       |       | Face = .062"<br>Outside Dia. = Pitch Dia. + .062"                                       |                               |              |       |
| BRASS                         |               |       |       |       |                                                                                         |                               |              |       |
| 10                            | .312          | .125  | —     | —     | A                                                                                       | G96                           | 09234        |       |
| 14                            | .438          |       |       |       |                                                                                         | G98                           | 09238        |       |
| 16                            | .500          |       |       |       |                                                                                         | G99                           | 09240        |       |
| 20                            | .625          |       |       |       |                                                                                         | G101                          | 09244        |       |
| 24                            | .750          |       |       |       |                                                                                         | G102                          | 09246        |       |
| 28                            | .875          | G103  | 09248 |       |                                                                                         |                               |              |       |
| 32                            | 1.000         | G104  | 09250 |       |                                                                                         |                               |              |       |
| 40                            | 1.250         | .250  | —     | —     |                                                                                         | G105                          | 09252        |       |
| 48                            | 1.500         |       |       |       |                                                                                         | G106                          | 09254        |       |
| 64                            | 2.000         | .3125 | —     | —     |                                                                                         | G110                          | 09256        |       |
| 80                            | 2.500         |       |       |       |                                                                                         | G111                          | 09258        |       |
| 96                            | 3.000         |       |       |       |                                                                                         | G112                          | 09260        |       |
| 112                           | 3.500         |       |       |       |                                                                                         | G113                          | 09262        |       |
| 128                           | 4.000         |       |       |       |                                                                                         | G114                          | 09264        |       |
| Face = .188"                  |               |       |       |       |                                                                                         |                               |              |       |
| 8                             | .250          | .125  | —     | —     |                                                                                         | A                             | G159         | 09266 |
| 10                            | .312          |       |       |       | G161                                                                                    |                               | 09268        |       |
| 12                            | .375          |       |       |       | G163                                                                                    |                               | 09270        |       |
| 14                            | .438          |       |       |       | G165                                                                                    |                               | 09272        |       |
| 15                            | .469          |       |       |       | G166                                                                                    |                               | 09274        |       |
| 16                            | .500          | .1875 | —     | —     | G167                                                                                    |                               | 09276        |       |
| 18                            | .562          |       |       |       | G168                                                                                    |                               | 09278        |       |
| 20                            | .625          |       |       |       | G169                                                                                    |                               | 09280        |       |
| 22                            | .688          |       |       |       | G170                                                                                    |                               | 09282        |       |
| 24                            | .750          |       |       |       | G171                                                                                    |                               | 09284        |       |
| 26                            | .812          |       |       |       | G172                                                                                    |                               | 09286        |       |
| 28                            | .875          |       |       |       | G173                                                                                    |                               | 09288        |       |
| 30                            | .938          |       |       |       | G174                                                                                    |                               | 09290        |       |
| 32                            | 1.000         |       |       |       | G175                                                                                    |                               | 09292        |       |
| 36                            | 1.125         | G176  | 09294 |       |                                                                                         |                               |              |       |
| 40                            | 1.250         | .250  | —     | —     | G177                                                                                    |                               | 09296        |       |
| 44                            | 1.375         |       |       |       | G178                                                                                    |                               | 09298        |       |
| 48                            | 1.500         |       |       |       | G179                                                                                    |                               | 09300        |       |
| 52                            | 1.625         |       |       |       | G180                                                                                    |                               | 09302        |       |
| 56                            | 1.750         |       |       |       | G181                                                                                    |                               | 09304        |       |

## 32 and 24 Diametral Pitch (Brass & Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore  | Hub  |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                           |              | With<br>Setscrew  |              |       |
|-------------------------------|---------------|-------|------|-------|-----------------------------|-----------------------------------------------------------------------------------------|--------------|-------------------|--------------|-------|
|                               |               |       | Dia. | Proj. |                             | Catalog<br>Number                                                                       | Item<br>Code | Catalog<br>Number | Item<br>Code |       |
| <b>32<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = .188"<br>Outside Dia. = Pitch Dia. + .062"<br>Overall Length = .187" + Hub Proj. |              |                   |              |       |
| BRASS                         |               |       |      |       |                             |                                                                                         |              |                   |              |       |
| 64                            | 2.000         | .3125 | .62  | .25   | B                           | G182                                                                                    | 09306        | —                 | —            |       |
| 72                            | 2.250         |       |      | .31   | C                           | G183                                                                                    | 09308        | —                 | —            |       |
| 80                            | 2.500         |       |      |       | D                           | G184                                                                                    | 09310        | —                 | —            |       |
| 96                            | 3.000         |       |      |       |                             | G185                                                                                    | 09312        | —                 | —            |       |
| 112                           | 3.500         |       |      |       |                             | G186                                                                                    | 09314        | —                 | —            |       |
| 128                           | 4.000         |       |      | .75   |                             | G187                                                                                    | 09316        | —                 | —            |       |
| STEEL                         |               |       |      |       |                             |                                                                                         |              |                   |              |       |
| 16                            | .500          | .1875 | —    | —     | A                           | S3216                                                                                   | 09572        | —                 | —            |       |
| 20                            | .625          | .250  | —    | —     |                             | S3220                                                                                   | 09574        | —                 | —            |       |
| 22                            | .688          |       | —    | —     |                             | S3222                                                                                   | 09576        | —                 | —            |       |
| 24                            | .750          | .3125 | —    | —     |                             | S3224                                                                                   | 09578        | —                 | —            |       |
| 28                            | .875          | .375  | —    | —     |                             | S3228                                                                                   | 09580        | —                 | —            |       |
| 32                            | 1.000         | .375  |      |       |                             | S3232                                                                                   | 09582        | —                 | —            |       |
| 40                            | 1.250         | .375  | —    | —     |                             | S3240                                                                                   | 09584        | —                 | —            |       |
| 48                            | 1.500         |       |      |       |                             | S3248                                                                                   | 09586        | —                 | —            |       |
| 56                            | 1.750         |       |      |       |                             | S3256                                                                                   | 09588        | —                 | —            |       |
| 64                            | 2.000         |       |      |       |                             | S3264                                                                                   | 09590        | —                 | —            |       |
| 80                            | 2.500         |       |      |       |                             | S3280                                                                                   | 09592        | —                 | —            |       |
| 96                            | 3.000         |       |      |       |                             | S3296                                                                                   | 09594        | —                 | —            |       |
| 16                            | .500          | .1875 | .39  | .31   |                             | —                                                                                       | —            | H3216             | 09536        |       |
| 18                            | .562          | .45   | .31  |       |                             | —                                                                                       | —            | H3218             | 09538        |       |
| 20                            | .625          | .250  | .52  | .31   |                             | —                                                                                       | —            | H3220             | 09540        |       |
| 22                            | .688          |       | .58  |       |                             | .31                                                                                     | —            | —                 | H3222        | 09542 |
| 24                            | .750          | .3125 | .64  | .31   |                             | —                                                                                       | —            | H3224             | 09544        |       |
| 26                            | .812          |       | .70  |       |                             | —                                                                                       | —            | H3226             | 09546        |       |
| 28                            | .875          |       | .75  |       |                             | —                                                                                       | —            | H3228             | 09548        |       |
| 30                            | .938          |       | .75  |       |                             | —                                                                                       | —            | H3230             | 09550        |       |
| 32                            | 1.000         |       | .75  |       |                             | .38                                                                                     | —            | —                 | H3232        | 09552 |
| 40                            | 1.250         |       | .375 |       |                             | .88                                                                                     | .38          | —                 | —            | H3240 |
| 48                            | 1.500         | 1.00  |      | .38   |                             | —                                                                                       | —            | H3248             | 09556        |       |
| 56                            | 1.750         |       |      |       |                             | —                                                                                       | —            | H3256             | 09558        |       |
| 64                            | 2.000         |       |      |       |                             | —                                                                                       | —            | H3264             | 09560        |       |
| 80                            | 2.500         | .375  | 1.12 | .38   |                             | —                                                                                       | —            | H3280             | 09562        |       |
| 96                            | 3.000         |       | 1.25 | .50   |                             | —                                                                                       | —            | H3296             | 09564        |       |
| 128                           | 4.000         |       | 1.88 | .50   |                             | —                                                                                       | —            | H32128            | 09566        |       |
| 160                           | 5.000         |       | 2.12 | .50   |                             | —                                                                                       | —            | H32160            | 09568        |       |
| 192                           | 6.000         |       | 2.12 | .50   |                             | —                                                                                       | —            | H32192            | 09570        |       |
| <b>24<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = .250"<br>Outside Dia. = Pitch Dia. + .083"<br>Overall Length = .250" + Hub Proj. |              |                   |              |       |
| BRASS                         |               |       |      |       |                             |                                                                                         |              |                   |              |       |
| 12                            | .500          | .1875 | .38  | .25   | A                           | G254                                                                                    | 09202        | —                 | —            |       |
| 16                            | .667          |       | .50  |       |                             | G256                                                                                    | 09204        | —                 | —            |       |
| 18                            | .750          |       | .50  |       |                             | G257                                                                                    | 09206        | —                 | —            |       |
| 24                            | 1.000         | .250  | .62  | .25   |                             | G258                                                                                    | 09208        | —                 | —            |       |
| 30                            | 1.250         |       | .62  |       |                             | G259                                                                                    | 09210        | —                 | —            |       |
| 36                            | 1.500         |       |      |       |                             | G261                                                                                    | 09212        | —                 | —            |       |
| 42                            | 1.750         | .3125 | .62  | .25   | B                           | G263                                                                                    | 09214        | —                 | —            |       |
| 48                            | 2.000         |       | .69  | .31   |                             | G264                                                                                    | 09216        | —                 | —            |       |
| 54                            | 2.250         |       |      |       | C                           | G265                                                                                    | 09218        | —                 | —            |       |
| 60                            | 2.500         |       |      |       |                             | G266                                                                                    | 09220        | —                 | —            |       |
| 66                            | 2.750         |       |      |       |                             | G267                                                                                    | 09222        | —                 | —            |       |
| 72                            | 3.000         | .375  | .75  | .31   | D                           | G268                                                                                    | 09224        | —                 | —            |       |
| 84                            | 3.500         |       | .75  | .31   |                             | G269                                                                                    | 09226        | —                 | —            |       |
| 96                            | 4.000         |       | .75  | .31   |                             | G270                                                                                    | 09228        | —                 | —            |       |
| 120                           | 5.000         |       | .88  | .38   |                             | G272                                                                                    | 09230        | —                 | —            |       |
| 144                           | 6.000         |       | .88  | .38   |                             | G274                                                                                    | 09232        | —                 | —            |       |



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



### REFERENCE PAGES

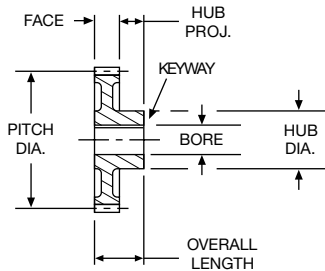
Alterations — 322  
Horsepower Ratings — 50  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

# Spur Gears

## 24 and 20 Diametral Pitch (Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)

A



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 50, 51  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†H2412 & H2414 have #35 (.110) drilled hole through one wall, no keyway.

‡H2415-H24144 has one setscrew, no keyway.

\*\*NA11B-5/16"-NA14B-5/16 bore has #35 (.110) drilled hole through one wall, no keyway.

††3/8" & 1/2" bores have one setscrew, no keyway.

NA40-5/8" & NA40-3/4" bores have standard keyway at 90° to setscrew. See Page 323.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore  | Hub  |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                           |              | With Keyway<br>& Setscrew† |              |
|-------------------------------|---------------|-------|------|-------|-----------------------------|-----------------------------------------------------------------------------------------|--------------|----------------------------|--------------|
|                               |               |       | Dia. | Proj. |                             | Catalog<br>Number                                                                       | Item<br>Code | Catalog<br>Number          | Item<br>Code |
| <b>24<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = .250"<br>Outside Dia. = Pitch Dia. + .083"<br>Overall Length = .250" + Hub Proj. |              |                            |              |
| STEEL                         |               |       |      |       |                             |                                                                                         |              |                            |              |
| 12                            | .500          | .250  | —    | —     | A                           | S2412                                                                                   | 09630        | —                          | —            |
| 15                            | .625          |       | —    | —     |                             | S2415                                                                                   | 09632        | —                          | —            |
| 16                            | .667          | .3125 | —    | —     |                             | S2416                                                                                   | 09634        | —                          | —            |
| 18                            | .750          |       | —    | —     |                             | S2418                                                                                   | 09636        | —                          | —            |
| 21                            | .875          | .375  | —    | —     |                             | S2421                                                                                   | 09638        | —                          | —            |
| 24                            | 1.000         | .500  | —    | —     |                             | S2424                                                                                   | 09640        | —                          | —            |
| 30                            | 1.250         |       |      |       |                             | S2430                                                                                   | 09642        | —                          | —            |
| 36                            | 1.500         |       |      |       |                             | S2436                                                                                   | 09644        | —                          | —            |
| 42                            | 1.750         |       |      |       |                             | S2442                                                                                   | 09646        | —                          | —            |
| 48                            | 2.000         |       |      |       |                             | S2448                                                                                   | 09648        | —                          | —            |
| 60                            | 2.500         |       |      |       |                             | S2460                                                                                   | 09650        | —                          | —            |
| 72                            | 3.000         |       |      |       |                             | S2472                                                                                   | 09652        | —                          | —            |
| 12                            | .500          |       |      |       |                             | .250                                                                                    | .36          | .31                        | —            |
| 14                            | .583          |       | .46  | —     |                             | —                                                                                       | H2414†       |                            | 09598        |
| 15                            | .625          |       | .50  | —     |                             | —                                                                                       | H2415†       |                            | 09600        |
| 16                            | .667          | .3125 | .54  | .31   |                             | —                                                                                       | —            | H2416‡                     | 09602        |
| 18                            | .750          |       | .62  |       |                             | —                                                                                       | —            | H2418‡                     | 09604        |
| 20                            | .833          |       | .70  |       |                             | —                                                                                       | —            | H2420‡                     | 09606        |
| 21                            | .875          | .375  | .74  | .31   |                             | —                                                                                       | —            | H2421‡                     | 09608        |
| 24                            | 1.000         |       | .87  |       |                             | —                                                                                       | —            | H2424‡                     | 09610        |
| 30                            | 1.250         |       | 1.00 |       |                             | —                                                                                       | —            | H2430‡                     | 09612        |
| 36                            | 1.500         |       | 1.12 |       |                             | —                                                                                       | —            | H2436‡                     | 09614        |
| 42                            | 1.750         |       | 1.12 |       |                             | —                                                                                       | —            | H2442‡                     | 09616        |
| 48                            | 2.000         |       | 1.25 |       |                             | —                                                                                       | —            | H2448‡                     | 09618        |
| 60                            | 2.500         |       | 1.25 |       | —                           | —                                                                                       | H2460‡       | 09620                      |              |
| 72                            | 3.000         |       | .500 |       | 1.38                        | .50                                                                                     | —            | —                          | H2472‡       |
| 96                            | 4.000         |       | 2.00 | —     | —                           |                                                                                         | H2496‡       | 09624                      |              |
| 120                           | 5.000         |       | 2.25 | —     | —                           |                                                                                         | H24120‡      | 09626                      |              |
| 144                           | 6.000         |       | 2.25 | —     | —                           |                                                                                         | H24144‡      | 09628                      |              |
| <b>20<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = .375"<br>Outside Dia. = Pitch Dia. + .100"<br>Overall Length = .375" + Hub Proj. |              |                            |              |
| STEEL                         |               |       |      |       |                             |                                                                                         |              |                            |              |
| 11                            | .600*         | .3125 | .46  | .38   | A                           | NA11B                                                                                   | 09662        | NA11B-5/16**               | 46000        |
| 12                            | .600          |       | .46  |       |                             | NA12B                                                                                   | 09664        | NA12B-5/16**               | 46001        |
| 13                            | .650          |       | .50  |       |                             | NA13B                                                                                   | 09666        | NA13B-5/16**               | 46002        |
| 14                            | .700          |       | .56  |       |                             | NA14B                                                                                   | 09668        | NA14B-5/16**               | 46003        |
| 15                            | .750          | .375  | .60  | .38   |                             | NA15B                                                                                   | 09670        | NA15B-3/8††                | 46004        |
| 16                            | .800          |       | .66  |       |                             | NA16B                                                                                   | 09672        | NA16B-3/8††                | 46005        |
| 18                            | .900          |       | .74  |       |                             | NA18B                                                                                   | 09674        | NA18B-3/8††                | 46006        |
| 20                            | 1.000         | .375  | .84  | .38   |                             | NA20B                                                                                   | 09676        | NA20B-3/8††                | 46007        |
|                               |               | .500  |      |       |                             | —                                                                                       | —            | NA20B-1/2††                | 46008        |
| 22                            | 1.100         | .375  | .82  |       |                             | NA22B                                                                                   | 09678        | NA22B-3/8††                | 46009        |
|                               |               | .500  |      | —     |                             | —                                                                                       | NA22B-1/2††  | 46010                      |              |
| 24                            | 1.200         | .375  | .92  | .38   |                             | NA24                                                                                    | 09680        | NA24-3/8††                 | 46011        |
|                               |               | .500  |      |       |                             | —                                                                                       | —            | NA24-1/2††                 | 46012        |
| 25                            | 1.250         | .375  | .97  |       |                             | NA25B                                                                                   | 09682        | NA25B-3/8††                | 46013        |
|                               |               | .500  |      | —     |                             | —                                                                                       | NA25B-1/2††  | 46014                      |              |
| 28                            | 1.400         | .375  | 1.12 | .38   |                             | NA28B                                                                                   | 09684        | NA28B-3/8††                | 46015        |
|                               |               | .500  |      |       |                             | —                                                                                       | —            | NA28B-1/2††                | 46016        |
| 30                            | 1.500         | .375  | 1.22 |       |                             | NA30B                                                                                   | 09686        | NA30B-3/8††                | 46017        |
|                               |               | .500  |      | —     |                             | —                                                                                       | NA30B-1/2††  | 46018                      |              |
| 32                            | 1.600         | .375  | 1.32 | .50   |                             | NA32                                                                                    | 09688        | NA32-3/8††                 | 46019        |
|                               |               | .500  |      |       |                             | —                                                                                       | —            | NA32-1/2††                 | 46020        |
| 35                            | 1.750         | .375  | 1.47 |       |                             | NA35                                                                                    | 09690        | NA35-3/8††                 | 46021        |
|                               |               | .500  |      | —     |                             | —                                                                                       | NA35-1/2††   | 46022                      |              |
| 36                            | 1.800         | .375  | 1.52 | .50   |                             | NA36                                                                                    | 09692        | NA36-3/8††                 | 46023        |
|                               |               | .500  |      |       | —                           | —                                                                                       | NA36-1/2††   | 46024                      |              |
| 40                            | 2.000         | .375  | 1.72 |       | NA40                        | 09694                                                                                   | NA40-3/8††   | 46025                      |              |
|                               |               | .500  |      | —     | —                           | NA40-1/2††                                                                              | 46026        |                            |              |
|                               |               | .625  |      | —     | —                           | NA40-5/8                                                                                | 46027        |                            |              |
|                               |               | .750  |      | —     | —                           | NA40-3/4                                                                                | 46028        |                            |              |
| 48                            | 2.400         | .375  | 1.33 | .50   | NA48A                       | 10208                                                                                   | —            | —                          |              |
| 50                            | 2.500         |       | 1.42 |       | NA50A                       | 10210                                                                                   | —            | —                          |              |
| 60                            | 3.000         |       | 1.92 |       | NA60A                       | 10212                                                                                   | —            | —                          |              |
| 64                            | 3.200         |       | 2.12 |       | NA64A                       | 10214                                                                                   | —            | —                          |              |

## 20 and 16 Diametral Pitch (Cast Iron, Brass & Steel)

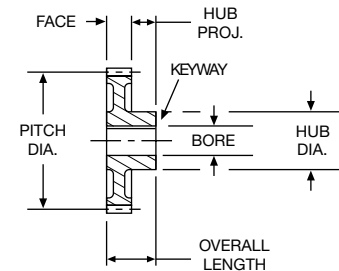
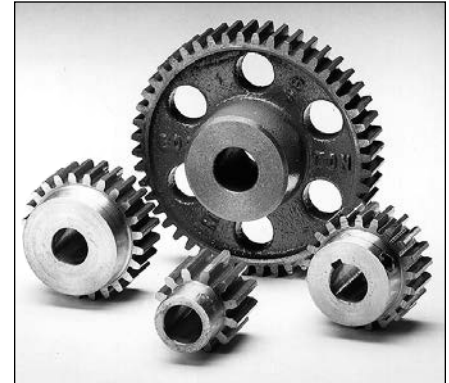
14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth            | Pitch<br>Dia.  | Bore  | Hub   |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                           |                | With Keyway<br>and Setscrew† |              |              |                |       |   |              |                |       |   |
|-------------------------------|----------------|-------|-------|-------|-----------------------------|-----------------------------------------------------------------------------------------|----------------|------------------------------|--------------|--------------|----------------|-------|---|--------------|----------------|-------|---|
|                               |                |       | Dia.  | Proj. |                             | Catalog<br>Number                                                                       | Item<br>Code   | Catalog<br>Number            | Item<br>Code |              |                |       |   |              |                |       |   |
| <b>20<br/>DIAMETRAL PITCH</b> |                |       |       |       |                             | Face = .375"<br>Outside Dia. = Pitch Dia. + .100"<br>Overall Length = .375" + Hub Proj. |                |                              |              |              |                |       |   |              |                |       |   |
| CAST IRON                     |                |       |       |       |                             |                                                                                         |                |                              |              |              |                |       |   |              |                |       |   |
| 70<br>72                      | 3.500<br>3.600 | .375  | 1.25  | .50   | B                           | NA70<br>NA72                                                                            | 10216<br>10218 | —                            | —            |              |                |       |   |              |                |       |   |
| 80<br>84                      | 4.000<br>4.200 |       |       |       |                             | .500                                                                                    | 1.25           | .50                          | C            | NA80<br>NA84 | 10220<br>10222 | —     | — |              |                |       |   |
| 90<br>96                      | 4.500<br>4.800 |       |       |       |                             |                                                                                         |                |                              |              | .500         | 1.50           | .50   | D | NA90<br>NA96 | 10224<br>10226 | —     | — |
| 100                           | 5.000          |       |       |       |                             |                                                                                         |                |                              |              |              |                |       |   | .62          | NA100          | 10228 | — |
| 112                           | 5.600          | .50   | NA112 | 10230 | —                           |                                                                                         |                |                              |              |              |                |       |   |              |                |       |   |
| 120                           | 6.000          |       |       |       |                             | NA120                                                                                   | 10232          | —                            | —            |              |                |       |   |              |                |       |   |
| 140                           | 7.000          |       |       |       |                             |                                                                                         |                |                              |              | NA140        | 10234          | —     | — |              |                |       |   |
| 144                           | 7.200          |       |       |       |                             |                                                                                         |                |                              |              |              |                |       |   | NA144        | 10236          | —     | — |
| 160                           | 8.000          | NA160 | 10238 | —     | —                           |                                                                                         |                |                              |              |              |                |       |   |              |                |       |   |
| 180                           | 9.000          |       |       |       |                             | NA180                                                                                   | 10240          | —                            | —            |              |                |       |   |              |                |       |   |
| 200                           | 10.000         |       |       |       |                             |                                                                                         |                |                              |              | 2.25         | NA200B         | 10242 | — |              |                |       |   |
|                               |                |       |       |       |                             |                                                                                         |                |                              |              |              |                |       |   |              |                |       |   |
|                               |                |       |       |       |                             |                                                                                         |                |                              |              |              |                |       |   |              |                |       |   |
|                               |                |       |       |       |                             |                                                                                         |                |                              |              |              |                |       |   |              |                |       |   |

|                               |                |              |                     |     |   |                                                                                        |                |     |   |              |                |   |              |              |                |              |                |
|-------------------------------|----------------|--------------|---------------------|-----|---|----------------------------------------------------------------------------------------|----------------|-----|---|--------------|----------------|---|--------------|--------------|----------------|--------------|----------------|
| <b>16<br/>DIAMETRAL PITCH</b> |                |              |                     |     |   | Face = .313"<br>Outside Dia. = Pitch Dia. + .125"<br>Overall Length = Face + Hub Proj. |                |     |   |              |                |   |              |              |                |              |                |
| BRASS                         |                |              |                     |     |   |                                                                                        |                |     |   |              |                |   |              |              |                |              |                |
| 8<br>9                        | .500<br>.563   | .1875        | —                   | —   | A | G226<br>G227                                                                           | 09168<br>09170 | —   | — |              |                |   |              |              |                |              |                |
| 10<br>12                      | .625<br>.750   |              |                     |     |   | .250                                                                                   | —              | —   | A | G228<br>G229 | 09172<br>09174 | — | —            |              |                |              |                |
| 14<br>16                      | .875<br>1.000  |              |                     |     |   |                                                                                        |                |     |   | .3125        | —              | — | B            | G230<br>G231 | 09176<br>09178 | —            | —              |
| 18<br>20                      | 1.125<br>1.250 |              |                     |     |   |                                                                                        |                |     |   |              |                |   |              | .3125        | .75            | .31          | D              |
| 24<br>28                      | 1.500<br>1.750 | .375         | .88<br>1.00<br>1.00 | .38 | A |                                                                                        |                |     |   |              |                |   |              |              |                |              |                |
| 32<br>40                      | 2.000<br>2.500 |              |                     |     |   | .500                                                                                   | .96<br>.625    | .44 | A |              |                |   |              |              |                |              |                |
| 48                            | 3.000          |              |                     |     |   |                                                                                        |                |     |   | 1.08<br>.625 | .44            | A | G239<br>G240 |              |                |              |                |
| 56<br>64                      | 3.500<br>4.000 |              |                     |     |   |                                                                                        |                |     |   |              |                |   | 1.20<br>.750 | .44          | A              | G241<br>G242 | 09196<br>09198 |
| 80                            | 5.000          | 1.33<br>.750 | .44                 | A   | — |                                                                                        |                |     |   |              |                |   |              |              |                | —            | —              |
|                               |                |              |                     |     |   |                                                                                        |                |     |   |              |                |   |              |              |                |              |                |
|                               |                |              |                     |     |   |                                                                                        |                |     |   |              |                |   |              |              |                |              |                |
|                               |                |              |                     |     |   |                                                                                        |                |     |   |              |                |   |              |              |                |              |                |

|                      |                               |                      |                          |     |   |                                  |                                  |                                                      |                                  |                              |                         |                                        |                         |                                       |            |                         |                |
|----------------------|-------------------------------|----------------------|--------------------------|-----|---|----------------------------------|----------------------------------|------------------------------------------------------|----------------------------------|------------------------------|-------------------------|----------------------------------------|-------------------------|---------------------------------------|------------|-------------------------|----------------|
| <b>STEEL</b>         |                               |                      |                          |     |   | Face = .500"                     |                                  |                                                      |                                  |                              |                         |                                        |                         |                                       |            |                         |                |
| 11<br>12<br>13<br>14 | .750*<br>.750<br>.813<br>.875 | .375                 | .56<br>.56<br>.63<br>.69 | .44 | A | NB11B<br>NB12B<br>NB13B<br>NB14B | 09704<br>09706<br>09708<br>09710 | NB11B-3/8†<br>NB12B-3/8†<br>NB13B-3/8†<br>NB14B-3/8† | 46029<br>46030<br>46031<br>46032 |                              |                         |                                        |                         |                                       |            |                         |                |
| 15<br>16<br>18       | .938<br>1.000<br>1.125        |                      |                          |     |   | .500                             | .75<br>.81<br>.94                | .44                                                  | A                                | NB15B<br>NB16B<br>NB18B      | 09712<br>09714<br>09716 | NB15B-1/2†<br>NB16B-1/2†<br>NB18B-1/2† | 46033<br>46034<br>46035 |                                       |            |                         |                |
| 20                   | 1.250                         |                      |                          |     |   |                                  |                                  |                                                      |                                  | .500<br>.625                 | .96                     | .44                                    | A                       | NB20B<br>—                            | 09718<br>— | NB20B-1/2†<br>NB20B-5/8 | 46036<br>46037 |
| 22                   | 1.375                         |                      |                          |     |   |                                  |                                  |                                                      |                                  |                              |                         |                                        |                         | .500<br>.625                          | 1.08       | .44                     | A              |
| 24                   | 1.500                         | .500<br>.625<br>.750 | 1.20                     | .44 | A |                                  |                                  |                                                      |                                  |                              |                         |                                        |                         |                                       |            |                         |                |
| 26                   | 1.625                         |                      |                          |     |   | .500<br>.625<br>.750             | 1.33                             | .44                                                  | A                                |                              |                         |                                        |                         |                                       |            |                         |                |
| 28                   | 1.750                         |                      |                          |     |   |                                  |                                  |                                                      |                                  | .500<br>.625<br>.750<br>.875 | 1.45                    | .50                                    | A                       |                                       |            |                         |                |
| 30                   | 1.875                         |                      |                          |     |   |                                  |                                  |                                                      |                                  |                              |                         |                                        |                         | .500<br>.625<br>.750<br>.875<br>1.000 | 1.58       | .50                     | A              |



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 51, 52  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

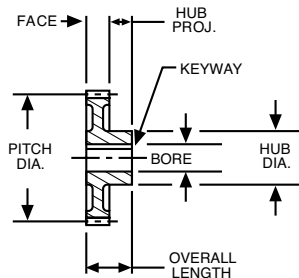
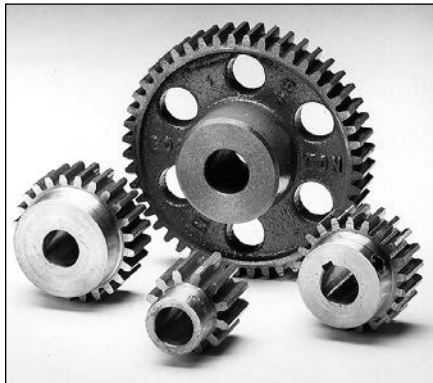
†3/8" and 1/2" bores have one setscrew, no keyway.  
5/8" bore and larger have standard keyway at 90° to setscrew. See Page 323.

# Spur Gears

## 16 and 12 Diametral Pitch (Steel, Non-Metallic & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

A



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 52, 53  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†1/2" bore has one setscrew, no keyway.

5/8" bore and larger have standard keyway at 90° to setscrew. See Page 323.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

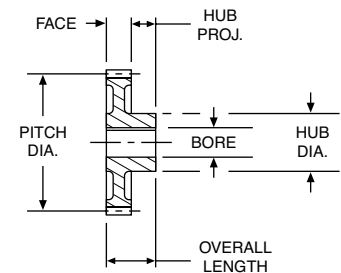
| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore                                  | Hub          |        | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                           |              | With Keyway<br>and Setscrew† |              |
|-------------------------------|---------------|---------------------------------------|--------------|--------|-----------------------------|-----------------------------------------------------------------------------------------|--------------|------------------------------|--------------|
|                               |               |                                       | Dia.         | Proj.  |                             | Catalog<br>Number                                                                       | Item<br>Code | Catalog<br>Number            | Item<br>Code |
| <b>16<br/>DIAMETRAL PITCH</b> |               |                                       |              |        |                             | Face = .500"<br>Outside Dia. = Pitch Dia. + .125"<br>Overall Length = .500" + Hub Proj. |              |                              |              |
| STEEL                         |               |                                       |              |        |                             |                                                                                         |              |                              |              |
| 32                            | 2.000         | .500<br>.625<br>.750<br>.875<br>1.000 | 1.70         | .50    | A                           | NB32                                                                                    | 09730        | NB32-1/2†                    | 46055        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | NB32-5/8                     | 46056        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | NB32-3/4                     | 46057        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | NB32-7/8                     | 46058        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | NB32-1                       | 46059        |
| 36                            | 2.250         | .500                                  | 1.95         | .50    |                             | NB36                                                                                    | 09732        | —                            | —            |
| 40                            | 2.500         |                                       | 1.69         |        |                             | NB40A                                                                                   | 10244        | —                            | —            |
| 48                            | 3.000         |                                       | 2.19         |        |                             | NB48A                                                                                   | 10246        | —                            | —            |
|                               |               |                                       |              |        |                             |                                                                                         |              |                              |              |
| NON-METALLIC                  |               |                                       |              |        |                             |                                                                                         |              |                              |              |
| 16                            | 1.000         | .375                                  | .81          | .50    | A                           | QBH16                                                                                   | 09014        | —                            | —            |
| 20                            | 1.250         |                                       | 1.06         |        |                             | QBH20                                                                                   | 09018        | —                            | —            |
| 24                            | 1.500         |                                       | 1.31         |        |                             | QBH24                                                                                   | 09022        | —                            | —            |
| 32                            | 2.000         |                                       | 1.81         |        |                             | QBH32                                                                                   | 09024        | —                            | —            |
| 40                            | 2.500         |                                       | —            |        |                             | QB40                                                                                    | 09000        | —                            | —            |
| 48                            | 3.000         |                                       | —            |        |                             | QB48                                                                                    | 09002        | —                            | —            |
| 64                            | 4.000         |                                       | —            |        |                             | QB64                                                                                    | 09006        | —                            | —            |
| CAST IRON                     |               |                                       |              |        |                             |                                                                                         |              |                              |              |
| 54                            | 3.375         | .500                                  | 1.25         | .50    | B                           | NB54                                                                                    | 10248        | —                            | —            |
| 56                            | 3.500         |                                       | 1.25         |        |                             | NB56                                                                                    | 10250        | —                            | —            |
| 60                            | 3.750         |                                       | 1.38         |        |                             | NB60                                                                                    | 10252        | —                            | —            |
| 64                            | 4.000         |                                       | 1.38         |        |                             | NB64                                                                                    | 10254        | —                            | —            |
| 72                            | 4.500         | .625                                  | 1.38         | .62    | C                           | NB72                                                                                    | 10256        | —                            | —            |
| 80                            | 5.000         |                                       | 1.50         |        |                             | NB80                                                                                    | 10258        | —                            | —            |
| 84                            | 5.250         |                                       | 1.50         |        |                             | NB84                                                                                    | 10260        | —                            | —            |
| 96                            | 6.000         |                                       | 1.50         |        |                             | NB96                                                                                    | 10262        | —                            | —            |
| 112                           | 7.000         |                                       | 1.50         |        | NB112                       | 10264                                                                                   | —            | —                            |              |
| 120                           | 7.500         |                                       | 1.50         |        | NB120                       | 10266                                                                                   | —            | —                            |              |
| 128                           | 8.000         |                                       | 1.50         |        | NB128                       | 10268                                                                                   | —            | —                            |              |
| 144                           | 9.000         |                                       | .625         |        | 1.75                        | .75                                                                                     | D            | NB144                        | 10270        |
| 160                           | 10.000        | 1.75                                  |              | NB160B | 10272                       |                                                                                         |              | —                            | —            |
| 192                           | 12.000        | 2.00                                  |              | NB192B | 10274                       |                                                                                         |              | —                            | —            |
|                               |               |                                       |              |        |                             |                                                                                         |              |                              |              |
| <b>12<br/>DIAMETRAL PITCH</b> |               |                                       |              |        |                             | Face = .750"<br>Outside Dia. = Pitch Dia. + .167"<br>Overall Length = .750" + Hub Proj. |              |                              |              |
| STEEL                         |               |                                       |              |        |                             |                                                                                         |              |                              |              |
| 11                            | 1.000*        | .500                                  | .75          | .50    | A                           | ND11B                                                                                   | 09744        | ND11B-1/2†                   | 46060        |
| 12                            | 1.000         |                                       | .75          |        |                             | ND12B                                                                                   | 09746        | ND12B-1/2†                   | 46061        |
| 13                            | 1.083         |                                       | .83          |        |                             | ND13B                                                                                   | 09748        | ND13B-1/2†                   | 46062        |
| 14                            | 1.167         |                                       | .92          |        |                             | ND14B                                                                                   | 09750        | ND14B-1/2†                   | 46063        |
| 15                            | 1.250         | .625                                  | 1.00         | .50    |                             | ND15B                                                                                   | 09752        | ND15B-5/8                    | 46064        |
| 16                            | 1.333         |                                       | .99          |        |                             | ND16B                                                                                   | 09754        | ND16B-5/8                    | 46065        |
| 18                            | 1.500         |                                       | 1.15         |        |                             | ND18B                                                                                   | 09756        | ND18B-5/8                    | 46066        |
| 20                            | 1.667         |                                       | .625<br>.750 |        |                             | 1.32                                                                                    | .50          | ND20B                        | 09758        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND20B-3/4                    | 46068        |
| 21                            | 1.750         | .625<br>.750<br>.875                  | 1.40         | .50    |                             | ND21B                                                                                   | 09760        | ND21B-5/8                    | 46069        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND21B-3/4                    | 46070        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND21B-7/8                    | 46071        |
| 22                            | 1.833         | .625<br>.750<br>.875<br>1.000         | 1.49         | .50    |                             | ND22B                                                                                   | 09762        | ND22B-5/8                    | 46072        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND22B-3/4                    | 46073        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND22B-7/8                    | 46074        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND22B-1                      | 46075        |
| 24                            | 2.000         | .625<br>.750<br>.875<br>1.000         | 1.65         | .50    |                             | ND24B                                                                                   | 09764        | ND24B-5/8                    | 46076        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND24B-3/4                    | 46077        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND24B-7/8                    | 46078        |
|                               |               |                                       |              |        |                             | —                                                                                       | —            | ND24B-1                      | 46079        |
| 30                            | 2.500         | .625                                  | 2.15         | .62    |                             | ND30                                                                                    | 09766        | —                            | —            |
| 32                            | 2.667         |                                       | 1.92         |        |                             | ND32A                                                                                   | 10276        | —                            | —            |
| 36                            | 3.000         |                                       | 2.25         |        |                             | ND36A                                                                                   | 10278        | —                            | —            |
| 40                            | 3.333         |                                       | 2.34         |        |                             | ND40A                                                                                   | 10280        | —                            | —            |
| 42                            | 3.500         |                                       | 2.50         |        |                             | ND42A                                                                                   | 10282        | —                            | —            |

## 12 and 10 Diametral Pitch (Steel, Non-Metallic & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

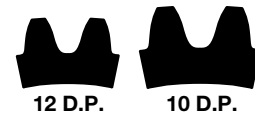
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth               | Pitch<br>Dia.                                      | Bore                  | Hub                                  |               | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                           |                                                                                           | With Keyway<br>and Setscrew†                       |                                     |                            |
|----------------------------------|----------------------------------------------------|-----------------------|--------------------------------------|---------------|-----------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------|----------------------------|
|                                  |                                                    |                       | Dia.                                 | Proj.         |                             | Catalog<br>Number                                                                       | Item<br>Code                                                                              | Catalog<br>Number                                  | Item<br>Code                        |                            |
| <b>12<br/>DIAMETRAL PITCH</b>    |                                                    |                       |                                      |               |                             | Face = .750"<br>Outside Dia. = Pitch Dia. + .167"<br>Overall Length = .750" + Hub Proj. |                                                                                           |                                                    |                                     |                            |
| NON-METALLIC                     |                                                    |                       |                                      |               |                             |                                                                                         |                                                                                           |                                                    |                                     |                            |
| 15<br>18<br>21                   | 1.250<br>1.500<br>1.750                            | .500                  | 1.00<br>1.25<br>1.50                 | .50           | A                           | QDH15<br>QDH18<br>QDH21                                                                 | 09038<br>09042<br>09046                                                                   | -<br>-<br>-                                        | -<br>-<br>-                         |                            |
| 24<br>30<br>36<br>48             | 2.000<br>2.500<br>3.000<br>4.000                   | .625                  | 1.75<br>2.25<br>-<br>-               | .50<br>-<br>- |                             | QDH24<br>QDH30<br>QD36<br>QD48                                                          | 09050<br>09052<br>09026<br>09030                                                          | -<br>-<br>-<br>-                                   | -<br>-<br>-<br>-                    |                            |
| 60                               | 5.000                                              | .750                  | -                                    | -             |                             | QD60                                                                                    | 09034                                                                                     | -                                                  | -                                   |                            |
| CAST-IRON                        |                                                    |                       |                                      |               |                             |                                                                                         |                                                                                           |                                                    |                                     |                            |
| 48<br>54<br>60<br>64<br>72<br>84 | 4.000<br>4.500<br>5.000<br>5.333<br>6.000<br>7.000 | .750                  | 1.75                                 | .75           |                             | C<br><br><br><br><br><br>D                                                              | ND48<br>ND54<br>ND60<br>ND64<br>ND72<br>ND84                                              | 10284<br>10286<br>10288<br>10290<br>10292<br>10294 | -<br>-<br>-<br>-<br>-<br>-          | -<br>-<br>-<br>-<br>-<br>- |
| 96<br>108<br>112                 | 8.000<br>9.000<br>9.333                            | .750                  | 2.00                                 | .75           |                             |                                                                                         | ND96<br>ND108<br>ND112                                                                    | 10296<br>10298<br>10300                            | -<br>-<br>-                         | -<br>-<br>-                |
| 120<br>144<br>168                | 10.000<br>12.000<br>14.000                         | .875                  | 2.00                                 | 1.00          | ND120<br>ND144<br>ND168     |                                                                                         | 10302<br>10304<br>10306                                                                   | -<br>-<br>-                                        | -<br>-<br>-                         |                            |
| <b>10<br/>DIAMETRAL PITCH</b>    |                                                    |                       |                                      |               |                             |                                                                                         | Face = 1.000"<br>Outside Dia. = Pitch Dia. + .200"<br>Overall Length = 1.000" + Hub Proj. |                                                    |                                     |                            |
| STEEL                            |                                                    |                       |                                      |               |                             |                                                                                         |                                                                                           |                                                    |                                     |                            |
| 11<br>12<br>14                   | 1.200*<br>1.200<br>1.400                           | .625                  | .92<br>.92<br>1.02                   | .62           | A                           |                                                                                         | NF11B<br>NF12B<br>NF14B                                                                   | 09778<br>09780<br>09782                            | NF11B-5/8<br>NF12B-5/8<br>NF14B-5/8 | 46080<br>46081<br>46082    |
| 15<br>16                         | 1.500<br>1.600                                     | .750                  | 1.12<br>1.22                         | .62           |                             |                                                                                         | NF15B<br>NF16B                                                                            | 09784<br>09786                                     | NF15B-3/4<br>NF16B-3/4              | 46083<br>46084             |
| 18                               | 1.800                                              | .750<br>.875          | 1.42                                 | .62           |                             |                                                                                         | NF18B<br>-                                                                                | 09788<br>-                                         | NF18B-3/4<br>NF18B-7/8              | 46085<br>46086             |
| 20                               | 2.000                                              | .750<br>.875<br>1.000 | 1.62                                 | .62           |                             | NF20B<br>-<br>-                                                                         | 09790<br>-<br>-                                                                           | NF20B-3/4<br>NF20B-7/8<br>NF20B-1                  | 46087<br>46088<br>46089             |                            |
| 24                               | 2.400                                              | .750<br>.875<br>1.000 | 2.02                                 | .62           |                             | NF24B<br>-<br>-                                                                         | 09792<br>-<br>-                                                                           | NF24B-3/4<br>NF24B-7/8<br>NF24B-1                  | 46090<br>46091<br>46092             |                            |
| 25                               | 2.500                                              | .750                  | 2.12                                 | .62           |                             | NF25                                                                                    | 09794                                                                                     | -                                                  | -                                   |                            |
| 28<br>30<br>32<br>35<br>36       | 2.800<br>3.000<br>3.200<br>3.500<br>3.600          | .750                  | 1.81<br>2.02<br>2.22<br>2.52<br>2.61 | .88           |                             | NF28A<br>NF30A<br>NF32A<br>NF35A<br>NF36A                                               | 10310<br>10312<br>10314<br>10316<br>10318                                                 | -<br>-<br>-<br>-<br>-                              | -<br>-<br>-<br>-<br>-               |                            |
| NON-METALLIC                     |                                                    |                       |                                      |               |                             |                                                                                         |                                                                                           |                                                    |                                     |                            |
| 15<br>18                         | 1.500<br>1.800                                     | .625                  | 1.20<br>1.50                         | .62           |                             | A                                                                                       | QFH15<br>QFH18                                                                            | 09062<br>09066                                     | -<br>-                              | -<br>-                     |
| 20<br>25<br>30                   | 2.000<br>2.500<br>3.000                            | .750                  | 1.70<br>2.20<br>2.70                 | .62           |                             |                                                                                         | QFH20<br>QFH25<br>QFH30                                                                   | 09068<br>09070<br>09072                            | -<br>-<br>-                         | -<br>-<br>-                |



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 53, 54  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

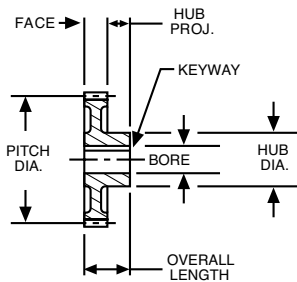
†All gears have standard keyway at 90° to setscrew.  
See Page 323.

# Spur Gears

## 10 and 8 Diametral Pitch (Cast Iron, Steel & Non-Metallic)

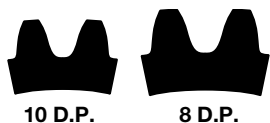
14-1/2° Pressure Angle (will not operate with 20° spurs)

A



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 54, 55  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†All gears have standard keyway, at 90° to setscrew.  
See Page 323.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

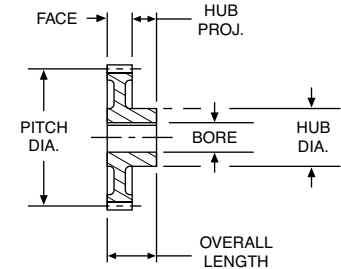
| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore  | Hub   |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                             |              | With Keyway<br>and Setscrew† |              |   |
|-------------------------------|---------------|-------|-------|-------|-----------------------------|-------------------------------------------------------------------------------------------|--------------|------------------------------|--------------|---|
|                               |               |       | Dia.  | Proj. |                             | Catalog<br>Number                                                                         | Item<br>Code | Catalog<br>Number            | Item<br>Code |   |
| <b>10<br/>DIAMETRAL PITCH</b> |               |       |       |       |                             | Face = 1.000"<br>Outside Dia. = Pitch Dia. + .200"<br>Overall Length = 1.000" + Hub Proj. |              |                              |              |   |
| CAST IRON                     |               |       |       |       |                             |                                                                                           |              |                              |              |   |
| 40                            | 4.000         | .875  | 2.12  | .88   | B                           | NF40                                                                                      | 10320        | —                            | —            |   |
| 42                            | 4.200         |       |       |       |                             | NF42                                                                                      | 10322        | —                            | —            |   |
| 45                            | 4.500         |       |       |       | NF45                        | 10324                                                                                     | —            | —                            |              |   |
| 48                            | 4.800         |       |       |       | NF48                        | 10326                                                                                     | —            | —                            |              |   |
| 50                            | 5.000         |       |       |       | NF50                        | 10328                                                                                     | —            | —                            |              |   |
| 54                            | 5.400         |       |       |       | NF54                        | 10330                                                                                     | —            | —                            |              |   |
| 55                            | 5.500         |       |       |       | D                           | NF55                                                                                      | 10332        | —                            | —            |   |
| 60                            | 6.000         |       |       |       |                             | NF60                                                                                      | 10334        | —                            | —            |   |
| 64                            | 6.400         |       | NF64  | 10336 |                             | —                                                                                         | —            |                              |              |   |
| 70                            | 7.000         |       | NF70  | 10338 |                             | —                                                                                         | —            |                              |              |   |
| 72                            | 7.200         |       | NF72  | 10340 |                             | —                                                                                         | —            |                              |              |   |
| 80                            | 8.000         |       | NF80  | 10342 |                             | —                                                                                         | —            |                              |              |   |
| 84                            | 8.400         |       | NF84  | 10344 |                             | —                                                                                         | —            |                              |              |   |
| 90                            | 9.000         |       | NF90  | 10346 | —                           | —                                                                                         |              |                              |              |   |
| 96                            | 9.600         |       | NF96  | 10348 | —                           | —                                                                                         |              |                              |              |   |
| 100                           | 10.000        | 1.00  | 2.25  | .88   | D                           | NF100                                                                                     | 10350        | —                            | —            |   |
| 110                           | 11.000        |       | 2.50  | 1.00  |                             | NF110                                                                                     | 10352        | —                            | —            |   |
| 120                           | 12.000        |       |       |       |                             | NF120                                                                                     | 10356        | —                            | —            |   |
| 140                           | 14.000        |       |       |       |                             | NF140                                                                                     | 10358        | —                            | —            |   |
| 144                           | 14.400        |       |       |       |                             | NF144                                                                                     | 10360        | —                            | —            |   |
| 160                           | 16.000        |       |       |       |                             | NF160                                                                                     | 10362        | —                            | —            |   |
| 180                           | 18.000        |       |       |       |                             | 2.75                                                                                      | NF180        | 10364                        | —            | — |
| <b>8<br/>DIAMETRAL PITCH</b>  |               |       |       |       |                             | Face = 1.250"<br>Outside Dia. = Pitch Dia. + .250"<br>Overall Length = 1.250" + Hub Proj. |              |                              |              |   |
| STEEL                         |               |       |       |       |                             |                                                                                           |              |                              |              |   |
| 11                            | 1.500*        | .750  | 1.12  | .75   | A                           | NH11B                                                                                     | 09806        | NH11B-3/4                    | 46093        |   |
| 12                            | 1.500         |       | 1.12  |       |                             | NH12B                                                                                     | 09808        | NH12B-3/4                    | 46094        |   |
| 14                            | 1.750         |       | 1.31  |       |                             | NH14B                                                                                     | 09810        | NH14B-3/4                    | 46095        |   |
| 15                            | 1.875         | .875  | 1.43  | .75   |                             | NH15B                                                                                     | 09812        | NH15B-7/8                    | 46096        |   |
| 16                            | 2.000         | .875  | 1.56  | .75   |                             | NH16B                                                                                     | 09814        | NH16B-7/8                    | 46097        |   |
|                               |               | 1.000 |       |       |                             | —                                                                                         | NH16B-1      | 46098                        |              |   |
| 18                            | 2.250         | .875  | 1.81  | .75   |                             | NH18B                                                                                     | 09816        | NH18B-7/8                    | 46099        |   |
|                               |               | 1.000 |       |       |                             | —                                                                                         | NH18B-1      | 46100                        |              |   |
|                               |               | 1.125 |       |       |                             | —                                                                                         | NH18B-1-1/8  | 46101                        |              |   |
| 20                            | 2.500         | .875  | 2.06  | .75   |                             | NH20B                                                                                     | 09818        | NH20B-7/8                    | 46102        |   |
|                               |               | 1.000 |       |       |                             | —                                                                                         | NH20B-1      | 46103                        |              |   |
|                               |               | 1.125 |       |       |                             | —                                                                                         | NH20B-1-1/8  | 46104                        |              |   |
| 22                            | 2.750         | .875  | 2.31  | .75   |                             | NH22B                                                                                     | 09820        | NH22B-7/8                    | 46105        |   |
|                               |               | 1.000 |       |       |                             | —                                                                                         | NH22B-1      | 46106                        |              |   |
|                               |               | 1.125 |       |       |                             | —                                                                                         | NH22B-1-1/8  | 46107                        |              |   |
| 24                            | 3.000         | .875  | 2.06  | .88   |                             | NH24A                                                                                     | 10368        | —                            | —            |   |
| 28                            | 3.500         |       | 2.56  |       |                             | NH28A                                                                                     | 10370        | —                            | —            |   |
| 30                            | 3.750         |       | 2.75  |       |                             | NH30A                                                                                     | 10372        | —                            | —            |   |
| 32                            | 4.000         |       | 1.000 |       |                             | 3.00                                                                                      | NH32A        | 10374                        | —            | — |
| NON-METALLIC                  |               |       |       |       |                             |                                                                                           |              |                              |              |   |
| 16                            | 2.000         | .750  | 1.62  | .75   | A                           | QHH16                                                                                     | 09082        | —                            | —            |   |
| 18                            | 2.250         |       | 1.88  |       |                             | QHH18                                                                                     | 09084        | —                            | —            |   |
| 20                            | 2.500         | .875  | 2.12  | .75   |                             | QHH20                                                                                     | 09086        | —                            | —            |   |
| 24                            | 3.000         |       | 2.62  |       |                             | QHH24                                                                                     | 09088        | —                            | —            |   |
| 28                            | 3.500         |       | 3.12  |       |                             | QHH28                                                                                     | 09090        | —                            | —            |   |

## 8 and 6 Diametral Pitch (Cast Iron & Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)

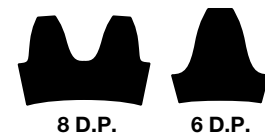
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth           | Pitch<br>Dia. | Bore   | Hub  |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                             |              | With Keyway<br>and Setscrew† |              |
|------------------------------|---------------|--------|------|-------|-----------------------------|-------------------------------------------------------------------------------------------|--------------|------------------------------|--------------|
|                              |               |        | Dia. | Proj. |                             | Catalog<br>Number                                                                         | Item<br>Code | Catalog<br>Number            | Item<br>Code |
| <b>8<br/>DIAMETRAL PITCH</b> |               |        |      |       |                             | Face = 1.250"<br>Outside Dia. = Pitch Dia. + .250"<br>Overall Length = 1.250" + Hub Proj. |              |                              |              |
| CAST IRON                    |               |        |      |       |                             |                                                                                           |              |                              |              |
| 36                           | 4.500         | 1.000  | 2.50 | 1.00  | B                           | NH36                                                                                      | 10376        | —                            | —            |
| 40                           | 5.000         |        |      |       |                             | NH40                                                                                      | 10378        | —                            | —            |
| 42                           | 5.250         |        |      |       |                             | NH42                                                                                      | 10380        | —                            | —            |
| 44                           | 5.500         |        |      |       |                             | NH44                                                                                      | 10382        | —                            | —            |
| 48                           | 6.000         |        |      |       | C                           | NH48                                                                                      | 10384        | —                            | —            |
| 54                           | 6.750         |        |      |       |                             | NH54                                                                                      | 10386        | —                            | —            |
| 56                           | 7.000         |        |      |       |                             | NH56                                                                                      | 10388        | —                            | —            |
| 60                           | 7.500         |        |      |       |                             | NH60                                                                                      | 10390        | —                            | —            |
| 64                           | 8.000         | 1.125  | 3.00 | 1.12  | D                           | NH64                                                                                      | 10392        | —                            | —            |
| 72                           | 9.000         |        |      |       |                             | NH72                                                                                      | 10394        | —                            | —            |
| 80                           | 10.000        |        |      |       |                             | NH80                                                                                      | 10396        | —                            | —            |
| 84                           | 10.500        |        |      |       |                             | NH84                                                                                      | 10398        | —                            | —            |
| 88                           | 11.000        |        |      |       |                             | NH88                                                                                      | 10400        | —                            | —            |
| 96                           | 12.000        |        |      |       |                             | NH96                                                                                      | 10402        | —                            | —            |
| 112                          | 14.000        |        |      |       |                             | NH112                                                                                     | 10404        | —                            | —            |
| 120                          | 15.000        |        |      |       |                             | NH120                                                                                     | 10406        | —                            | —            |
| 128                          | 16.000        |        |      |       |                             | NH128                                                                                     | 10408        | —                            | —            |
| 144                          | 18.000        |        |      |       |                             | NH144                                                                                     | 10410        | —                            | —            |
| 160                          | 20.000        | 1.125  | 3.25 | 1.25  |                             | NH160B                                                                                    | 10412        | —                            | —            |
| <b>6<br/>DIAMETRAL PITCH</b> |               |        |      |       |                             | Face = 1.500"<br>Outside Dia. = Pitch Dia + .333"<br>Overall Length = 1.500" + Hub Proj.  |              |                              |              |
| STEEL                        |               |        |      |       |                             |                                                                                           |              |                              |              |
| 11                           | 2.000*        | 1.000  | 1.46 | .88   | A                           | NJ11B                                                                                     | 09830        | NJ11B-1                      | 46108        |
| 12                           | 2.000         |        |      |       |                             | NJ12B                                                                                     | 09832        | NJ12B-1                      | 46109        |
| 14                           | 2.333         | 1.000  | 1.79 | .88   |                             | NJ14B                                                                                     | 09834        | NJ14B-1                      | 46110        |
|                              |               | 1.125  |      |       |                             | —                                                                                         | —            | NJ14B-1-1/8                  | 46111        |
| 15                           | 2.500         | 1.000  | 1.96 | .88   |                             | NJ15B                                                                                     | 09836        | NJ15B-1                      | 46112        |
|                              |               | 1.125  |      |       |                             | —                                                                                         | —            | NJ15B-1-1/8                  | 46113        |
|                              |               | 1.1875 |      |       |                             | —                                                                                         | —            | NJ15B-1-3/16                 | 46114        |
|                              |               | 1.250  |      |       |                             | —                                                                                         | —            | NJ15B-1-1/4                  | 46115        |
| 16                           | 2.667         | 1.000  | 2.13 | .88   |                             | NJ16B                                                                                     | 09838        | NJ16B-1                      | 46116        |
|                              |               | 1.125  |      |       |                             | —                                                                                         | —            | NJ16B-1-1/8                  | 46117        |
|                              |               | 1.1875 |      |       |                             | —                                                                                         | —            | NJ16B-1-3/16                 | 46118        |
|                              |               | 1.250  |      |       |                             | —                                                                                         | —            | NJ16B-1-1/4                  | 46119        |
| 18                           | 3.000         | 1.000  | 2.46 | .88   |                             | NJ18B                                                                                     | 09840        | NJ18B-1                      | 46120        |
|                              |               | 1.125  |      |       |                             | —                                                                                         | —            | NJ18B-1-1/8                  | 46121        |
|                              |               | 1.1875 |      |       |                             | —                                                                                         | —            | NJ18B-1-3/16                 | 46122        |
|                              |               | 1.250  |      |       |                             | —                                                                                         | —            | NJ18B-1-1/4                  | 46123        |
| 20                           | 3.333         | 1.000  | 2.79 | .88   |                             | NJ20                                                                                      | 09842        | NJ20-1                       | 46124        |
|                              |               | 1.125  |      |       |                             | —                                                                                         | —            | NJ20-1-1/8                   | 46125        |
|                              |               | 1.1875 |      |       |                             | —                                                                                         | —            | NJ20-1-3/16                  | 46126        |
|                              |               | 1.250  |      |       |                             | —                                                                                         | —            | NJ20-1-1/4                   | 46127        |
| 21                           | 3.500         | 1.000  | 2.96 | .88   |                             | NJ21B                                                                                     | 09844        | —                            | —            |
| 24                           | 4.000         | 1.125  | 3.00 | .88   |                             | NJ24A                                                                                     | 10414        | —                            | —            |
| 27                           | 4.500         |        | 3.50 |       |                             | NJ27A                                                                                     | 10416        | —                            | —            |
| 30                           | 5.000         |        | 4.00 |       |                             | NJ30A                                                                                     | 10418        | —                            | —            |



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 55, 56  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

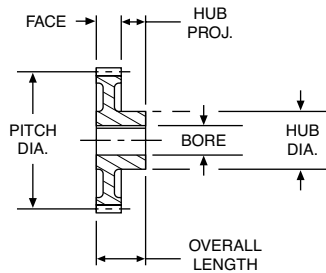
†All gears have standard keyway, at 90° to setscrew. See Page 323.

# Spur Gears

## 6 and 5 Diametral Pitch (Steel & Cast Iron)

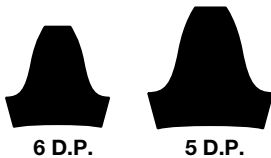
14-1/2° Pressure Angle (will not operate with 20° spurs)

A



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth           | Pitch<br>Dia. | Bore   | Hub   |        | Style<br>See<br>Page<br>323                                                               | Without Keyway<br>or Setscrew |              |
|------------------------------|---------------|--------|-------|--------|-------------------------------------------------------------------------------------------|-------------------------------|--------------|
|                              |               |        | Dia.  | Proj.  |                                                                                           | Catalog<br>Number             | Item<br>Code |
| <b>6<br/>DIAMETRAL PITCH</b> |               |        |       |        | Face = 1.500"<br>Outside Dia. = Pitch Dia. + .333"<br>Overall Length = 1.500" + Hub Proj. |                               |              |
| CAST IRON                    |               |        |       |        |                                                                                           |                               |              |
| 32                           | 5.333         | 1.125  | 2.50  | 1.00   | B                                                                                         | NJ32                          | 10420        |
| 33                           | 5.500         |        |       |        |                                                                                           | NJ33                          | 10422        |
| 36                           | 6.000         |        |       |        | C                                                                                         | NJ36                          | 10424        |
| 40                           | 6.667         |        |       |        |                                                                                           | NJ40                          | 10426        |
| 42                           | 7.000         |        |       |        | D                                                                                         | NJ42                          | 10428        |
| 48                           | 8.000         |        |       |        |                                                                                           | NJ48                          | 10430        |
| 54                           | 9.000         | NJ54   | 10432 |        |                                                                                           |                               |              |
| 60                           | 10.000        | 1.250  | 3.00  | 1.25   |                                                                                           | NJ60                          | 10434        |
| 64                           | 10.667        |        |       |        | NJ64                                                                                      | 10436                         |              |
| 66                           | 11.000        |        | NJ66  |        | 10438                                                                                     |                               |              |
| 72                           | 12.000        |        | NJ72  |        | 10440                                                                                     |                               |              |
| 84                           | 14.000        |        | 3.25  |        | NJ84                                                                                      | 10442                         |              |
| 96                           | 16.000        |        |       |        | NJ96                                                                                      | 10444                         |              |
| 108                          | 18.000        |        | 3.50  |        | NJ108                                                                                     | 10446                         |              |
| 120                          | 20.000        |        |       |        | NJ120B                                                                                    | 10448                         |              |
| 144                          | 24.000        | 3.75   | 1.50  | NJ144B | 10452                                                                                     |                               |              |
| <b>5<br/>DIAMETRAL PITCH</b> |               |        |       |        | Face = 1.750"<br>Outside Dia. = Pitch Dia. + .400"<br>Overall Length = 1.750" + Hub Proj. |                               |              |
| STEEL                        |               |        |       |        |                                                                                           |                               |              |
| 11                           | 2.400*        | 1.0625 | 1.78  | .88    | A                                                                                         | NK11B                         | 09846        |
| 12                           | 2.400         |        | 1.78  |        |                                                                                           | NK12B                         | 09848        |
| 14                           | 2.800         |        | 2.18  |        |                                                                                           | NK14B                         | 09850        |
| 15                           | 3.000         |        | 2.38  |        |                                                                                           | NK15B                         | 09852        |
| 16                           | 3.200         |        | 2.58  |        |                                                                                           | NK16B                         | 09854        |
| 18                           | 3.600         |        | 2.98  |        |                                                                                           | NK18B                         | 09856        |
| 20                           | 4.000         |        | 3.38  |        |                                                                                           | NK20B                         | 09858        |
| CAST IRON                    |               |        |       |        |                                                                                           |                               |              |
| 24                           | 4.800         | 1.0625 | 3.00  | 1.25   | A                                                                                         | NK24B                         | 10454        |
| 25                           | 5.000         |        |       |        | B                                                                                         | NK25B                         | 10456        |
| 30                           | 6.000         |        |       |        |                                                                                           | NK30B                         | 10458        |
| 35                           | 7.000         | 1.1875 | 3.00  | 1.25   | D                                                                                         | NK35B                         | 10460        |
| 40                           | 8.000         |        |       |        |                                                                                           | NK40B                         | 10462        |
| 45                           | 9.000         |        |       |        |                                                                                           | NK45B                         | 10464        |
| 50                           | 10.000        | 1.1875 | 3.50  | 1.25   |                                                                                           | NK50B                         | 10466        |
| 55                           | 11.000        |        |       |        |                                                                                           | NK55B                         | 10468        |
| 60                           | 12.000        |        |       |        |                                                                                           | NK60B                         | 10470        |
| 70                           | 14.000        |        |       |        |                                                                                           | NK70B                         | 10472        |
| 80                           | 16.000        |        |       |        |                                                                                           | NK80B                         | 10474        |
| 100                          | 20.000        | 1.3125 | 3.75  | 1.50   |                                                                                           | NK100B                        | 10478        |

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 56  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

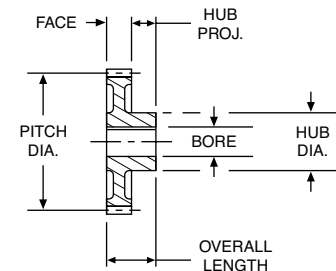
## 4 and 3 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

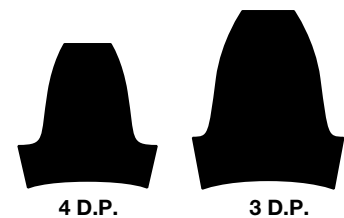
| No.<br>of<br>Teeth                                                                       | Pitch<br>Dia.                                                                                                                       | Bore   | Hub                                                          |       | Style<br>See<br>Page<br>323                                                               | Without Keyway<br>or Setscrew                                        |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------|----------------------------------|-----------------------------------------|-------------------------------------------|---------------------------------|----------------------------------|------|----------------|
|                                                                                          |                                                                                                                                     |        | Dia.                                                         | Proj. |                                                                                           | Catalog<br>Number                                                    | Item<br>Code                                                         |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| <b>4<br/>DIAMETRAL PITCH</b>                                                             |                                                                                                                                     |        |                                                              |       | Face = 2.000"<br>Outside Dia. = Pitch Dia. + .500"<br>Overall Length = 2.000" + Hub Proj. |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| STEEL                                                                                    |                                                                                                                                     |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| 11<br>12<br>14<br>15<br>16<br>18<br>20<br>22                                             | 3.000*<br>3.000<br>3.500<br>3.750<br>4.000<br>4.500<br>5.000<br>5.500                                                               | 1.125  | 2.27<br>2.27<br>2.77<br>3.02<br>3.27<br>3.77<br>4.27<br>4.77 | .88   | A                                                                                         | NL11B<br>NL12B<br>NL14B<br>NL15B<br>NL16B<br>NL18B<br>NL20B<br>NL22B | 09860<br>09862<br>09864<br>09866<br>09868<br>09870<br>09872<br>09874 |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| CAST IRON                                                                                |                                                                                                                                     |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| 24<br>28<br>30<br>32<br>36<br>40<br>42<br>44<br>48<br>54<br>56<br>60<br>64<br>72         | 6.000<br>7.000<br>7.500<br>8.000<br>9.000<br>10.000<br>10.500<br>11.000<br>12.000<br>13.500<br>14.000<br>15.000<br>16.000<br>18.000 |        | 1.250                                                        |       |                                                                                           | 3.50                                                                 | 1.50                                                                 | A                                                                     | NL24B<br>NL28B<br>NL30<br>NL32B<br>NL36B                             | 10484<br>10486<br>10488<br>10490<br>10492 |                                  |                                         |                                           |                                 |                                  |      |                |
| 40<br>42<br>44<br>48<br>54<br>56<br>60<br>64<br>72                                       | 10.000<br>10.500<br>11.000<br>12.000<br>13.500<br>14.000<br>15.000<br>16.000<br>18.000                                              |        |                                                              |       |                                                                                           |                                                                      |                                                                      | 4.00                                                                  | C                                                                    | NL40B<br>NL42<br>NL44B<br>NL48B           | 10494<br>10496<br>10498<br>10500 |                                         |                                           |                                 |                                  |      |                |
| 80<br>84<br>88<br>96                                                                     | 20.000<br>21.000<br>22.000<br>24.000                                                                                                |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       | 4.50                                                                 | 1.50<br><br><br>1.75                      | D                                | NL54<br>NL56B<br>NL60<br>NL64B<br>NL72B | 10502<br>10504<br>10506<br>10508<br>10510 |                                 |                                  |      |                |
| 80<br>84<br>88<br>96                                                                     | 20.000<br>21.000<br>22.000<br>24.000                                                                                                |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           | 1.375                            | 4.50<br><br><br>1.75                    | D                                         | NL80B<br>NL84<br>NL88B<br>NL96B | 10512<br>10514<br>10516<br>10518 |      |                |
| Face = 3.000"†<br>Outside Dia. = Pitch Dia. + .667"<br>Overall Length = Face + Hub Proj. |                                                                                                                                     |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| STEEL                                                                                    |                                                                                                                                     |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| 11<br>12<br>14<br>15<br>16<br>18<br>20<br>21                                             | 4.000*<br>4.000<br>4.667<br>5.000<br>5.333<br>6.000<br>6.667<br>7.000                                                               | 1.3125 |                                                              | -     | -                                                                                         | A                                                                    |                                                                      | NO11B†<br>NO12B†<br>NO14B<br>NO15B<br>NO16B<br>NO18B<br>NO20<br>NO21B | 09876<br>09878<br>09880<br>09882<br>09884<br>09886<br>09888<br>09890 |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| CAST IRON                                                                                |                                                                                                                                     |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  |      |                |
| 24<br>30<br>36<br>42                                                                     | 8.000<br>10.000<br>12.000<br>14.000                                                                                                 |        | 1.4375                                                       |       |                                                                                           |                                                                      | 4.50<br><br>5.25                                                     | 1.25<br><br>1.75                                                      | B                                                                    | NO24B<br>NO30B<br>NO36B                   | 10524<br>10526<br>10528          |                                         |                                           |                                 |                                  |      |                |
| 48<br>60                                                                                 | 16.000<br>20.000                                                                                                                    |        |                                                              |       |                                                                                           |                                                                      | 1.5625                                                               | 5.25                                                                  | 1.75                                                                 | C                                         | NO42                             | 10530                                   |                                           |                                 |                                  |      |                |
| 72<br>84                                                                                 | 24.000<br>28.000                                                                                                                    |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      | 1.6875                                    | 5.50<br>5.75                     | 1.75                                    | D                                         | NO48B<br>NO60B                  | 10532<br>10536                   |      |                |
| 96<br>108                                                                                | 32.000<br>36.000                                                                                                                    |        |                                                              |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         | 1.9375                                    | 5.75                            | 1.75                             | D    | NO72B<br>NO84B |
| 96<br>108                                                                                | 32.000<br>36.000                                                                                                                    |        | 1.9375                                                       |       |                                                                                           |                                                                      |                                                                      |                                                                       |                                                                      |                                           |                                  |                                         |                                           |                                 |                                  | 5.75 | 1.75           |
| 96<br>108                                                                                | 32.000<br>36.000                                                                                                                    |        |                                                              |       |                                                                                           |                                                                      | 1.9375                                                               | 5.75                                                                  | 1.75                                                                 |                                           |                                  |                                         |                                           |                                 |                                  |      |                |

\*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.  
†NO11B and NO12B have 4" Face.



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |



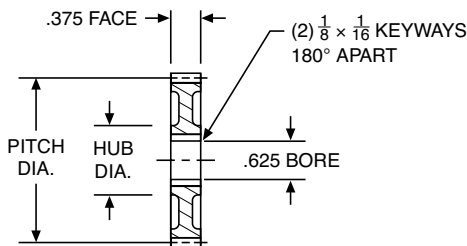
### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 56, 57  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

# Change Gears

## 20 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

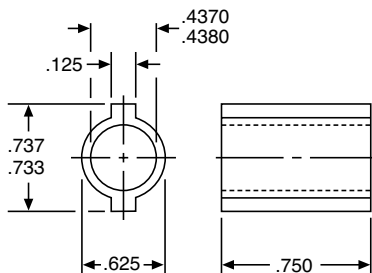


### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 51  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

### COMPOUND STEEL BUSHINGS

These steel bushings have 2 keys, 180° apart and fit bores of GA series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



### ORDER BY CATALOG NUMBER OR ITEM CODE

| CATALOG NO. | ITEM CODE |
|-------------|-----------|
| GAB20A      | 18500     |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth              | Pitch Dia. | Hub Dia. | Catalog Number | Item Code | No. of Teeth                             | Pitch Dia. | Hub Dia. | Catalog Number | Item Code |
|---------------------------|------------|----------|----------------|-----------|------------------------------------------|------------|----------|----------------|-----------|
| <b>20 DIAMETRAL PITCH</b> |            |          |                |           | <b>Outside Dia. = Pitch Dia. + .100"</b> |            |          |                |           |
| <b>STEEL</b>              |            |          |                |           | <b>CAST IRON</b>                         |            |          |                |           |
| 20                        | 1.000      |          | GA20           | 10038     | 71                                       | 3.550      |          | GA71B          | 10842     |
| 21                        | 1.050      |          | GA21           | 10040     | 72                                       | 3.600      |          | GA72B          | 10844     |
| 22                        | 1.100      |          | GA22           | 10042     | 73                                       | 3.650      |          | GA73B          | 10846     |
| 23                        | 1.150      |          | GA23           | 10044     | 74                                       | 3.700      |          | GA74B          | 10848     |
| 24                        | 1.200      |          | GA24           | 10046     | 75                                       | 3.750      | 1.56     | GA75B          | 10850     |
| 25                        | 1.250      |          | GA25           | 10048     | 76                                       | 3.800      |          | GA76B          | 10852     |
| 26                        | 1.300      |          | GA26           | 10050     | 77                                       | 3.850      |          | GA77B          | 10854     |
| 27                        | 1.350      |          | GA27           | 10052     | 78                                       | 3.900      |          | GA78B          | 10856     |
| 28                        | 1.400      |          | GA28           | 10054     | 79                                       | 3.950      |          | GA79B          | 10858     |
| 29                        | 1.450      |          | GA29           | 10056     | 80                                       | 4.000      |          | GA80B          | 10860     |
| 30                        | 1.500      |          | GA30           | 10058     | 81                                       | 4.050      |          | GA81B          | 10862     |
| 31                        | 1.550      |          | GA31           | 10060     | 82                                       | 4.100      |          | GA82B          | 10864     |
| 32                        | 1.600      |          | GA32           | 10062     | 83                                       | 4.150      |          | GA83B          | 10866     |
| 33                        | 1.650      |          | GA33           | 10064     | 84                                       | 4.200      |          | GA84B          | 10868     |
| 34                        | 1.700      |          | GA34           | 10066     | 85                                       | 4.250      |          | GA85B          | 10870     |
| 35                        | 1.750      |          | GA35           | 10068     | 86                                       | 4.300      |          | GA86B          | 10872     |
| 36                        | 1.800      |          | GA36           | 10070     | 87                                       | 4.350      |          | GA87B          | 10874     |
| 37                        | 1.850      |          | GA37           | 10072     | 88                                       | 4.400      |          | GA88B          | 10876     |
| 38                        | 1.900      |          | GA38           | 10074     | 89                                       | 4.450      |          | GA89B          | 10878     |
| 39                        | 1.950      |          | GA39           | 10076     | 90                                       | 4.500      |          | GA90B          | 10880     |
| 40                        | 2.000      |          | GA40           | 10078     | 91                                       | 4.550      |          | GA91B          | 10882     |
| 41                        | 2.050      |          | GA41           | 10080     | 92                                       | 4.600      |          | GA92B          | 10884     |
| 42                        | 2.100      |          | GA42           | 10082     | 93                                       | 4.650      |          | GA93B          | 10886     |
| 43                        | 2.150      |          | GA43           | 10084     | 94                                       | 4.700      |          | GA94B          | 10888     |
| 44                        | 2.200      |          | GA44           | 10086     | 95                                       | 4.750      |          | GA95B          | 10890     |
| 45                        | 2.250      |          | GA45           | 10088     | 96                                       | 4.800      |          | GA96B          | 10892     |
| 46                        | 2.300      |          | GA46           | 10090     | 97                                       | 4.850      |          | GA97B          | 10894     |
| 47                        | 2.350      |          | GA47           | 10092     | 98                                       | 4.900      | 1.69     | GA98B          | 10896     |
| 48                        | 2.400      |          | GA48           | 10094     | 99                                       | 4.950      |          | GA99B          | 10898     |
| 49                        | 2.450      |          | GA49           | 10096     | 100                                      | 5.000      |          | GA100B         | 10900     |
| 50                        | 2.500      |          | GA50           | 10098     | 101                                      | 5.050      |          | GA101B         | 10902     |
| <b>CAST IRON</b>          |            |          |                |           | 102                                      | 5.100      |          | GA102B         | 10904     |
| 51                        | 2.550      |          | GA51B          | 10802     | 103                                      | 5.150      |          | GA103B         | 10906     |
| 52                        | 2.600      |          | GA52B          | 10804     | 104                                      | 5.200      |          | GA104B         | 10908     |
| 53                        | 2.650      |          | GA53B          | 10806     | 105                                      | 5.250      |          | GA105B         | 10910     |
| 54                        | 2.700      |          | GA54B          | 10808     | 106                                      | 5.300      |          | GA106B         | 10912     |
| 55                        | 2.750      |          | GA55B          | 10810     | 107                                      | 5.350      |          | GA107B         | 10914     |
| 56                        | 2.800      |          | GA56B          | 10812     | 108                                      | 5.400      |          | GA108B         | 10916     |
| 57                        | 2.850      |          | GA57B          | 10814     | 109                                      | 5.450      |          | GA109B         | 10918     |
| 58                        | 2.900      |          | GA58B          | 10816     | 110                                      | 5.500      |          | GA110B         | 10920     |
| 59                        | 2.950      |          | GA59B          | 10818     | 111                                      | 5.550      |          | GA111B         | 10922     |
| 60                        | 3.000      |          | GA60B          | 10820     | 112                                      | 5.600      |          | GA112B         | 10924     |
| 61                        | 3.050      |          | GA61B          | 10822     | 113                                      | 5.650      |          | GA113B         | 10926     |
| 62                        | 3.100      |          | GA62B          | 10824     | 114                                      | 5.700      |          | GA114B         | 10928     |
| 63                        | 3.150      |          | GA63B          | 10826     | 115                                      | 5.750      |          | GA115B         | 10930     |
| 64                        | 3.200      |          | GA64B          | 10828     | 116                                      | 5.800      |          | GA116B         | 10932     |
| 65                        | 3.250      |          | GA65B          | 10830     | 117                                      | 5.850      |          | GA117B         | 10934     |
| 66                        | 3.300      |          | GA66B          | 10832     | 118                                      | 5.900      |          | GA118B         | 10936     |
| 67                        | 3.350      |          | GA67B          | 10834     | 119                                      | 5.950      |          | GA119B         | 10938     |
| 68                        | 3.400      |          | GA68B          | 10836     | 120                                      | 6.000      |          | GA120B         | 10940     |
| 69                        | 3.450      |          | GA69B          | 10838     |                                          |            |          |                |           |
| 70                        | 3.500      |          | GA70B          | 10840     |                                          |            |          |                |           |

|                    |                                         |
|--------------------|-----------------------------------------|
| Style See Page 323 | 20 – 78 Teeth – A<br>79 – 120 Teeth – C |
|--------------------|-----------------------------------------|

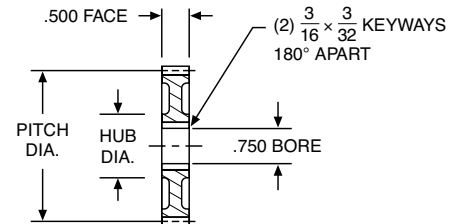
## 16 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth              | Pitch Dia. | Hub Dia. | Catalog Number | Item Code | No. of Teeth                      | Pitch Dia. | Hub Dia. | Catalog Number | Item Code |
|---------------------------|------------|----------|----------------|-----------|-----------------------------------|------------|----------|----------------|-----------|
| <b>16 DIAMETRAL PITCH</b> |            |          |                |           | Outside Dia. = Pitch Dia. + .125" |            |          |                |           |
| <b>STEEL</b>              |            |          |                |           | <b>CAST IRON</b>                  |            |          |                |           |
| 20                        | 1.250      |          | GB20           | 10100     | 76                                | 4.750      |          | GB76B          | 11012     |
| 21                        | 1.313      |          | GB21           | 10102     | 77                                | 4.813      |          | GB77B          | 11014     |
| 22                        | 1.375      |          | GB22           | 10104     | 78                                | 4.875      |          | GB78B          | 11016     |
| 23                        | 1.438      |          | GB23           | 10106     | 79                                | 4.938      |          | GB79B          | 11018     |
| 24                        | 1.500      |          | GB24           | 10108     | 80                                | 5.000      |          | GB80B          | 11020     |
| 25                        | 1.563      |          | GB25           | 10110     | 81                                | 5.063      |          | GB81B          | 11022     |
| 26                        | 1.625      |          | GB26           | 10112     | 82                                | 5.125      |          | GB82A          | 11024     |
| 27                        | 1.688      |          | GB27           | 10114     | 83                                | 5.188      |          | GB83A          | 11026     |
| 28                        | 1.750      |          | GB28           | 10116     | 84                                | 5.250      |          | GB84A          | 11028     |
| 29                        | 1.813      |          | GB29           | 10118     | 85                                | 5.313      |          | GB85A          | 11030     |
| 30                        | 1.875      | -        | GB30           | 10120     | 86                                | 5.375      |          | GB86A          | 11032     |
| 31                        | 1.938      |          | GB31           | 10122     | 87                                | 5.438      |          | GB87A          | 11034     |
| 32                        | 2.000      |          | GB32           | 10124     | 88                                | 5.500      |          | GB88A          | 11036     |
| 33                        | 2.063      |          | GB33           | 10126     | 89                                | 5.563      |          | GB89A          | 11038     |
| 34                        | 2.125      |          | GB34           | 10128     | 90                                | 5.625      |          | GB90A          | 11040     |
| 35                        | 2.188      |          | GB35           | 10130     | 91                                | 5.688      |          | GB91A          | 11042     |
| 36                        | 2.250      |          | GB36           | 10132     | 92                                | 5.750      |          | GB92A          | 11044     |
| 37                        | 2.313      |          | GB37           | 10134     | 93                                | 5.813      |          | GB93A          | 11046     |
| 38                        | 2.375      |          | GB38           | 10136     | 94                                | 5.875      |          | GB94A          | 11048     |
| 39                        | 2.438      |          | GB39           | 10138     | 95                                | 5.938      |          | GB95A          | 11050     |
| 40                        | 2.500      |          | GB40           | 10140     | 96                                | 6.000      |          | GB96A          | 11052     |
| <b>CAST IRON</b>          |            |          |                |           | 97                                | 6.063      |          | GB97A          | 11054     |
| 41                        | 2.563      |          | GB41B          | 10942     | 98                                | 6.125      |          | GB98A          | 11056     |
| 42                        | 2.625      |          | GB42B          | 10944     | 99                                | 6.188      |          | GB99A          | 11058     |
| 43                        | 2.688      |          | GB43B          | 10946     | 100                               | 6.250      |          | GB100A         | 11060     |
| 44                        | 2.750      |          | GB44B          | 10948     | 101                               | 6.313      | 1.81     | GB101A         | 11062     |
| 45                        | 2.913      |          | GB45B          | 10950     | 102                               | 6.375      |          | GB102A         | 11064     |
| 46                        | 2.875      | 1.56     | GB46B          | 10952     | 103                               | 6.438      |          | GB103A         | 11066     |
| 47                        | 2.938      |          | GB47B          | 10954     | 104                               | 6.500      |          | GB104A         | 11068     |
| 48                        | 3.000      |          | GB48B          | 10956     | 105                               | 6.563      |          | GB105A         | 11070     |
| 49                        | 3.063      |          | GB49B          | 10958     | 106                               | 6.625      |          | GB106A         | 11072     |
| 50                        | 3.125      |          | GB50B          | 10960     | 107                               | 6.688      |          | GB107A         | 11074     |
| 51                        | 3.188      |          | GB51B          | 10962     | 108                               | 6.750      |          | GB108A         | 11076     |
| 52                        | 3.250      |          | GB52B          | 10964     | 109                               | 6.913      |          | GB109A         | 11078     |
| 53                        | 3.313      |          | GB53B          | 10966     | 110                               | 6.975      |          | GB110A         | 11080     |
| 54                        | 3.375      |          | GB54B          | 10968     | 111                               | 6.938      |          | GB111A         | 11082     |
| 55                        | 3.438      |          | GB55B          | 10970     | 112                               | 7.000      |          | GB112A         | 11084     |
| 56                        | 3.500      |          | GB56B          | 10972     | 113                               | 7.063      |          | GB113A         | 11086     |
| 57                        | 3.563      |          | GB57B          | 10974     | 114                               | 7.125      |          | GB114A         | 11088     |
| 58                        | 3.625      |          | GB58B          | 10976     | 115                               | 7.188      |          | GB115A         | 11090     |
| 59                        | 3.688      |          | GB59B          | 10978     | 116                               | 7.250      |          | GB116A         | 11092     |
| 60                        | 3.750      |          | GB60B          | 10980     | 117                               | 7.313      |          | GB117A         | 11094     |
| 61                        | 3.813      |          | GB61B          | 10982     | 118                               | 7.375      |          | GB118A         | 11096     |
| 62                        | 3.875      |          | GB62B          | 10984     | 119                               | 7.438      |          | GB119A         | 11098     |
| 63                        | 3.938      |          | GB63B          | 10986     | 120                               | 7.500      |          | GB120A         | 11100     |
| 64                        | 4.000      | 1.81     | GB64B          | 10988     | 121                               | 7.563      |          | GB121A         | 11102     |
| 65                        | 4.063      |          | GB65B          | 10990     | 122                               | 7.625      |          | GB122A         | 11104     |
| 66                        | 4.125      |          | GB66B          | 10992     | 123                               | 7.688      |          | GB123A         | 11106     |
| 67                        | 4.188      |          | GB67B          | 10994     | 124                               | 7.750      |          | GB124A         | 11108     |
| 68                        | 4.250      |          | GB68B          | 10996     | 125                               | 7.813      |          | GB125A         | 11110     |
| 69                        | 4.313      |          | GB69B          | 10998     | 126                               | 7.875      |          | GB126A         | 11112     |
| 70                        | 4.375      |          | GB70B          | 11000     | 127                               | 7.938      |          | GB127A         | 11114     |
| 71                        | 4.438      |          | GB71B          | 11002     | 128                               | 8.000      |          | GB128A         | 11116     |
| 72                        | 4.500      |          | GB72B          | 11004     |                                   |            |          |                |           |
| 73                        | 4.563      |          | GB73B          | 11006     |                                   |            |          |                |           |
| 74                        | 4.625      |          | GB74B          | 11008     |                                   |            |          |                |           |
| 75                        | 4.688      |          | GB75B          | 11010     |                                   |            |          |                |           |

Style See Page 323  
20 - 79 Teeth - A  
80 - 128 Teeth - C

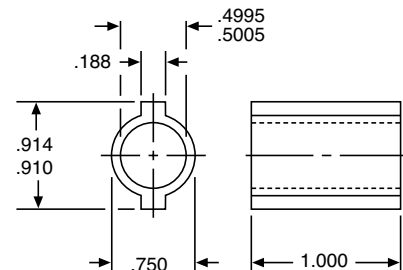


### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 52  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

### COMPOUND STEEL BUSHINGS

These steel bushings have 2 keys, 180° apart and fit bores of GB series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



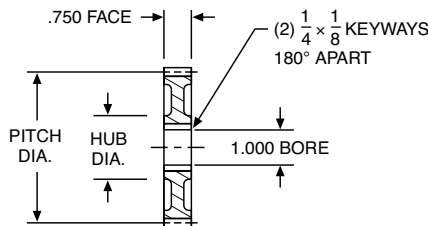
ORDER BY CATALOG NUMBER  
OR ITEM CODE

| CATALOG NO. | ITEM CODE |
|-------------|-----------|
| GBB16A      | 18502     |

# Change Gears

## 12 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

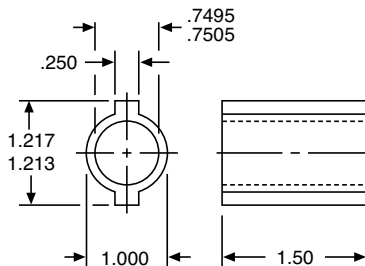


### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 53  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

### Compound Steel Bushings

These steel bushings have 2 keys, 180° apart and fit bores of GD series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



### ORDER BY CATALOG NUMBER OR ITEM CODE

| CATALOG NO. | ITEM CODE |
|-------------|-----------|
| GDB12A      | 18504     |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth              | Pitch Dia. | Hub Dia. | Catalog Number | Item Code | No. of Teeth                                                                                      | Pitch Dia. | Hub Dia. | Catalog Number | Item Code |
|---------------------------|------------|----------|----------------|-----------|---------------------------------------------------------------------------------------------------|------------|----------|----------------|-----------|
| <b>12 DIAMETRAL PITCH</b> |            |          |                |           |                                                                                                   |            |          |                |           |
|                           |            |          |                |           | Outside Dia. = Pitch Dia. +.167"                                                                  |            |          |                |           |
| STEEL                     |            |          |                |           | CAST IRON                                                                                         |            |          |                |           |
| 20                        | 1.667      | -        | GD20           | 10142     | 75                                                                                                | 6.250      | 2.19     | GD75A          | 11194     |
| 21                        | 1.750      |          | GD21           | 10144     | 76                                                                                                | 6.333      |          | GD76A          | 11196     |
| 22                        | 1.833      |          | GD22           | 10146     | 77                                                                                                | 6.417      |          | GD77A          | 11198     |
| 23                        | 1.917      |          | GD23           | 10148     | 78                                                                                                | 6.500      |          | GD78A          | 11200     |
| 24                        | 2.000      |          | GD24           | 10150     | 79                                                                                                | 6.583      |          | GD79A          | 11202     |
| 25                        | 2.083      |          | GD25           | 10152     | 80                                                                                                | 6.667      |          | GD80A          | 11204     |
| 26                        | 2.167      |          | GD26           | 10154     | 81                                                                                                | 6.750      |          | GD81A          | 11206     |
| 27                        | 2.250      |          | GD27           | 10156     | 82                                                                                                | 6.833      |          | GD82A          | 11208     |
| 28                        | 2.333      |          | GD28           | 10158     | 83                                                                                                | 6.917      |          | GD83A          | 11210     |
| 29                        | 2.417      |          | GD29           | 10160     | 84                                                                                                | 7.000      |          | GD84A          | 11212     |
| 30                        | 2.500      |          | GD30           | 10162     | 85                                                                                                | 7.083      | 2.44     | GD85A          | 11214     |
| 31                        | 2.583      |          | GD31           | 10164     | 86                                                                                                | 7.167      |          | GD86A          | 11216     |
| 32                        | 2.667      |          | GD32           | 10166     | 87                                                                                                | 7.250      |          | GD87A          | 11218     |
| 33                        | 2.750      |          | GD33           | 10168     | 88                                                                                                | 7.333      |          | GD88A          | 11220     |
| 34                        | 2.833      |          | GD34           | 10170     | 89                                                                                                | 7.417      |          | GD89A          | 11222     |
| 35                        | 2.917      |          | GD35           | 10172     | 90                                                                                                | 7.500      |          | GD90A          | 11224     |
| 36                        | 3.000      |          | GD36           | 10174     | 91                                                                                                | 7.583      |          | GD91A          | 11226     |
| CAST IRON                 |            |          |                |           | 92                                                                                                | 7.667      |          | GD92A          | 11228     |
| 37                        | 3.083      | 1.76     | GD37B          | 11118     | 93                                                                                                | 7.750      |          | GD93A          | 11230     |
| 38                        | 3.167      |          | GD38B          | 11120     | 94                                                                                                | 7.833      |          | GD94A          | 11232     |
| 39                        | 3.250      |          | GD39B          | 11122     | 95                                                                                                | 7.917      | GD95A    | 11234          |           |
| 40                        | 3.333      |          | GD40B          | 11124     | 96                                                                                                | 8.000      | GD96A    | 11236          |           |
| 41                        | 3.417      |          | GD41B          | 11126     | 97                                                                                                | 8.083      | GD97A    | 11238          |           |
| 42                        | 3.500      |          | GD42B          | 11128     | 98                                                                                                | 8.167      | GD98A    | 11240          |           |
| 43                        | 3.583      |          | GD43B          | 11130     | 99                                                                                                | 8.250      | GD99A    | 11242          |           |
| 44                        | 3.667      |          | GD44B          | 11132     | 100                                                                                               | 8.333      | GD100A   | 11244          |           |
| 45                        | 3.750      |          | GD45B          | 11134     | 101                                                                                               | 8.417      | GD101A   | 11246          |           |
| 46                        | 3.833      |          | GD46B          | 11136     | 102                                                                                               | 8.500      | GD102A   | 11248          |           |
| 47                        | 3.917      |          | GD47B          | 11138     | 103                                                                                               | 8.583      | GD103A   | 11250          |           |
| 48                        | 4.000      |          | GD48B          | 11140     | 104                                                                                               | 8.667      | GD104A   | 11252          |           |
| 49                        | 4.083      | 2.19     | GD49B          | 11142     | 105                                                                                               | 8.750      | GD105A   | 11254          |           |
| 50                        | 4.167      |          | GD50B          | 11144     | 106                                                                                               | 8.833      | GD106A   | 11256          |           |
| 51                        | 4.250      |          | GD51B          | 11146     | 107                                                                                               | 8.917      | GD107A   | 11258          |           |
| 52                        | 4.333      |          | GD52B          | 11148     | 108                                                                                               | 9.000      | GD108A   | 11260          |           |
| 53                        | 4.417      |          | GD53B          | 11150     | 109                                                                                               | 9.083      | GD109A   | 11262          |           |
| 54                        | 4.500      |          | GD54B          | 11152     | 110                                                                                               | 9.167      | GD110A   | 11264          |           |
| 55                        | 4.583      |          | GD55B          | 11154     | 111                                                                                               | 9.250      | GD111A   | 11266          |           |
| 56                        | 4.667      |          | GD56B          | 11156     | 112                                                                                               | 9.333      | GD112A   | 11268          |           |
| 57                        | 4.750      |          | GD57B          | 11158     | 113                                                                                               | 9.417      | GD113A   | 11270          |           |
| 58                        | 4.833      |          | GD58B          | 11160     | 114                                                                                               | 9.500      | GD114A   | 11272          |           |
| 59                        | 4.917      |          | GD59B          | 11162     | 115                                                                                               | 9.583      | GD115A   | 11274          |           |
| 60                        | 5.000      | 2.19     | GD60B          | 11164     | 116                                                                                               | 9.667      | GD116A   | 11276          |           |
| 61                        | 5.083      |          | GD61B          | 11166     | 117                                                                                               | 9.750      | GD117A   | 11278          |           |
| 62                        | 5.167      |          | GD62B          | 11168     | 118                                                                                               | 9.833      | GD118A   | 11280          |           |
| 63                        | 5.250      |          | GD63A          | 11170     | 119                                                                                               | 9.917      | GD119A   | 11282          |           |
| 64                        | 5.333      |          | GD64A          | 11172     | 120                                                                                               | 10.000     | GD120A   | 11284          |           |
| 65                        | 5.417      |          | GD65A          | 11174     | <div><div>Style See Page 323</div><div>20 – 60 Teeth – A</div><div>61 – 120 Teeth – C</div></div> |            |          |                |           |
| 66                        | 5.500      |          | GD66A          | 11176     |                                                                                                   |            |          |                |           |
| 67                        | 5.583      |          | GD67A          | 11178     |                                                                                                   |            |          |                |           |
| 68                        | 5.667      |          | GD68A          | 11180     |                                                                                                   |            |          |                |           |
| 69                        | 5.750      |          | GD69A          | 11182     |                                                                                                   |            |          |                |           |
| 70                        | 5.833      |          | GD70A          | 11184     |                                                                                                   |            |          |                |           |
| 71                        | 5.917      |          | GD71A          | 11186     |                                                                                                   |            |          |                |           |
| 72                        | 6.000      |          | GD72A          | 11188     |                                                                                                   |            |          |                |           |
| 73                        | 6.083      |          | GD73A          | 11190     |                                                                                                   |            |          |                |           |
| 74                        | 6.167      |          | GD74A          | 11192     |                                                                                                   |            |          |                |           |

# Change Gears

## 10 Diametral Pitch (Steel & Cast Iron)

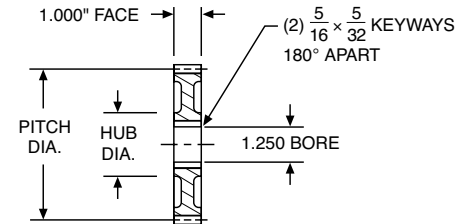
14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth | Pitch Dia. | Hub Dia. | Catalog Number | Item Code | No. of Teeth                     | Pitch Dia. | Hub Dia. | Catalog Number | Item Code |
|--------------|------------|----------|----------------|-----------|----------------------------------|------------|----------|----------------|-----------|
| 10           |            |          |                |           | Outside Dia. = Pitch Dia. +.200" |            |          |                |           |
| STEEL        |            |          |                |           | CAST IRON                        |            |          |                |           |
| 20           | 2.000      | -        | GF20           | 10176     | 61                               | 6.100      | 3.12     | GF61A          | 11346     |
| 21           | 2.100      |          | GF21           | 10178     | 62                               | 6.200      |          | GF62A          | 11348     |
| 22           | 2.200      |          | GF22           | 10180     | 63                               | 6.300      |          | GF63A          | 11350     |
| 23           | 2.300      |          | GF23           | 10182     | 64                               | 6.400      |          | GF64A          | 11352     |
| 24           | 2.400      |          | GF24           | 10184     | 65                               | 6.500      |          | GF65A          | 11354     |
| 25           | 2.500      |          | GF25           | 10186     | 66                               | 6.600      |          | GF66A          | 11356     |
| 26           | 2.600      |          | GF26           | 10188     | 67                               | 6.700      |          | GF67A          | 11358     |
| 27           | 2.700      |          | GF27           | 10190     | 68                               | 6.800      |          | GF68A          | 11360     |
| 28           | 2.800      |          | GF28           | 10192     | 69                               | 6.900      |          | GF69A          | 11362     |
| 29           | 2.900      |          | GF29           | 10194     | 70                               | 7.000      |          | GF70A          | 11364     |
| 30           | 3.000      | GF30     | 10196          | 71        | 7.100                            | GF71A      | 11366    |                |           |
| CAST IRON    |            |          |                |           | 72                               | 7.200      | GF72A    | 11368          |           |
| 31           | 3.100      | 1.94     | GF31B          | 11286     | 73                               | 7.300      | GF73A    | 11370          |           |
| 32           | 3.200      |          | GF32B          | 11288     | 74                               | 7.400      | GF74A    | 11372          |           |
| 33           | 3.300      |          | GF33B          | 11290     | 75                               | 7.500      | GF75A    | 11374          |           |
| 34           | 3.400      |          | GF34B          | 11292     | 76                               | 7.600      | GF76A    | 11376          |           |
| 35           | 3.500      |          | GF35B          | 11294     | 77                               | 7.700      | GF77A    | 11378          |           |
| 36           | 3.600      |          | GF36B          | 11296     | 78                               | 7.800      | GF78A    | 11380          |           |
| 37           | 3.700      |          | GF37B          | 11298     | 79                               | 7.900      | GF79A    | 11382          |           |
| 38           | 3.800      |          | GF38B          | 11300     | 80                               | 8.000      | GF80A    | 11384          |           |
| 39           | 3.900      |          | GF39B          | 11302     | 81                               | 8.100      | GF81A    | 11386          |           |
| 40           | 4.000      |          | GF40B          | 11304     | 82                               | 8.200      | GF82A    | 11388          |           |
| 41           | 4.100      | GF41B    | 11306          | 83        | 8.300                            | GF83A      | 11390    |                |           |
| 42           | 4.200      | 2.68     | GF42B          | 11308     | 84                               | 8.400      | GF84A    | 11392          |           |
| 43           | 4.300      |          | GF43B          | 11310     | 85                               | 8.500      | GF85A    | 11394          |           |
| 44           | 4.400      |          | GF44B          | 11312     | 86                               | 8.600      | GF86A    | 11396          |           |
| 45           | 4.500      |          | GF45B          | 11314     | 87                               | 8.700      | GF87A    | 11398          |           |
| 46           | 4.600      |          | GF46B          | 11316     | 88                               | 8.800      | GF88A    | 11400          |           |
| 47           | 4.700      |          | GF47B          | 11318     | 89                               | 8.900      | GF89A    | 11402          |           |
| 48           | 4.800      |          | GF48B          | 11320     | 90                               | 9.000      | GF90A    | 11404          |           |
| 49           | 4.900      |          | GF49B          | 11322     | 91                               | 9.100      | GF91A    | 11406          |           |
| 50           | 5.000      |          | GF50B          | 11324     | 92                               | 9.200      | GF92A    | 11408          |           |
| 51           | 5.100      |          | GF51B          | 11326     | 93                               | 9.300      | GF93A    | 11410          |           |
| 52           | 5.200      | 3.12     | GF52A          | 11328     | 94                               | 9.400      | GF94A    | 11412          |           |
| 53           | 5.300      |          | GF53A          | 11330     | 95                               | 9.500      | GF95A    | 11414          |           |
| 54           | 5.400      |          | GF54A          | 11332     | 96                               | 9.600      | GF96A    | 11416          |           |
| 55           | 5.500      |          | GF55A          | 11334     | 97                               | 9.700      | GF97A    | 11418          |           |
| 56           | 5.600      |          | GF56A          | 11336     | 98                               | 9.800      | GF98A    | 11420          |           |
| 57           | 5.700      |          | GF57A          | 11338     | 99                               | 9.900      | GF99A    | 11422          |           |
| 58           | 5.800      |          | GF58A          | 11340     | 100                              | 10.000     | GF100A   | 11424          |           |
| 59           | 5.900      |          | GF59A          | 11342     |                                  |            |          |                |           |
| 60           | 6.000      |          | GF60A          | 11344     |                                  |            |          |                |           |

|       |    |          |   |
|-------|----|----------|---|
| Style | 20 | 22 Teeth | A |
|-------|----|----------|---|

|       |                    |
|-------|--------------------|
| Style | 20 - 60 Teeth - A  |
| See   | 61 - 66 Teeth - B  |
| Page  | 67 - 100 Teeth - C |
| 323   |                    |

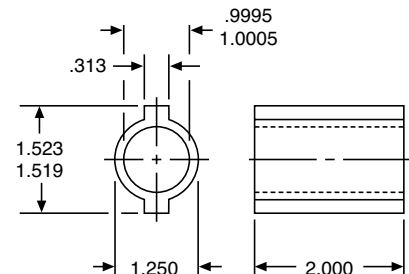


### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 54  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

### Compound Steel Bushings

These steel bushings have 2 keys, 180° apart and fit bores of GF series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



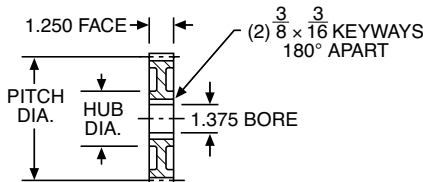
ORDER BY CATALOG NUMBER  
OR ITEM CODE

| CATALOG NO. | ITEM CODE |
|-------------|-----------|
| GFB10A      | 18506     |

# Change Gears

## 8 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)



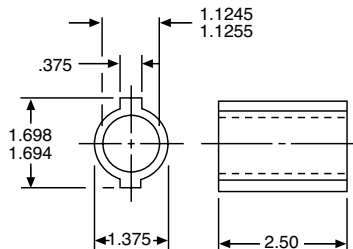
### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 55  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49



### Compound Steel Bushings

These steel bushings have 2 keys, 180° apart and fit bores of GH series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



ORDER BY CATALOG NUMBER  
OR ITEM CODE

| CATALOG NO. | ITEM CODE |
|-------------|-----------|
| GHB8A       | 18508     |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth             | Pitch Dia. | Hub Dia. | Catalog Number | Item Code | No. of Teeth                             | Pitch Dia. | Hub Dia. | Catalog Number | Item Code |
|--------------------------|------------|----------|----------------|-----------|------------------------------------------|------------|----------|----------------|-----------|
| <b>8 DIAMETRAL PITCH</b> |            |          |                |           | <b>Outside Dia. = Pitch Dia. + .250"</b> |            |          |                |           |
| <b>STEEL</b>             |            |          |                |           | <b>CAST IRON</b>                         |            |          |                |           |
| 20                       | 2.500      | —        | GH20           | 10198     | 61                                       | 7.625      |          | GH61A          | 11498     |
| 21                       | 2.625      | —        | GH21           | 10200     | 62                                       | 7.750      |          | GH62A          | 11500     |
| 22                       | 2.750      | —        | GH22           | 10202     | 63                                       | 7.875      |          | GH63A          | 11502     |
| 23                       | 2.875      | —        | GH23           | 10204     | 64                                       | 8.000      |          | GH64A          | 11504     |
| 24                       | 3.000      | —        | GH24           | 10206     | 65                                       | 8.125      |          | GH65A          | 11506     |
| <b>CAST IRON</b>         |            |          |                |           | 66                                       | 8.250      |          | GH66A          | 11508     |
| 25                       | 3.125      | 2.06     | GH25B          | 11426     | 67                                       | 8.375      |          | GH67A          | 11510     |
| 26                       | 3.250      |          | GH26B          | 11428     | 68                                       | 8.500      |          | GH68A          | 11512     |
| 27                       | 3.375      |          | GH27B          | 11430     | 69                                       | 8.625      |          | GH69A          | 11514     |
| 28                       | 3.500      |          | GH28B          | 11432     | 70                                       | 8.750      | 3.25     | GH70A          | 11516     |
| 29                       | 3.625      |          | GH29B          | 11434     | 71                                       | 8.875      |          | GH71A          | 11518     |
| 30                       | 3.750      |          | GH30B          | 11436     | 72                                       | 9.000      |          | GH72A          | 11520     |
| 31                       | 3.875      |          | GH31B          | 11438     | 73                                       | 9.125      |          | GH73A          | 11522     |
| 32                       | 4.000      |          | GH32B          | 11440     | 74                                       | 9.250      |          | GH74A          | 11524     |
| 33                       | 4.125      |          | GH33B          | 11442     | 75                                       | 9.375      |          | GH75A          | 11526     |
| 34                       | 4.250      |          | GH34B          | 11444     | 76                                       | 9.500      |          | GH76A          | 11528     |
| 35                       | 4.375      |          | GH35B          | 11446     | 77                                       | 9.625      |          | GH77A          | 11530     |
| 36                       | 4.500      | 2.69     | GH36B          | 11448     | 78                                       | 9.750      |          | GH78A          | 11532     |
| 37                       | 4.625      |          | GH37B          | 11450     | 79                                       | 9.875      |          | GH79A          | 11534     |
| 38                       | 4.750      |          | GH38B          | 11452     | 80                                       | 10.000     |          | GH80A          | 11536     |
| 39                       | 4.875      |          | GH39B          | 11454     | 81                                       | 10.125     |          | GH81A          | 11538     |
| 40                       | 5.000      |          | GH40B          | 11456     | 82                                       | 10.250     |          | GH82A          | 11540     |
| 41                       | 5.125      |          | GH41A          | 11458     | 83                                       | 10.375     |          | GH83A          | 11542     |
| 42                       | 5.250      |          | GH42A          | 11460     | 84                                       | 10.500     |          | GH84A          | 11544     |
| 43                       | 5.375      |          | GH43A          | 11462     | 85                                       | 10.625     |          | GH85A          | 11546     |
| 44                       | 5.500      |          | GH44A          | 11464     | 86                                       | 10.750     |          | GH86A          | 11548     |
| 45                       | 5.625      |          | GH45A          | 11466     | 87                                       | 10.875     |          | GH87A          | 11550     |
| 46                       | 5.750      | 3.12     | GH46A          | 11468     | 88                                       | 11.000     |          | GH88A          | 11552     |
| 47                       | 5.875      |          | GH47A          | 11470     | 89                                       | 11.125     | 3.75     | GH89A          | 11554     |
| 48                       | 6.000      |          | GH48A          | 11472     | 90                                       | 11.250     |          | GH90A          | 11556     |
| 49                       | 6.125      |          | GH49A          | 11474     | 91                                       | 11.375     |          | GH91A          | 11558     |
| 50                       | 6.250      |          | GH50A          | 11476     | 92                                       | 11.500     |          | GH92A          | 11560     |
| 51                       | 6.375      |          | GH51A          | 11478     | 93                                       | 11.625     |          | GH93A          | 11562     |
| 52                       | 6.500      |          | GH52A          | 11480     | 94                                       | 11.750     |          | GH94A          | 11564     |
| 53                       | 6.625      |          | GH53A          | 11482     | 95                                       | 11.875     |          | GH95A          | 11566     |
| 54                       | 6.750      |          | GH54A          | 11484     | 96                                       | 12.000     |          | GH96A          | 11568     |
| 55                       | 6.875      |          | GH55A          | 11486     | 97                                       | 12.125     |          | GH97A          | 11570     |
| 56                       | 7.000      | 3.25     | GH56A          | 11488     | 98                                       | 12.250     |          | GH98A          | 11572     |
| 57                       | 7.125      |          | GH57A          | 11490     | 99                                       | 12.375     |          | GH99A          | 11574     |
| 58                       | 7.250      |          | GH58A          | 11492     | 100                                      | 12.500     |          | GH100A         | 11576     |
| 59                       | 7.375      |          | GH59A          | 11494     |                                          |            |          |                |           |
| 60                       | 7.500      |          | GH60A          | 11496     |                                          |            |          |                |           |

|       |                    |
|-------|--------------------|
| Style | 20 – 49 Teeth – A  |
| See   | 50 – 57 Teeth – B  |
| Page  | 58 – 68 Teeth – C  |
| 323   | 69 – 100 Teeth – D |

## 20 through 6 Diametral Pitch (Steel)

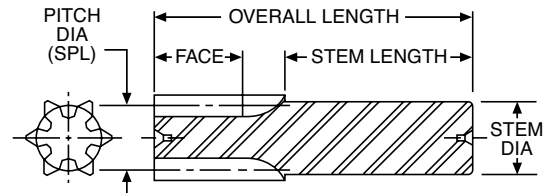
14-1/2° Pressure Angle (will not operate with 20° spurs)

Boston Gear Stem Pinions feature small numbers of teeth cut integral on a steel shaft. Undercutting of the teeth is minimized by the use of special enlarged Pitch Diameters. When run with standard stock spur gears, they provide high ratios not normally found in spur gear drives. They are not intended to be operated with each other, with internal gears or with 11 tooth pinions, but will run satisfactorily with all other standard 14½° Pressure Angle spur gears.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth              | Pitch Dia.* | Stem Dia. | Stem Length | Overall Length | Catalog Number | Item Code            |
|---------------------------|-------------|-----------|-------------|----------------|----------------|----------------------|
| <b>20 DIAMETRAL PITCH</b> |             |           |             |                |                | <b>FACE = 1.125"</b> |
| 5                         | .287        | .375      | 2.875       | 4.500          | NAR5           | 09654                |
| 6                         | .335        | .375      | 2.875       | 4.500          | NAR6           | 09656                |
| 8                         | .430        | .500      | 3.375       | 5.000          | NAR8           | 09658                |
| 10                        | .525        | .625      | 3.375       | 5.000          | NAR10          | 09660                |
| <b>16 DIAMETRAL PITCH</b> |             |           |             |                |                | <b>FACE = 1.375"</b> |
| 5                         | .359        | .4375     | 3.125       | 5.000          | NBR5           | 09696                |
| 6                         | .419        | .500      | 3.125       | 5.000          | NBR6           | 09698                |
| 8                         | .537        | .625      | 3.375       | 5.250          | NBR8           | 09700                |
| 10                        | .656        | .750      | 3.375       | 5.250          | NBR10          | 09702                |
| <b>12 DIAMETRAL PITCH</b> |             |           |             |                |                | <b>FACE = 2.000"</b> |
| 5                         | .479        | .625      | 4.375       | 7.250          | NDR5           | 09734                |
| 6                         | .558        | .625      | 4.375       | 7.250          | NDR6           | 09736                |
| 7                         | .637        | .750      | 4.375       | 7.250          | NDR7           | 09738                |
| 8                         | .716        | .875      | 4.375       | 7.250          | NDR8           | 09740                |
| 10                        | .875        | 1.000     | 4.375       | 7.250          | NDR10          | 09742                |
| <b>10 DIAMETRAL PITCH</b> |             |           |             |                |                | <b>FACE = 2.250"</b> |
| 5                         | .575        | .750      | 4.375       | 7.500          | NFR5           | 09768                |
| 6                         | .670        | .750      | 4.375       | 7.500          | NFR6           | 09770                |
| 7                         | .765        | .875      | 4.375       | 7.500          | NFR7           | 09772                |
| 8                         | .860        | 1.000     | 4.375       | 7.500          | NFR8           | 09774                |
| 10                        | 1.050       | 1.125     | 4.375       | 7.500          | NFR10          | 09776                |
| <b>8 DIAMETRAL PITCH</b>  |             |           |             |                |                | <b>FACE = 2.500"</b> |
| 5                         | .718        | .875      | 4.375       | 7.750          | NHR5           | 09796                |
| 6                         | .837        | 1.000     | 4.375       | 7.750          | NHR6           | 09798                |
| 7                         | .956        | 1.125     | 4.375       | 7.750          | NHR7           | 09800                |
| 8                         | 1.075       | 1.125     | 4.375       | 7.750          | NHR8           | 09802                |
| 10                        | 1.312       | 1.500     | 4.375       | 7.750          | NHR10          | 09804                |
| <b>6 DIAMETRAL PITCH</b>  |             |           |             |                |                | <b>FACE = 3.000"</b> |
| 5                         | .958        | 1.250     | 4.375       | 8.500          | NJR5           | 09822                |
| 6                         | 1.116       | 1.375     | 4.375       | 8.500          | NJR6           | 09824                |
| 8                         | 1.433       | 1.625     | 5.000       | 9.000          | NJR8           | 09826                |
| 10                        | 1.750       | 2.000     | 5.375       | 9.500          | NJR10          | 09828                |

\*Used for calculating Center Distance, not ratio.



### STANDARD TOLERANCES

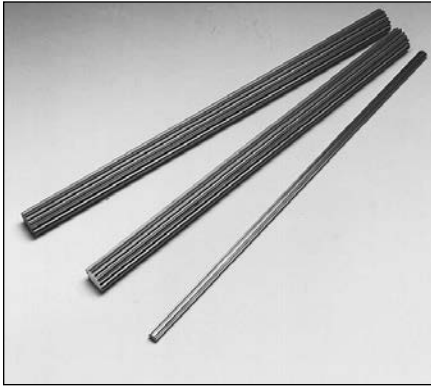
| DIMENSION | TOLERANCE          |
|-----------|--------------------|
| STEM DIA. | All +.0000 - .0015 |

# Drawn Pinion Wire

## 48, 32 and 24 Diametral Pitch (Brass & Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)

A



Drawn Pinion Wire, teeth not generated. All Pinion Wire is stocked in 4 foot pieces. Other lengths can be furnished on special order. Price on application.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth           | Pitch Dia. | Catalog Number | Item Code |
|------------------------|------------|----------------|-----------|
| <b>48</b>              |            |                |           |
| <b>DIAMETRAL PITCH</b> |            |                |           |
| <b>BRASS</b>           |            |                |           |
| 6                      | .125       | G24            | 36900     |
| 8                      | .167       | G25            | 36902     |
| 9                      | .188       | G26            | 36904     |
| 10                     | .208       | G27            | 36906     |
| 12                     | .250       | G29            | 36908     |
| 14                     | .292       | G30            | 36910     |
| 15                     | .312       | G31            | 36912     |
| 16                     | .333       | G32            | 36914     |
| 18                     | .375       | G33            | 36916     |
| <b>STEEL</b>           |            |                |           |
| 6                      | .125       | GS24           | 36954     |
| 8                      | .167       | GS25           | 36956     |
| 9                      | .188       | GS26           | 36958     |
| 10                     | .208       | GS27           | 36960     |
| 12                     | .250       | GS29           | 36962     |
| 14                     | .292       | GS30           | 36964     |
| 15                     | .312       | GS31           | 36966     |
| 16                     | .333       | GS32           | 36968     |
| 18                     | .375       | GS33           | 36970     |
| <b>32</b>              |            |                |           |
| <b>DIAMETRAL PITCH</b> |            |                |           |
| <b>BRASS</b>           |            |                |           |
| 6                      | .188       | G39            | 36918     |
| 8                      | .250       | G40            | 36920     |
| 9                      | .281       | G41            | 36922     |
| 10                     | .312       | G42            | 36924     |
| 11                     | .344       | G43            | 36926     |
| 12                     | .375       | G44            | 36928     |
| 14                     | .438       | G45            | 36930     |
| 15                     | .469       | G46            | 36932     |
| 16                     | .500       | G47            | 36934     |
| <b>STEEL</b>           |            |                |           |
| 6                      | .188       | GS39           | 36972     |
| 8                      | .250       | GS40           | 36974     |
| 9                      | .281       | GS41           | 36976     |
| 10                     | .312       | GS42           | 36978     |
| 11                     | .344       | GS43           | 36980     |
| 12                     | .375       | GS44           | 36982     |
| 14                     | .438       | GS45           | 36984     |
| 15                     | .469       | GS46           | 36986     |
| 16                     | .500       | GS47           | 36988     |
| <b>24</b>              |            |                |           |
| <b>DIAMETRAL PITCH</b> |            |                |           |
| <b>BRASS</b>           |            |                |           |
| 6                      | .250       | G54            | 36936     |
| 9                      | .375       | G56            | 36940     |
| 10                     | .417       | G57            | 36942     |
| 12                     | .500       | G59            | 36946     |
| 14                     | .583       | G60            | 36948     |
| 15                     | .625       | G61            | 36950     |
| 16                     | .667       | G62            | 36952     |
| <b>STEEL</b>           |            |                |           |
| 6                      | .250       | GS54           | 36990     |
| 8                      | .333       | GS55           | 36992     |
| 9                      | .375       | GS56           | 36994     |
| 10                     | .417       | GS57           | 36996     |
| 11                     | .458       | GS58           | 36998     |
| 12                     | .500       | GS59           | 37000     |
| 14                     | .583       | GS60           | 37002     |
| 15                     | .625       | GS61           | 37004     |
| 16                     | .667       | GS62           | 37006     |

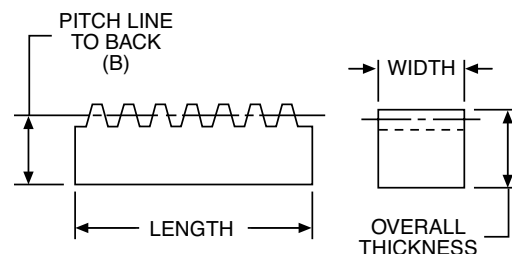
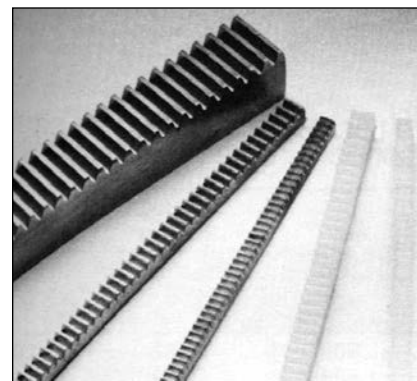
## 48 through 3 Diametral Pitch (Nylon & Steel)

### 14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Overall<br>Thick-<br>ness | Pitch<br>Line<br>to Back<br>(B) | Nom-<br>inal<br>Length<br>(Feet) | Mating<br>Spur<br>Gear<br>Page # | Nylon               |                 | Steel                      |                         |
|---------------------------|---------------------------------|----------------------------------|----------------------------------|---------------------|-----------------|----------------------------|-------------------------|
|                           |                                 |                                  |                                  | Catalog<br>Number   | Item<br>Code    | Catalog<br>Number          | Item<br>Code            |
| 48 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = .125"  |                 |                            |                         |
| .125                      | .104                            | 1<br>2                           | 18                               | GP586-1<br>—        | 53899<br>—      | —<br>L501-2                | —<br>12726              |
| 32 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = .188"  |                 |                            |                         |
| .188                      | .156                            | 1<br>2<br>4                      | 18, 19                           | GP583-1<br>—<br>—   | 53900<br>—<br>— | —<br>L503-2<br>L503-4      | —<br>12728<br>12730     |
| 24 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = .250"  |                 |                            |                         |
| .250                      | .208                            | 1<br>2<br>4                      | 19, 20                           | GP579-1<br>—<br>—   | 53901<br>—<br>— | —<br>L505-2<br>L505-4      | —<br>12732<br>12734     |
| 20 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = .375"  |                 |                            |                         |
| .375                      | .325                            | 2<br>4<br>6                      | 20, 21                           | —<br>—<br>—         | —<br>—<br>—     | L509-2<br>L509-4<br>L509-6 | 12736<br>12738<br>12740 |
| 16 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = .313"  |                 |                            |                         |
| .313                      | .250                            | 2<br>4                           | 21, 22                           | —<br>—              | —<br>—          | L510-2<br>L510-4           | 12742<br>12744          |
| 16 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = .500"  |                 |                            |                         |
| .500                      | .438                            | 4<br>6                           | 21, 22                           | —<br>—              | —<br>—          | L512-4<br>L512-6           | 12746<br>12748          |
| 12 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = .750"  |                 |                            |                         |
| .500                      | .417                            | 4<br>6                           | 22, 23                           | —<br>—              | —<br>—          | L514-4<br>L514-6           | 12750<br>12752          |
| .750                      | .667                            | 4<br>6                           |                                  | —<br>—              | —<br>—          | L515-4<br>L515-6           | 12754<br>12756          |
| 10 DIAMETRAL PITCH        |                                 |                                  |                                  | FACE WIDTH = 1.000" |                 |                            |                         |
| .625                      | .525                            | 4<br>6                           | 23, 24                           | —<br>—              | —<br>—          | L516-4<br>L516-6           | 37324<br>37326          |
| 1.000                     | .900                            | 4<br>6                           |                                  | —<br>—              | —<br>—          | L517-4<br>L517-6           | 37328<br>37330          |
| 8 DIAMETRAL PITCH         |                                 |                                  |                                  | FACE WIDTH = 1.250" |                 |                            |                         |
| .750                      | .625                            | 4<br>6                           | 24, 25                           | —<br>—              | —<br>—          | L518-4<br>L518-6           | 37332<br>37334          |
| 1.250                     | 1.125                           | 4<br>6                           |                                  | —<br>—              | —<br>—          | L519-4<br>L519-6           | 37336<br>37338          |
| 6 DIAMETRAL PITCH         |                                 |                                  |                                  | FACE WIDTH = 1.500" |                 |                            |                         |
| 1.000                     | .833                            | 4<br>6                           | 25, 26                           | —<br>—              | —<br>—          | L520-4<br>L520-6           | 37340<br>37342          |
| 1.500                     | 1.333                           | 4<br>6                           |                                  | —<br>—              | —<br>—          | L521-4<br>L521-6           | 37344<br>37346          |
| 5 DIAMETRAL PITCH         |                                 |                                  |                                  | FACE WIDTH = 1.750" |                 |                            |                         |
| 1.250                     | 1.050                           | 4<br>6                           | 26                               | —<br>—              | —<br>—          | L522-4<br>L522-6           | 37348<br>37350          |
| 4 DIAMETRAL PITCH         |                                 |                                  |                                  | FACE WIDTH = 2.000" |                 |                            |                         |
| 1.500                     | 1.250                           | 4<br>6                           | 27                               | —<br>—              | —<br>—          | L523-4<br>L523-6           | 37352<br>37354          |
| 3 DIAMETRAL PITCH         |                                 |                                  |                                  | FACE WIDTH = 3.000" |                 |                            |                         |
| 1.500                     | 1.167                           | 4<br>6                           | 27                               | —<br>—              | —<br>—          | L524-4<br>L524-6           | 37356<br>37358          |

\*Face Width of L512-4 and L512-6 = 1/2".

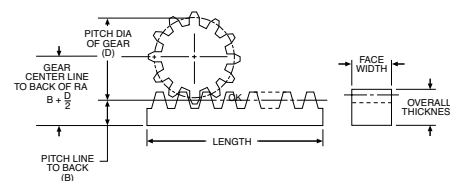


#### STANDARD TOLERANCES†

| DIMENSION  |           | TOLERANCE     |
|------------|-----------|---------------|
| LENGTH†    | All       | + 1.00 - .000 |
| FACE WIDTH | 1/8 - 3/4 | + .000 - .002 |
|            | 1 - 1-1/2 | + .000 - .003 |
|            | 1-3/4 - 2 | + .000 - .004 |
|            | 3         | + .000 - .006 |

†Ends not machined. Tolerance allows for cutting and matching. Nylon Rack is molded in proper lengths to permit end to end butting without interruption of tooth spacing.

‡Steel only.



#### REFERENCE PAGES

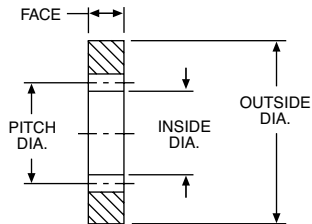
Alterations — 322  
Lubrication — 322  
Materials — 323

# Internal Gears

## 48 through 16 Diametral Pitch (Brass)

14-1/2° Pressure Angle (will not operate with 20° spurs)

A

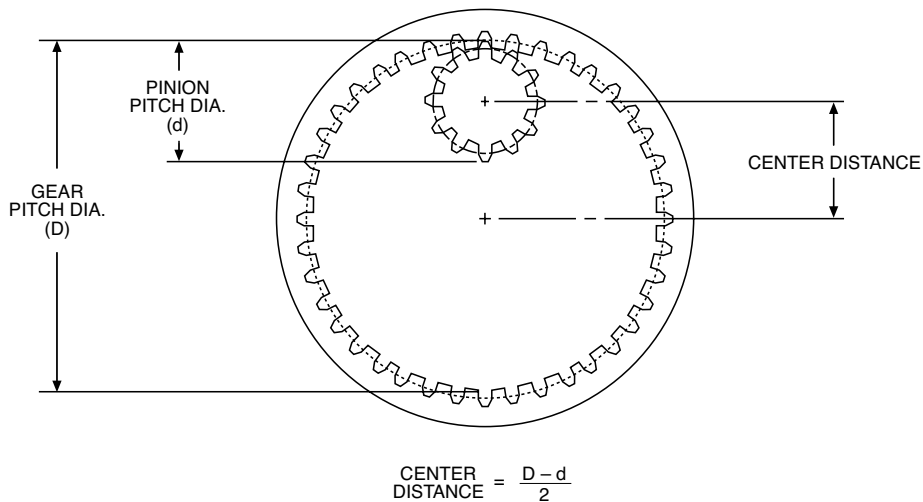


### STANDARD TOLERANCES

| DIMENSION |          |     | TOLERANCE    |
|-----------|----------|-----|--------------|
| I.D.      | 48 Pitch | All | +.004 - .000 |
|           | 32 Pitch | All | +.005 - .000 |
|           | 24 Pitch | All | +.006 - .000 |
|           | 16 Pitch | All | +.008 - .000 |
| O.D.      | All      |     | +.001 + .003 |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth           | Pitch Dia. | O.D.  | I.D.                | Catalog Number | Item Code |
|------------------------|------------|-------|---------------------|----------------|-----------|
| <b>48</b>              |            |       |                     |                |           |
| <b>DIAMETRAL PITCH</b> |            |       | <b>FACE = .125"</b> |                |           |
| 48                     | 1.000      | 1.500 | .986                | G632           | 12066     |
| 72                     | 1.500      | 2.000 | 1.486               | G633           | 12068     |
| 96                     | 2.000      | 2.750 | 1.986               | G635           | 12070     |
| 144                    | 3.000      | 3.750 | 2.986               | G637           | 12072     |
| <b>32</b>              |            |       |                     |                |           |
| <b>DIAMETRAL PITCH</b> |            |       | <b>FACE = .188"</b> |                |           |
| 48                     | 1.500      | 2.000 | 1.480               | G664           | 12056     |
| 64                     | 2.000      | 2.750 | 1.980               | G666           | 12058     |
| 96                     | 3.000      | 3.750 | 2.980               | G668           | 12060     |
| 128                    | 4.000      | 4.750 | 3.980               | G669           | 12062     |
| 192                    | 6.000      | 6.750 | 5.980               | G670           | 12064     |
| <b>24</b>              |            |       |                     |                |           |
| <b>DIAMETRAL PITCH</b> |            |       | <b>FACE = .250"</b> |                |           |
| 36                     | 1.500      | 2.250 | 1.474               | G675           | 12046     |
| 48                     | 2.000      | 2.750 | 1.974               | G677           | 12048     |
| 72                     | 3.000      | 3.750 | 2.974               | G679           | 12050     |
| 96                     | 4.000      | 4.750 | 3.974               | G680           | 12052     |
| 144                    | 6.000      | 6.750 | 5.974               | G681           | 12054     |
| <b>16</b>              |            |       |                     |                |           |
| <b>DIAMETRAL PITCH</b> |            |       | <b>FACE = .313"</b> |                |           |
| 32                     | 2.000      | 2.750 | 1.962               | G689           | 12038     |
| 48                     | 3.000      | 3.750 | 2.962               | G691           | 12040     |
| 64                     | 4.000      | 4.750 | 3.962               | G692           | 12042     |
| 96                     | 6.000      | 6.750 | 5.962               | G693           | 12044     |



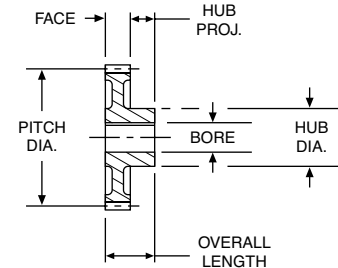
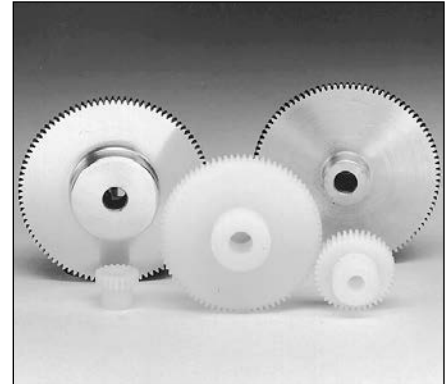
NOTE: The difference in tooth numbers between Gear and Pinion should not be less than 15.

## 64 and 48 Diametral Pitch (Delrin & Brass)

20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth                        | Pitch<br>Dia. | Bore  | Hub  |        | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew            |              |
|-------------------------------------------|---------------|-------|------|--------|-----------------------------|------------------------------------------|--------------|
|                                           |               |       | Dia. | Proj.  |                             | Catalog<br>Number                        | Item<br>Code |
| <b>64</b>                                 |               |       |      |        |                             | <b>Face = .125"</b>                      |              |
| <b>DIAMETRAL PITCH</b>                    |               |       |      |        |                             | <b>Outside Dia. = Pitch Dia. + .033"</b> |              |
| <b>Overall Length = .125" + Hub Proj.</b> |               |       |      |        |                             |                                          |              |
| <b>BRASS</b>                              |               |       |      |        |                             |                                          |              |
| 16                                        | .250          | .125  | .19  | .19    | A                           | Y6416                                    | 09482        |
| 18                                        | .281          |       | .22  |        |                             | Y6418                                    | 09484        |
| 20                                        | .312          |       | .25  |        |                             | Y6420                                    | 09486        |
| 24                                        | .375          |       | .28  |        |                             | Y6424                                    | 09488        |
| 28                                        | .438          |       | .34  |        |                             | Y6428                                    | 09490        |
| 32                                        | .500          | .1875 | .38  | .25    |                             | Y6432                                    | 09492        |
| 36                                        | .562          |       | .44  |        |                             | Y6436                                    | 09494        |
| 40                                        | .625          |       | .44  |        |                             | Y6440                                    | 09496        |
| 44                                        | .688          |       | .50  |        |                             | Y6444                                    | 09498        |
| 48                                        | .750          |       | .50  |        |                             | Y6448                                    | 09500        |
| 52                                        | .812          |       | .56  |        |                             | Y6452                                    | 09502        |
| 56                                        | .875          |       | .56  |        |                             | Y6456                                    | 09504        |
| 60                                        | .938          |       | .62  |        |                             | Y6460                                    | 09506        |
| 64                                        | 1.000         | .250  | .62  | .25    | Y6464                       | 09508                                    |              |
| 72                                        | 1.125         |       | .69  |        | Y6472                       | 09510                                    |              |
| 80                                        | 1.250         |       | .69  |        | Y6480                       | 09512                                    |              |
| 88                                        | 1.375         |       | .75  |        | Y6488                       | 09514                                    |              |
| 96                                        | 1.500         |       | .75  |        | Y6496                       | 09516                                    |              |
| 112                                       | 1.750         |       | .81  |        | Y64112                      | 09518                                    |              |
| 128                                       | 2.000         |       | .88  |        | Y64128                      | 09520                                    |              |
| 144                                       | 2.250         | .3125 | .75  | .31    | C                           | Y64144                                   | 09522        |
| 160                                       | 2.500         |       | .75  |        |                             | Y64160                                   | 09524        |
| 192                                       | 3.000         |       | .88  |        |                             | Y64192                                   | 09526        |
| <b>48</b>                                 |               |       |      |        |                             | <b>Face = .125"</b>                      |              |
| <b>DIAMETRAL PITCH</b>                    |               |       |      |        |                             | <b>Outside Dia. = Pitch Dia. + .042"</b> |              |
| <b>Overall Length = .125" + Hub Proj.</b> |               |       |      |        |                             |                                          |              |
| <b>MOLDED DELRIN</b>                      |               |       |      |        |                             |                                          |              |
| 18                                        | .375          | .1562 | .31  | .25    | A                           | YP4818                                   | 53902        |
| 19                                        | .396          |       | .34  |        |                             | YP4819                                   | 53903        |
| 20                                        | .417          |       |      |        |                             | YP4820                                   | 53904        |
| 21                                        | .438          |       | .38  |        |                             | YP4821                                   | 53905        |
| 22                                        | .458          |       |      |        |                             | YP4822                                   | 53906        |
| 23                                        | .479          |       |      |        |                             | YP4823                                   | 53907        |
| 24                                        | .500          |       | .41  |        |                             | YP4824                                   | 53908        |
| 25                                        | .521          |       |      |        |                             | YP4825                                   | 53909        |
| 26                                        | .542          |       | .45  |        |                             | YP4826                                   | 53910        |
| 27                                        | .562          |       |      |        |                             | YP4827                                   | 53911        |
| 28                                        | .583          |       | .48  |        |                             | YP4828                                   | 53912        |
| 29                                        | .604          |       |      |        |                             | YP4829                                   | 53913        |
| 30                                        | .625          | .50   |      | YP4830 |                             | 53914                                    |              |
| 31                                        | .646          | .1875 | .55  | .25    |                             | YP4831                                   | 53915        |
| 32                                        | .667          |       |      |        |                             | YP4832                                   | 53916        |
| 33                                        | .688          |       |      |        |                             | YP4833                                   | 53917        |
| 34                                        | .708          |       |      |        |                             | YP4834                                   | 53918        |
| 35                                        | .729          |       |      |        |                             | YP4835                                   | 53919        |
| 36                                        | .750          |       |      |        |                             | YP4836                                   | 53920        |
| 37                                        | .771          |       |      |        |                             | YP4837                                   | 53921        |
| 38                                        | .792          |       |      |        |                             | YP4838                                   | 53922        |
| 39                                        | .813          |       |      |        |                             | YP4839                                   | 53923        |
| 40                                        | .833          |       |      |        |                             | YP4840                                   | 53924        |
| 42                                        | .875          |       |      |        |                             | YP4842                                   | 53925        |



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



48 D.P.



64 D.P.

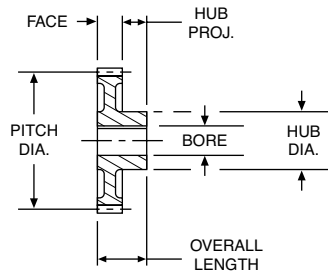
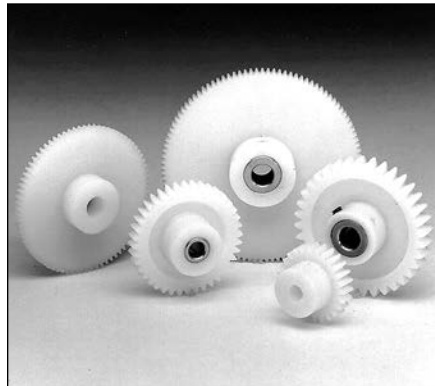
### REFERENCE PAGES

Alterations — 322  
Lubrication — 322  
Materials — 323

# Spur Gears

## 48 Diametral Pitch (Delrin)

20° Pressure Angle (will not operate with 14-1/2° spurs)



### STANDARD TOLERANCES\*

| DIMENSION |     | TOLERANCE    |
|-----------|-----|--------------|
| BORE      | All | +.001 – .000 |

\*Gears with Brass Inserts only.



48 D.P.

### REFERENCE PAGES

Alterations — 322

Materials — 323

†All YPB gears have setscrews.

| BORE | SETSCREW |
|------|----------|
| 1/8  | #2-56    |
| 3/16 | #4-40    |
| 1/4  | #6-32    |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

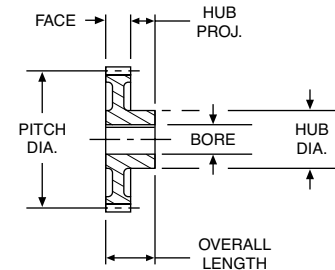
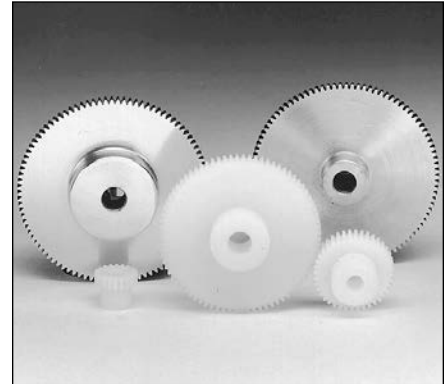
| No.<br>of<br>Teeth               | Pitch<br>Dia. | Bore    | Hub     |       | Style<br>See<br>Page<br>323                                                             | Without Keyway<br>or Setscrew† |              |       |
|----------------------------------|---------------|---------|---------|-------|-----------------------------------------------------------------------------------------|--------------------------------|--------------|-------|
|                                  |               |         | Dia.    | Proj. |                                                                                         | Catalog<br>Number              | Item<br>Code |       |
| <b>48<br/>DIAMETRAL PITCH</b>    |               |         |         |       | Face = .125"<br>Outside Dia. = Pitch Dia. + .042"<br>Overall Length = .125" + Hub Proj. |                                |              |       |
| MOLDED DELRIN                    |               |         |         |       |                                                                                         |                                |              |       |
| 44                               | .917          | .188    | .55     |       |                                                                                         | YP4844                         | 53926        |       |
| 45                               | .938          |         |         |       |                                                                                         | YP4845                         | 53927        |       |
| 48                               | 1.000         | .250    | .61     | .25   | B                                                                                       | YP4848                         | 53928        |       |
| 52                               | 1.083         |         |         |       |                                                                                         | YP4852                         | 53929        |       |
| 54                               | 1.125         |         |         |       |                                                                                         | YP4854                         | 53930        |       |
| 56                               | 1.168         |         |         |       |                                                                                         | YP4856                         | 53931        |       |
| 60                               | 1.250         |         |         |       |                                                                                         | YP4860                         | 53932        |       |
| 64                               | 1.333         |         |         |       |                                                                                         | YP4864                         | 53933        |       |
| 66                               | 1.375         |         |         |       |                                                                                         | YP4866                         | 53934        |       |
| 72                               | 1.500         |         |         |       |                                                                                         | YP4872                         | 53935        |       |
| 80                               | 1.667         |         |         |       |                                                                                         | YP4880                         | 53936        |       |
| 84                               | 1.750         |         |         |       |                                                                                         | YP4884                         | 53937        |       |
| 96                               | 2.000         |         |         |       |                                                                                         | YP4896                         | 53938        |       |
| 100                              | 2.083         |         |         |       |                                                                                         | YP48100                        | 53939        |       |
| 108                              | 2.250         |         |         |       |                                                                                         | YP48108                        | 53940        |       |
| 120                              | 2.500         |         |         |       |                                                                                         | YP48120                        | 53941        |       |
| MOLDED DELRIN WITH BRASS INSERTS |               |         |         |       |                                                                                         |                                |              |       |
| 18                               | .375          | .125    | .31     |       |                                                                                         | YPB4818                        | 53942        |       |
| 19                               | .396          |         | .34     |       |                                                                                         | YPB4819                        | 53943        |       |
| 20                               | .417          |         |         |       |                                                                                         | YPB4820                        | 53944        |       |
| 21                               | .438          |         |         |       |                                                                                         | YPB4821                        | 53945        |       |
| 22                               | .458          |         |         |       |                                                                                         | YPB4822                        | 53946        |       |
| 23                               | .479          |         | YPB4823 |       |                                                                                         | 53947                          |              |       |
| 24                               | .500          | .188    | .40     |       | A                                                                                       | YPB4824                        | 53948        |       |
| 25                               | .521          |         | YPB4825 |       |                                                                                         | 53949                          |              |       |
| 26                               | .542          |         | .45     |       |                                                                                         | YPB4826                        | 53950        |       |
| 27                               | .562          |         |         |       |                                                                                         | YPB4827                        | 53951        |       |
| 28                               | .583          |         | .48     |       |                                                                                         | YPB4828                        | 53952        |       |
| 29                               | .604          |         |         |       |                                                                                         | YPB4829                        | 53953        |       |
| 30                               | .625          |         | .50     |       |                                                                                         | YPB4830                        | 53954        |       |
| 31                               | .646          |         |         |       |                                                                                         | YPB4831                        | 53955        |       |
| 32                               | .667          |         |         |       |                                                                                         | YPB4832                        | 53956        |       |
| 33                               | .688          |         |         |       |                                                                                         | YPB4833                        | 53957        |       |
| 34                               | .708          |         | .55     |       |                                                                                         | .25                            | YPB4834      | 53958 |
| 35                               | .729          |         |         |       |                                                                                         |                                | YPB4835      | 53959 |
| 36                               | .750          | YPB4836 |         | 53960 |                                                                                         |                                |              |       |
| 37                               | .771          | YPB4837 |         | 53961 |                                                                                         |                                |              |       |
| 38                               | .792          | YPB4838 |         | 53962 |                                                                                         |                                |              |       |
| 39                               | .813          | YPB4839 |         | 53963 |                                                                                         |                                |              |       |
| 40                               | .833          | YPB4840 |         | 53964 |                                                                                         |                                |              |       |
| 42                               | .875          | YPB4842 |         | 53965 |                                                                                         |                                |              |       |
| 44                               | .917          | YPB4844 |         | 53966 |                                                                                         |                                |              |       |
| 45                               | .938          | YPB4845 |         | 53967 |                                                                                         |                                |              |       |
| 48                               | 1.000         | .250    | .61     |       | B                                                                                       | YPB4848                        | 53968        |       |
| 52                               | 1.083         |         |         |       |                                                                                         | YPB4852                        | 53969        |       |
| 54                               | 1.125         |         |         |       |                                                                                         | YPB4854                        | 53970        |       |
| 56                               | 1.168         |         |         |       |                                                                                         | YPB4856                        | 53971        |       |
| 60                               | 1.250         |         |         |       |                                                                                         | YPB4860                        | 53972        |       |
| 64                               | 1.333         |         |         |       |                                                                                         | YPB4864                        | 53973        |       |
| 66                               | 1.375         |         |         |       |                                                                                         | YPB4866                        | 53974        |       |
| 72                               | 1.500         |         |         |       |                                                                                         | YPB4872                        | 53975        |       |
| 80                               | 1.667         |         |         |       |                                                                                         | YPB4880                        | 53976        |       |
| 84                               | 1.750         |         |         |       |                                                                                         | YPB4884                        | 53977        |       |
| 96                               | 2.000         |         |         |       |                                                                                         | YPB4896                        | 53978        |       |
| 100                              | 2.083         |         |         |       |                                                                                         | YPB48100                       | 53979        |       |
| 108                              | 2.250         |         |         |       |                                                                                         | YPB48108                       | 53980        |       |
| 120                              | 2.500         |         |         |       |                                                                                         | YPB48120                       | 53981        |       |

## 48 and 32 Diametral Pitch (Delrin & Brass)

20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore  | Hub    |        | Style<br>See<br>Page<br>323                                                             | Without Keyway<br>or Setscrew |              |
|-------------------------------|---------------|-------|--------|--------|-----------------------------------------------------------------------------------------|-------------------------------|--------------|
|                               |               |       | Dia.   | Proj.  |                                                                                         | Catalog<br>Number             | Item<br>Code |
| <b>48<br/>DIAMETRAL PITCH</b> |               |       |        |        | Face = .125"<br>Outside Dia. = Pitch Dia. + .042"<br>Overall Length = .125" + Hub Proj. |                               |              |
| BRASS                         |               |       |        |        |                                                                                         |                               |              |
| 12                            | .250          | .125  | .18    | .19    | A                                                                                       | Y4812                         | 09444        |
| 15                            | .312          |       | .22    |        |                                                                                         | Y4815                         | 09446        |
| 18                            | .375          |       | .28    |        |                                                                                         | Y4818                         | 09448        |
| 21                            | .438          |       | .35    |        |                                                                                         | Y4821                         | 09450        |
| 24                            | .500          | .1875 | .38    | .25    |                                                                                         | Y4824                         | 09452        |
| 27                            | .562          |       | .44    |        |                                                                                         | Y4827                         | 09454        |
| 30                            | .625          |       | .44    |        |                                                                                         | Y4830                         | 09456        |
| 36                            | .750          |       | .50    |        |                                                                                         | Y4836                         | 09458        |
| 42                            | .875          |       | .57    |        |                                                                                         | Y4842                         | 09460        |
| 48                            | 1.000         | .250  | .63    | .25    |                                                                                         | Y4848                         | 09462        |
| 54                            | 1.125         |       | .69    |        |                                                                                         | Y4854                         | 09464        |
| 60                            | 1.250         |       | .69    |        |                                                                                         | Y4860                         | 09466        |
| 66                            | 1.375         |       | .75    |        |                                                                                         | Y4866                         | 09468        |
| 72                            | 1.500         |       | .75    |        |                                                                                         | Y4872                         | 09470        |
| 84                            | 1.750         |       | .82    |        |                                                                                         | Y4884                         | 09472        |
| 96                            | 2.000         |       | .88    |        |                                                                                         | Y4896                         | 09474        |
| 120                           | 2.500         |       | .3125  |        | .75                                                                                     | .31                           | C            |
| 144                           | 3.000         | .88   |        | Y48144 | 09478                                                                                   |                               |              |
| 192                           | 4.000         | 1.00  |        | Y48192 | 09480                                                                                   |                               |              |
| <b>32<br/>DIAMETRAL PITCH</b> |               |       |        |        | Face = .188"<br>Outside Dia. = Pitch Dia. + .062"<br>Overall Length = .188" + Hub Proj. |                               |              |
| MOLDED DELRIN                 |               |       |        |        |                                                                                         |                               |              |
| 12                            | .375          | .1562 | .28    | .31    | A                                                                                       | YP3212                        | 53982        |
| 14                            | .438          |       | .31    |        |                                                                                         | YP3214                        | 53983        |
| 15                            | .469          |       | .31    |        |                                                                                         | YP3215                        | 53984        |
| 16                            | .500          |       | .34    |        |                                                                                         | YP3216                        | 53985        |
| 18                            | .562          | .1875 | .47    | .31    |                                                                                         | YP3218                        | 53986        |
| 20                            | .625          |       | .47    |        |                                                                                         | YP3220                        | 53987        |
| 22                            | .688          |       | .50    |        |                                                                                         | YP3222                        | 53988        |
| 24                            | .750          |       | .50    |        |                                                                                         | YP3224                        | 53989        |
| 26                            | .812          |       | .56    |        |                                                                                         | YP3226                        | 53990        |
| 28                            | .875          |       | .50    |        |                                                                                         | YP3228                        | 53991        |
| 30                            | .938          | .56   | YP3230 | 53992  |                                                                                         |                               |              |
| 32                            | 1.000         | .250  | .63    | .31    | B                                                                                       | YP3232                        | 53993        |
| 34                            | 1.062         |       |        |        |                                                                                         | YP3234                        | 53994        |
| 36                            | 1.125         |       |        |        |                                                                                         | YP3236                        | 53995        |
| 38                            | 1.187         |       |        |        |                                                                                         | YP3238                        | 53996        |
| 40                            | 1.250         |       |        |        |                                                                                         | YP3240                        | 53997        |
| 42                            | 1.312         |       |        |        |                                                                                         | YP3242                        | 53998        |
| 44                            | 1.375         |       |        |        |                                                                                         | YP3244                        | 53999        |
| 48                            | 1.500         |       |        |        |                                                                                         | .63                           | YP3248       |
| 52                            | 1.625         | .3125 |        | .67    |                                                                                         | .31                           | YP3252       |
| 56                            | 1.750         |       |        | YP3256 |                                                                                         |                               | 54002        |
| 64                            | 2.000         |       |        | YP3264 |                                                                                         |                               | 54003        |
| 72                            | 2.250         |       |        | YP3272 |                                                                                         |                               | 54004        |
| 80                            | 2.500         |       |        | .81    |                                                                                         |                               | YP3280       |
| 96                            | 3.000         |       |        | YP3296 |                                                                                         |                               | 54006        |



### STANDARD TOLERANCES\*

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005"   |

\*Brass only.



48 D.P.



32 D.P.

### REFERENCE PAGES

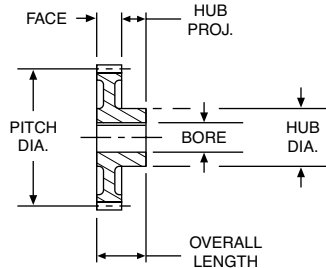
Alterations — 322  
Lubrication — 322  
Materials — 323

# Spur Gears

## 32 Diametral Pitch (Delrin & Brass)

20° Pressure Angle (will not operate with 14-1/2° spurs)

A



### STANDARD TOLERANCES

| DIMENSION                        |     | TOLERANCE     |
|----------------------------------|-----|---------------|
| <b>Brass</b>                     |     |               |
| BORE                             | All | ± .0005       |
| <b>Delrin with Brass Inserts</b> |     |               |
| BORE                             | All | + .001 - .000 |



32 D.P.

### REFERENCE PAGES

Alterations — 322  
Lubrication — 322  
Materials — 323

†All YPB gears have setscrew and spot drill.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth               | Pitch<br>Dia. | Bore  | Hub  |        | Style<br>See<br>Page<br>323                                                             | Without Keyway<br>or Setscrew† |              |       |
|----------------------------------|---------------|-------|------|--------|-----------------------------------------------------------------------------------------|--------------------------------|--------------|-------|
|                                  |               |       | Dia. | Proj.  |                                                                                         | Catalog<br>Number              | Item<br>Code |       |
| <b>32<br/>DIAMETRAL PITCH</b>    |               |       |      |        | Face = .188"<br>Outside Dia. = Pitch Dia. + .062"<br>Overall Length = .188" + Hub Proj. |                                |              |       |
| MOLDED DELRIN with BRASS INSERTS |               |       |      |        |                                                                                         |                                |              |       |
| 12                               | .375          | .125  | .28  | .31    | A                                                                                       | YPB3212                        | 54007        |       |
| 14                               | .438          |       | .31  |        |                                                                                         | YPB3214                        | 54008        |       |
| 15                               | .469          |       | .31  |        |                                                                                         | YPB3215                        | 54009        |       |
| 16                               | .500          |       | .34  |        |                                                                                         | YPB3216                        | 54010        |       |
| 18                               | .562          |       | .34  |        |                                                                                         | YPB3218                        | 54011        |       |
| 20                               | .625          | .1875 | .47  |        |                                                                                         | YPB3220                        | 54012        |       |
| 22                               | .688          |       | .50  |        |                                                                                         | YPB3222                        | 54013        |       |
| 24                               | .750          |       | .50  |        |                                                                                         | YPB3224                        | 54014        |       |
| 26                               | .812          |       | .56  |        |                                                                                         | YPB3226                        | 54015        |       |
| 28                               | .875          |       | .50  |        |                                                                                         | YPB3228                        | 54016        |       |
| 30                               | .938          |       | .56  |        |                                                                                         | YPB3230                        | 54017        |       |
| 32                               | 1.000         | .250  | .63  |        | B                                                                                       | YPB3232                        | 54018        |       |
| 34                               | 1.062         |       | .61  |        |                                                                                         | YPB3234                        | 54019        |       |
| 36                               | 1.125         |       | .61  |        |                                                                                         | YPB3236                        | 54020        |       |
| 38                               | 1.187         |       | .61  |        |                                                                                         | YPB3238                        | 54021        |       |
| 40                               | 1.250         |       | .61  |        |                                                                                         | YPB3240                        | 54022        |       |
| 42                               | 1.312         |       | .61  |        |                                                                                         | YPB3242                        | 54023        |       |
| 44                               | 1.375         |       | .61  |        |                                                                                         | YPB3244                        | 54024        |       |
| 48                               | 1.500         |       | .63  |        |                                                                                         | YPB3248                        | 54025        |       |
| 52                               | 1.625         | .3125 | .67  |        |                                                                                         | YPB3252                        | 54026        |       |
| 56                               | 1.750         |       | .67  |        |                                                                                         | YPB3256                        | 54027        |       |
| 64                               | 2.000         |       | .67  |        |                                                                                         | YPB3264                        | 54028        |       |
| 72                               | 2.250         |       | .81  |        |                                                                                         | YPB3272                        | 54029        |       |
| 80                               | 2.500         |       | .81  |        |                                                                                         | YPB3280                        | 54030        |       |
| 96                               | 3.000         |       | .81  |        |                                                                                         | YPB3296                        | 54031        |       |
| BRASS                            |               |       |      |        |                                                                                         |                                |              |       |
| 12                               | .375          | .125  | .28  | .25    | A                                                                                       | Y3212                          | 09406        |       |
| 14                               | .438          |       | .34  |        |                                                                                         | Y3214                          | 09408        |       |
| 16                               | .500          |       | .40  |        |                                                                                         | Y3216                          | 09410        |       |
| 18                               | .562          |       | .43  |        |                                                                                         | Y3218                          | 09412        |       |
| 20                               | .625          |       | .47  |        |                                                                                         | Y3220                          | 09414        |       |
| 24                               | .750          | .1875 | .53  |        |                                                                                         | Y3224                          | 09416        |       |
| 28                               | .875          |       | .59  |        |                                                                                         | Y3228                          | 09418        |       |
| 32                               | 1.000         |       | .66  |        |                                                                                         | Y3232                          | 09420        |       |
| 36                               | 1.125         |       | .72  |        |                                                                                         | Y3236                          | 09422        |       |
| 40                               | 1.250         |       | .72  |        |                                                                                         | Y3240                          | 09424        |       |
| 48                               | 1.500         |       | .78  |        |                                                                                         | Y3248                          | 09426        |       |
| 56                               | 1.750         | .3125 | .84  |        | .25                                                                                     | C                              | Y3256        | 09428 |
| 64                               | 2.000         |       | .90  |        |                                                                                         |                                | Y3264        | 09430 |
| 72                               | 2.250         |       | .88  |        |                                                                                         |                                | Y3272        | 09432 |
| 80                               | 2.500         |       | .88  |        |                                                                                         |                                | Y3280        | 09434 |
| 96                               | 3.000         |       | 1.00 |        |                                                                                         |                                | Y3296        | 09436 |
| 112                              | 3.500         |       | 1.00 | Y32112 |                                                                                         |                                | 09438        |       |
| 128                              | 4.000         |       | 1.00 | Y32128 |                                                                                         |                                | 09440        |       |
| 160                              | 5.000         |       | 1.00 | Y32160 |                                                                                         |                                | 09442        |       |

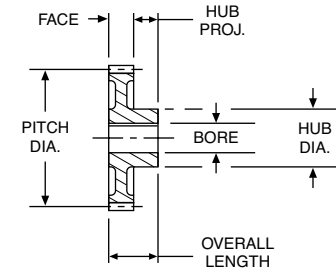
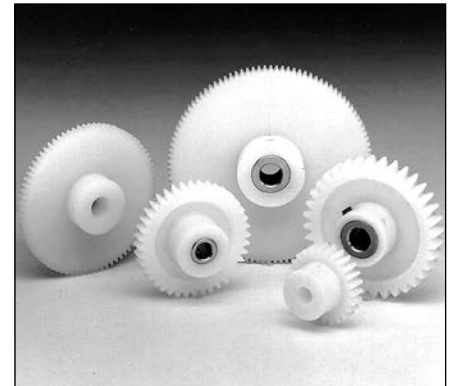
| BORE | SETScrew |
|------|----------|
| 1/8  | #2-56    |
| 3/16 | #4-40    |
| 1/4  | #6-32    |
| 5/16 | #8-32    |

## 24 Diametral Pitch (Delrin)

20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth               | Pitch<br>Dia. | Bore | Hub     |       | Style<br>See<br>Page<br>323                                                             | Without Keyway<br>or Setscrew† |              |
|----------------------------------|---------------|------|---------|-------|-----------------------------------------------------------------------------------------|--------------------------------|--------------|
|                                  |               |      | Dia.    | Proj. |                                                                                         | Catalog<br>Number              | Item<br>Code |
| <b>24<br/>DIAMETRAL PITCH</b>    |               |      |         |       | Face = .250”<br>Outside Dia. = Pitch Dia. + .083”<br>Overall Length = .250” + Hub Proj. |                                |              |
| MOLDED DELRIN                    |               |      |         |       |                                                                                         |                                |              |
| 12                               | .500          | .188 | .38     | .31   | A                                                                                       | YP2412                         | 54032        |
| 14                               | .583          |      | .44     |       |                                                                                         | YP2414                         | 54033        |
| 15                               | .625          |      | .48     |       |                                                                                         | YP2415                         | 54034        |
| 16                               | .667          |      | .55     |       |                                                                                         | YP2416                         | 54035        |
| 17                               | .709          |      |         |       |                                                                                         | YP2417                         | 54036        |
| 18                               | .750          |      |         |       |                                                                                         | YP2418                         | 54037        |
| 19                               | .791          |      |         |       |                                                                                         | YP2419                         | 54038        |
| 20                               | .833          |      |         |       |                                                                                         | YP2420                         | 54039        |
| 21                               | .875          |      |         |       |                                                                                         | YP2421                         | 54040        |
| 22                               | .917          |      |         |       |                                                                                         | YP2422                         | 54041        |
| 23                               | .959          |      | YP2423  |       |                                                                                         | 54042                          |              |
| 24                               | 1.000         | .250 | .63     | .31   | B                                                                                       | YP2424                         | 54043        |
| 25                               | 1.041         |      | .61     |       |                                                                                         | YP2425                         | 54044        |
| 26                               | 1.083         |      | .63     |       |                                                                                         | YP2426                         | 54045        |
| 27                               | 1.125         |      |         |       |                                                                                         | YP2427                         | 54046        |
| 28                               | 1.167         |      |         |       |                                                                                         | YP2428                         | 54047        |
| 30                               | 1.250         |      |         |       |                                                                                         | YP2430                         | 54048        |
| 32                               | 1.333         |      | .61     |       |                                                                                         | YP2432                         | 54049        |
| 33                               | 1.375         |      |         |       |                                                                                         | YP2433                         | 54050        |
| 34                               | 1.416         |      |         |       |                                                                                         | YP2434                         | 54051        |
| 36                               | 1.500         |      |         |       |                                                                                         | YP2436                         | 54052        |
| 39                               | 1.625         | .313 | .67     | .31   | B                                                                                       | YP2439                         | 54053        |
| 40                               | 1.666         |      |         |       |                                                                                         | YP2440                         | 54054        |
| 42                               | 1.750         |      |         |       |                                                                                         | YP2442                         | 54055        |
| 44                               | 1.833         |      |         |       |                                                                                         | YP2444                         | 54056        |
| 45                               | 1.875         |      |         |       |                                                                                         | YP2445                         | 54057        |
| 48                               | 2.000         |      |         |       |                                                                                         | YP2448                         | 54058        |
| 50                               | 2.083         |      |         |       |                                                                                         | YP2450                         | 54059        |
| 52                               | 2.166         |      |         |       |                                                                                         | YP2452                         | 54060        |
| 54                               | 2.250         |      |         |       |                                                                                         | YP2454                         | 54061        |
| 56                               | 2.333         |      |         |       |                                                                                         | YP2456                         | 54062        |
| 60                               | 2.500         |      |         |       |                                                                                         | YP2460                         | 54063        |
| MOLDED DELRIN WITH BRASS INSERTS |               |      |         |       |                                                                                         |                                |              |
| 12                               | .500          | .188 | .38     | .31   | A                                                                                       | YPB2412                        | 54064        |
| 14                               | .583          |      | .44     |       |                                                                                         | YPB2414                        | 54065        |
| 15                               | .625          |      | .48     |       |                                                                                         | YPB2415                        | 54066        |
| 16                               | .667          |      | .55     |       |                                                                                         | YPB2416                        | 54067        |
| 17                               | .709          |      |         |       |                                                                                         | YPB2417                        | 54068        |
| 18                               | .750          |      |         |       |                                                                                         | YPB2418                        | 54069        |
| 19                               | .791          |      |         |       |                                                                                         | YPB2419                        | 54070        |
| 20                               | .833          |      |         |       |                                                                                         | YPB2420                        | 54071        |
| 21                               | .875          |      |         |       |                                                                                         | YPB2421                        | 54072        |
| 22                               | .917          |      |         |       |                                                                                         | YPB2422                        | 54073        |
| 23                               | .959          |      | YPB2423 |       |                                                                                         | 54074                          |              |
| 24                               | 1.000         | .250 | .63     | .31   | B                                                                                       | YPB2424                        | 54075        |
| 25                               | 1.041         |      | .61     |       |                                                                                         | YPB2425                        | 54076        |
| 26                               | 1.083         |      | .63     |       |                                                                                         | YPB2426                        | 54077        |
| 27                               | 1.125         |      |         |       |                                                                                         | YPB2427                        | 54078        |
| 28                               | 1.167         |      |         |       |                                                                                         | YPB2428                        | 54079        |
| 30                               | 1.250         |      |         |       |                                                                                         | YPB2430                        | 54080        |
| 32                               | 1.333         |      | .61     |       |                                                                                         | YPB2432                        | 54081        |
| 33                               | 1.375         |      |         |       |                                                                                         | YPB2433                        | 54082        |
| 34                               | 1.416         |      |         |       |                                                                                         | YPB2434                        | 54083        |
| 36                               | 1.500         |      |         |       |                                                                                         | YPB2436                        | 54084        |
| 39                               | 1.625         | .313 | .67     | .31   | B                                                                                       | YPB2439                        | 54085        |
| 40                               | 1.666         |      |         |       |                                                                                         | YPB2440                        | 54086        |
| 42                               | 1.750         |      |         |       |                                                                                         | YPB2442                        | 54087        |



### STANDARD TOLERANCES\*

| DIMENSION | TOLERANCE        |
|-----------|------------------|
| BORE      | All +.001 - .000 |

\*Gears with Brass Inserts only.



24 D.P.

### REFERENCE PAGES

Alterations — 322  
Materials — 323

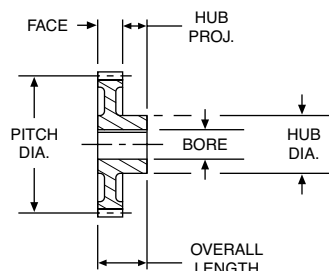
†All YPB gears have setscrew and spot drill.

| BORE | SETSCREW |
|------|----------|
| 3/16 | #4-40    |
| 1/4  | #6-32    |
| 5/16 | #8-32    |

# Spur Gears

## 24 and 20 Diametral Pitch (Delrin, Brass, Steel & Cast Iron)

20° Pressure Angle (will not operate with 14-1/2° spurs)



### STANDARD TOLERANCES

| DIMENSION                         |     | TOLERANCE     |
|-----------------------------------|-----|---------------|
| <b>Brass, Steel and Cast Iron</b> |     |               |
| BORE                              | All | ± .0005       |
| <b>Delrin with Brass Inserts</b>  |     |               |
| BORE                              | All | + .001 - .000 |



24 D.P.



20 D.P.

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 58  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

†YPB gears have one setscrew (#8-32), no keyway.

\*5/16" bore have #35 (.110) drilled hole through one wall, no keyway.

‡3/8" bore have one setscrew.

No keyway.

1/2" bore and larger have standard keyway at 90° to setscrew.

See Page 323.

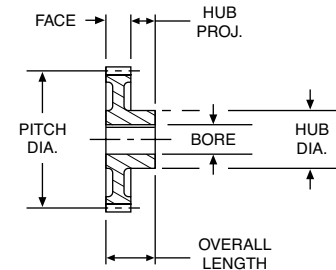
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth               | Pitch<br>Dia. | Bore  | Hub  |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                           |              | With Keyway<br>and Setscrew† |              |       |
|----------------------------------|---------------|-------|------|-------|-----------------------------|-----------------------------------------------------------------------------------------|--------------|------------------------------|--------------|-------|
|                                  |               |       | Dia. | Proj. |                             | Catalog<br>Number                                                                       | Item<br>Code | Catalog<br>Number            | Item<br>Code |       |
| <b>24<br/>DIAMETRAL PITCH</b>    |               |       |      |       |                             | Face = .250"<br>Outside Dia. = Pitch Dia. + .083"<br>Overall Length = .250" + Hub Proj. |              |                              |              |       |
| MOLDED DELRIN WITH BRASS INSERTS |               |       |      |       |                             |                                                                                         |              |                              |              |       |
| 44                               | 1.833         | .3125 | .67  | .31   | B                           | YPB2444                                                                                 | 54088        | —                            | —            |       |
| 45                               | 1.875         |       |      |       |                             | YPB2445                                                                                 | 54089        | —                            | —            |       |
| 48                               | 2.000         |       |      |       |                             | YPB2448                                                                                 | 54090        | —                            | —            |       |
| 50                               | 2.083         |       |      |       |                             | YPB2450                                                                                 | 54091        | —                            | —            |       |
| 52                               | 2.166         |       |      |       |                             | YPB2452                                                                                 | 54092        | —                            | —            |       |
| 54                               | 2.250         |       |      |       |                             | YPB2454                                                                                 | 54093        | —                            | —            |       |
| 56                               | 2.333         |       |      |       |                             | YPB2456                                                                                 | 54094        | —                            | —            |       |
| 60                               | 2.500         |       |      |       |                             | YPB2460                                                                                 | 54095        | —                            | —            |       |
| BRASS                            |               |       |      |       |                             |                                                                                         |              |                              |              |       |
| 12                               | .500          | .1875 | .38  | .25   | A                           | Y2412                                                                                   | 09372        | —                            | —            |       |
| 15                               | .625          |       | .50  |       |                             | Y2415                                                                                   | 09374        | —                            | —            |       |
| 18                               | .750          |       | .54  |       |                             | Y2418                                                                                   | 09376        | —                            | —            |       |
| 21                               | .875          |       | .60  |       |                             | Y2421                                                                                   | 09378        | —                            | —            |       |
| 24                               | 1.000         | .250  | .66  | .25   |                             | Y2424                                                                                   | 09380        | —                            | —            |       |
| 27                               | 1.125         |       | .73  |       |                             | Y2427                                                                                   | 09382        | —                            | —            |       |
| 30                               | 1.250         |       | .73  |       |                             | Y2430                                                                                   | 09384        | —                            | —            |       |
| 36                               | 1.500         |       | .79  |       |                             | Y2436                                                                                   | 09386        | —                            | —            |       |
| 42                               | 1.750         | .3125 | .86  | .25   | Y2442                       | 09388                                                                                   | —            | —                            |              |       |
| 48                               | 2.000         |       | .92  |       | Y2448                       | 09390                                                                                   | —            | —                            |              |       |
| 54                               | 2.250         |       | .88  | .31   | Y2454                       | 09392                                                                                   | —            | —                            |              |       |
| 60                               | 2.500         |       | .88  |       | Y2460                       | 09394                                                                                   | —            | —                            |              |       |
| 72                               | 3.000         | .375  | 1.00 | .31   | C                           | Y2472                                                                                   | 09396        | —                            | —            |       |
| 84                               | 3.500         |       |      |       |                             | Y2484                                                                                   | 09398        | —                            | —            |       |
| 96                               | 4.000         |       |      |       |                             | Y2496                                                                                   | 09400        | —                            | —            |       |
| 120                              | 5.000         |       |      |       |                             | .38                                                                                     | Y24120       | 09402                        | —            | —     |
| 144                              | 6.000         |       |      |       |                             |                                                                                         | Y24144       | 09404                        | —            | —     |
| <b>20<br/>DIAMETRAL PITCH</b>    |               |       |      |       |                             | Face = .500"<br>Outside Dia. = Pitch Dia. + .100"<br>Overall Length = .500" + Hub Proj. |              |                              |              |       |
| STEEL                            |               |       |      |       |                             |                                                                                         |              |                              |              |       |
| 12                               | .600          | .3125 | .46  | .44   |                             | A                                                                                       | YA12         | 09892                        | YA12-5/16"   | 46128 |
| 14                               | .700          |       | .56  |       | YA14                        |                                                                                         | 09894        | YA14-5/16"                   | 46129        |       |
| 15                               | .750          |       | .60  |       | YA15                        |                                                                                         | 09896        | YA15-3/8‡                    | 46130        |       |
| 16                               | .800          |       | .375 |       | .66                         |                                                                                         | YA16         | 09898                        | YA16-3/8‡    | 46131 |
| 18                               | .900          | .74   |      | YA18  | 09900                       |                                                                                         | YA18-3/8‡    | 46132                        |              |       |
| 20                               | 1.000         | .84   |      | YA20  | 09902                       |                                                                                         | YA20-1/2     | 46133                        |              |       |
| 24                               | 1.200         | .92   |      | YA24  | 09914                       |                                                                                         | YA24-1/2     | 46134                        |              |       |
| 25                               | 1.250         | .500  | .97  | YA25  | 09904                       |                                                                                         | YA25-1/2     | 46135                        |              |       |
| 30                               | 1.500         |       | 1.22 | YA30  | 09906                       |                                                                                         | YA30-1/2     | 46136                        |              |       |
| 35                               | 1.750         |       | 1.47 | YA35  | 09908                       |                                                                                         | YA35-1/2     | 46137                        |              |       |
| 40                               | 2.000         |       | .500 | 1.72  | .50                         |                                                                                         | YA40         | 09910                        | YA40-1/2     | 46138 |
|                                  |               | .625  | —    |       |                             |                                                                                         | —            | YA40-5/8                     | 46139        |       |
|                                  |               | .750  |      |       | —                           |                                                                                         | —            | YA40-3/4                     | 46140        |       |
| 45                               | 2.250         | .500  | 1.97 | .50   | YA45                        |                                                                                         | 09912        | —                            | —            |       |
| 50                               | 2.500         |       | 1.62 |       | YA50A                       |                                                                                         | 10548        | —                            | —            |       |
| 60                               | 3.000         |       | 2.12 |       | YA60A                       |                                                                                         | 10550        | —                            | —            |       |
| 70                               | 3.500         |       | 2.38 |       | YA70A                       |                                                                                         | 10552        | —                            | —            |       |
|                                  |               |       |      |       |                             |                                                                                         |              |                              |              |       |
| CAST IRON                        |               |       |      |       |                             |                                                                                         |              |                              |              |       |
| 80                               | 4.000         | .625  | 1.38 | .62   | C                           | YA80                                                                                    | 10554        | —                            | —            |       |
| 84                               | 4.200         |       |      |       | B                           | YA84                                                                                    | 10556        | —                            | —            |       |
| 90                               | 4.500         |       |      |       | A                           | YA90                                                                                    | 10558        | —                            | —            |       |
| 100                              | 5.000         | .625  | 1.50 | .62   | C                           | YA100                                                                                   | 10560        | —                            | —            |       |
| 120                              | 6.000         |       |      |       | D                           | YA120                                                                                   | 10562        | —                            | —            |       |
| 140                              | 7.000         |       |      |       |                             | YA140                                                                                   | 10564        | —                            | —            |       |
| 160                              | 8.000         |       |      |       |                             | YA160                                                                                   | 10566        | —                            | —            |       |
| 180                              | 9.000         |       |      |       |                             | YA180                                                                                   | 10568        | —                            | —            |       |
| 200                              | 10.000        | .625  | 1.75 | .75   |                             | YA200                                                                                   | 10570        | —                            | —            |       |

## 16 and 12 Diametral Pitch (Steel & Cast Iron) 20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore  | Hub  |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                             |              | With Keyway<br>and Setscrew† |              |
|-------------------------------|---------------|-------|------|-------|-----------------------------|-------------------------------------------------------------------------------------------|--------------|------------------------------|--------------|
|                               |               |       | Dia. | Proj. |                             | Catalog<br>Number                                                                         | Item<br>Code | Catalog<br>Number            | Item<br>Code |
| <b>16<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = .750"<br>Outside Dia. = Pitch Dia. + .125"<br>Overall Length = .750" + Hub Proj.   |              |                              |              |
| STEEL                         |               |       |      |       |                             |                                                                                           |              |                              |              |
| 12                            | .750          | .375  | .56  | .50   | A                           | YB12                                                                                      | 09916        | YB12-3/8†                    | 46141        |
| 14                            | .875          | .375  | .69  | .50   |                             | YB14                                                                                      | 09918        | YB14-3/8†                    | 46142        |
| 15                            | .938          | .375  | .75  | .50   |                             | YB15                                                                                      | 09920        | YB15-3/8†                    | 45991        |
|                               |               | .500  |      |       |                             | —                                                                                         | —            | YB15-1/2                     | 46143        |
| 16                            | 1.000         | .500  | .81  | .50   |                             | YB16                                                                                      | 09922        | YB16-1/2                     | 46144        |
| 18                            | 1.125         | .500  | .94  | .50   |                             | YB18                                                                                      | 09924        | YB18-1/2                     | 46145        |
| 20                            | 1.250         | .625  | 1.05 | .50   |                             | YB20                                                                                      | 09926        | YB20-5/8                     | 46146        |
| 24                            | 1.500         | .625  | 1.20 | .50   |                             | YB24                                                                                      | 09928        | YB24-5/8                     | 46147        |
|                               |               | .750  |      |       |                             | —                                                                                         | —            | YB24-3/4                     | 46148        |
| 28                            | 1.750         | .625  | 1.45 | .50   |                             | YB28                                                                                      | 09930        | YB28-5/8                     | 46149        |
|                               |               | .750  |      |       |                             | —                                                                                         | —            | YB28-3/4                     | 46150        |
| 30                            | 1.875         | .625  | 1.58 | .50   |                             | YB30                                                                                      | 09932        | YB30-5/8                     | 46151        |
|                               |               | .750  |      |       |                             | —                                                                                         | —            | YB30-3/4                     | 46152        |
|                               |               | .875  |      |       |                             | —                                                                                         | —            | YB30-7/8                     | 46153        |
| 32                            | 2.000         | .625  | 1.70 | .50   |                             | YB32                                                                                      | 09934        | YB32-5/8                     | 46154        |
|                               |               | .750  |      |       |                             | —                                                                                         | —            | YB32-3/4                     | 46155        |
|                               |               | .875  |      |       |                             | —                                                                                         | —            | YB32-7/8                     | 46156        |
|                               |               | 1.000 |      |       |                             | —                                                                                         | —            | YB32-1                       | 46157        |
| 36                            | 2.250         | .625  | 1.95 | .50   | YB36                        | 09936                                                                                     | —            | —                            |              |
| 40                            | 2.500         |       | 2.20 | .62   | YB40                        | 09938                                                                                     | —            | —                            |              |
| 48                            | 3.000         |       | 2.00 |       | YB48A                       | 10572                                                                                     | —            | —                            |              |
| 56                            | 3.500         |       | 2.50 |       | YB56A                       | 10574                                                                                     | —            | —                            |              |
| 60                            | 3.750         |       | 2.75 |       | YB60A                       | 10576                                                                                     | —            | —                            |              |
| 64                            | 4.000         | 2.88  | .75  |       | YB64A                       | 10578                                                                                     | —            | —                            |              |
| 72                            | 4.500         | 3.38  |      | YB72A | 10580                       | —                                                                                         | —            |                              |              |
| 80                            | 5.000         | 3.88  |      | YB80A | 10582                       | —                                                                                         | —            |                              |              |
|                               |               |       |      |       |                             |                                                                                           |              |                              |              |
| CAST IRON                     |               |       |      |       |                             |                                                                                           |              |                              |              |
| 96                            | 6.000         | .750  | 1.75 | .75   | D                           | YB96                                                                                      | 10584        | —                            | —            |
| 128                           | 8.000         |       | 2.00 |       |                             | YB128                                                                                     | 10588        | —                            | —            |
| 144                           | 9.000         |       | 2.00 |       |                             | YB144                                                                                     | 10590        | —                            | —            |
| 160                           | 10.000        | .875  | .75  | 1.00  | YB160                       | 10592                                                                                     | —            | —                            |              |
| 192                           | 12.000        | 2.00  | 1.00 |       | YB192                       | 10594                                                                                     | —            | —                            |              |
| <b>12<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = 1.000"<br>Outside Dia. = Pitch Dia. + .167"<br>Overall Length = 1.000" + Hub Proj. |              |                              |              |
| STEEL                         |               |       |      |       |                             |                                                                                           |              |                              |              |
| 12                            | 1.000         | .500  | .75  | .62   | A                           | YD12                                                                                      | 09940        | YD12-1/2*                    | 46158        |
| 13                            | 1.083         | .625  | .83  | .62   |                             | YD13                                                                                      | 09942        | YD13-5/8†                    | 46159        |
| 14                            | 1.167         |       | .92  |       |                             | YD14                                                                                      | 09944        | YD14-5/8                     | 46160        |
| 15                            | 1.250         |       | .99  |       |                             | YD15                                                                                      | 09946        | YD15-5/8                     | 46161        |
| 16                            | 1.333         |       | 1.07 |       |                             | YD16                                                                                      | 09948        | YD16-5/8                     | 46162        |
| 18                            | 1.500         | .750  | 1.24 | .62   |                             | YD18                                                                                      | 09950        | YD18-3/4                     | 46163        |
| 20                            | 1.667         | 1.32  | YD20 |       |                             | 09952                                                                                     | YD20-3/4     | 46164                        |              |
| 21                            | 1.750         | .750  | 1.40 | .62   |                             | YD21                                                                                      | 09954        | YD21-3/4                     | 46165        |
|                               |               | .875  |      |       |                             | —                                                                                         | —            | YD21-7/8                     | 46166        |
| 24                            | 2.000         | .750  | 1.65 | .62   |                             | YD24                                                                                      | 09956        | YD24-3/4                     | 46167        |
|                               |               | .875  |      |       |                             | —                                                                                         | —            | YD24-7/8                     | 46168        |
|                               |               | 1.000 |      |       |                             | —                                                                                         | —            | YD24-1                       | 46169        |
| 28                            | 2.333         | .750  | 1.99 | .62   |                             | YD28                                                                                      | 09958        | YD28-3/4                     | 46170        |
|                               |               | .875  |      |       |                             | —                                                                                         | —            | YD28-7/8                     | 46171        |
|                               |               | 1.000 |      |       |                             | —                                                                                         | —            | YD28-1                       | 46172        |
| 30                            | 2.500         | .750  | 2.15 | .62   |                             | YD30                                                                                      | 09960        | —                            | —            |
| 36                            | 3.000         |       | 1.94 |       |                             | YD36A                                                                                     | 10596        | —                            | —            |
| 42                            | 3.500         |       | 2.44 |       |                             | YD42A                                                                                     | 10598        | —                            | —            |
| 48                            | 4.000         | .875  | 2.88 | .88   |                             | YD48A                                                                                     | 10600        | —                            | —            |
| 54                            | 4.500         | 3.38  | .88  |       |                             | YD54A                                                                                     | 10602        | —                            | —            |



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



16 D.P.



12 D.P.

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 58, 59  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

†3/8" bore have one setscrew.  
No keyway.

YB15-1/2 and larger have standard keyway at 90° to setscrew.  
See page 323.

\*YD12-1/2 has one setscrew.  
No keyway.

‡YD13-5/8 has one setscrew.  
No keyway.

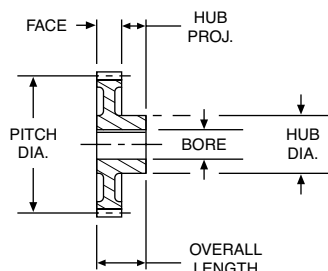
YD14-5/8 bore and larger have standard keyway at 90° to setscrew.

# Spur Gears

## 12 and 10 Diametral Pitch (Cast Iron & Steel)

20° Pressure Angle (will not operate with 14-1/2° spurs)

A

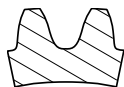


### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



12 D.P.



10 D.P.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth            | Pitch<br>Dia. | Bore  | Hub  |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                             |              | With Keyway<br>and Setscrew† |              |
|-------------------------------|---------------|-------|------|-------|-----------------------------|-------------------------------------------------------------------------------------------|--------------|------------------------------|--------------|
|                               |               |       | Dia. | Proj. |                             | Catalog<br>Number                                                                         | Item<br>Code | Catalog<br>Number            | Item<br>Code |
| <b>12<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = 1.000"<br>Outside Dia. = Pitch Dia. + .166"<br>Overall Length = 1.000" + Hub Proj. |              |                              |              |
| CAST IRON                     |               |       |      |       |                             |                                                                                           |              |                              |              |
| 60                            | 5.000         | .875  | 2.12 | .88   | B                           | YD60                                                                                      | 10604        | —                            | —            |
| 66                            | 5.500         |       |      |       |                             | YD66                                                                                      | 10606        | —                            | —            |
| 72                            | 6.000         |       |      |       |                             | YD72                                                                                      | 10608        | —                            | —            |
| 84                            | 7.000         |       |      |       |                             | YD84                                                                                      | 10610        | —                            | —            |
| 96                            | 8.000         |       |      |       |                             | YD96                                                                                      | 10612        | —                            | —            |
| 108                           | 9.000         |       | 2.25 |       |                             | YD108                                                                                     | 10614        | —                            | —            |
| 120                           | 10.000        | 1.000 | 2.25 | .88   | D                           | YD120                                                                                     | 10616        | —                            | —            |
| 132                           | 11.000        |       | 2.50 | 1.00  |                             | YD132                                                                                     | 10618        | —                            | —            |
| 144                           | 12.000        |       |      |       |                             | YD144                                                                                     | 10620        | —                            | —            |
| 168                           | 14.000        |       |      |       |                             | YD168                                                                                     | 10622        | —                            | —            |
| 192                           | 16.000        |       |      |       |                             | YD192                                                                                     | 10624        | —                            | —            |
| 216                           | 18.000        |       |      |       |                             | 2.75                                                                                      | YD216        | 10626                        | —            |
| <b>10<br/>DIAMETRAL PITCH</b> |               |       |      |       |                             | Face = 1.250"<br>Outside Dia. = Pitch Dia. + .200"<br>Overall Length = 1.250" + Hub Proj. |              |                              |              |
| STEEL                         |               |       |      |       |                             |                                                                                           |              |                              |              |
| 12                            | 1.200         | .625  | .92  | .62   | A                           | YF12                                                                                      | 09962        | YF12-5/8                     | 46173        |
| 14                            | 1.400         |       | 1.12 | .62   |                             | YF14                                                                                      | 09964        | YF14-5/8                     | 46174        |
| 15                            | 1.500         | .750  | 1.22 | .62   |                             | YF15                                                                                      | 09966        | YF15-3/4                     | 46175        |
| 16                            | 1.600         |       | 1.32 | .62   |                             | YF16                                                                                      | 09968        | YF16-3/4                     | 46176        |
| 18                            | 1.800         | .750  | 1.42 | .62   |                             | YF18                                                                                      | 09970        | YF18-3/4                     | 46177        |
|                               |               | .875  |      |       |                             | —                                                                                         | —            | YF18-7/8                     | 46178        |
| 20                            | 2.000         | .875  | 1.62 | .62   |                             | YF20                                                                                      | 09972        | YF20-7/8                     | 46179        |
|                               |               | 1.000 |      |       |                             | —                                                                                         | —            | YF20-1                       | 46180        |
| 24                            | 2.400         | .875  | 2.02 | .62   |                             | YF24                                                                                      | 09974        | YF24-7/8                     | 46181        |
|                               |               | 1.000 |      |       |                             | —                                                                                         | —            | YF24-1                       | 46182        |
| 25                            | 2.500         | .875  | 2.12 | .62   |                             | YF25                                                                                      | 09976        | YF25-7/8                     | 46183        |
|                               |               | 1.000 |      |       |                             | —                                                                                         | —            | YF25-1                       | 46184        |
| 28                            | 2.800         | .875  | 2.42 | .62   |                             | YF28                                                                                      | 09978        | YF28-7/8                     | 46185        |
|                               |               | 1.000 |      |       |                             | —                                                                                         | —            | YF28-1                       | 46186        |
| 30                            | 3.000         | .875  | 2.00 | .88   |                             | YF30A                                                                                     | 10630        | —                            | —            |
| 35                            | 3.500         |       | 2.50 |       |                             | YF35A                                                                                     | 10632        | —                            | —            |
| 40                            | 4.000         | 1.000 | 2.95 | .88   |                             | YF40A                                                                                     | 10634        | —                            | —            |
| 45                            | 4.500         |       | 3.45 |       |                             | YF45A                                                                                     | 10636        | —                            | —            |
| 48                            | 4.800         |       | 3.75 |       |                             | YF48A                                                                                     | 10638        | —                            | —            |
| 50                            | 5.000         |       | 3.95 |       |                             | YF50A                                                                                     | 10640        | —                            | —            |
| CAST IRON                     |               |       |      |       |                             |                                                                                           |              |                              |              |
| 55                            | 5.500         | 1.000 | 2.50 | 1.00  | B                           | YF55                                                                                      | 10642        | —                            | —            |
| 60                            | 6.000         |       |      |       |                             | YF60                                                                                      | 10644        | —                            | —            |
| 70                            | 7.000         |       |      |       |                             | YF70                                                                                      | 10646        | —                            | —            |
| 80                            | 8.000         |       |      |       |                             | YF80                                                                                      | 10648        | —                            | —            |
| 90                            | 9.000         |       |      |       |                             | YF90                                                                                      | 10650        | —                            | —            |
| 100                           | 10.000        | 1.125 | 3.00 | 1.12  | D                           | YF100                                                                                     | 10652        | —                            | —            |
| 120                           | 12.000        |       |      |       |                             | YF120                                                                                     | 10656        | —                            | —            |
| 140                           | 14.000        |       |      |       |                             | YF140                                                                                     | 10658        | —                            | —            |
| 160                           | 16.000        |       |      |       |                             | YF160                                                                                     | 10660        | —                            | —            |
| 200                           | 20.000        |       | 3.25 | 1.25  |                             | YF200B                                                                                    | 10664        | —                            | —            |

†All gears have standard keyway at 90° to setscrew. See Page 323.

### REFERENCE PAGES

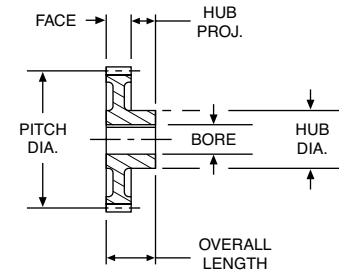
Alterations — 322  
Horsepower Ratings — 59, 60  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

## 8 and 6 Diametral Pitch (Steel & Cast Iron)

20° Pressure Angle (will not operate with 14-1/2° spurs)

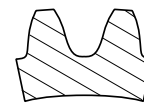
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth                     | Pitch<br>Dia.                                               | Bore                              | Hub          |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew                                                            |                                 | With Keyway<br>and Setscrew†                      |                                  |
|----------------------------------------|-------------------------------------------------------------|-----------------------------------|--------------|-------|-----------------------------|------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------|----------------------------------|
|                                        |                                                             |                                   | Dia.         | Proj. |                             | Catalog<br>Number                                                                        | Item<br>Code                    | Catalog<br>Number                                 | Item<br>Code                     |
| <b>8<br/>DIAMETRAL PITCH</b>           |                                                             |                                   |              |       |                             | Face = 1.500"<br>Outside Dia. = Pitch Dia. + .250"<br>Overall Length = 1.500" + Hub Proj |                                 |                                                   |                                  |
| STEEL                                  |                                                             |                                   |              |       |                             |                                                                                          |                                 |                                                   |                                  |
| 12<br>14                               | 1.500<br>1.750                                              | .750<br>.750                      | 1.12<br>1.31 | .75   | A                           | YH12<br>YH14                                                                             | 09980<br>09982                  | YH12-3/4<br>YH14-3/4                              | 46187<br>46188                   |
| 15                                     | 1.875                                                       | .750<br>.875                      | 1.43         | .75   |                             | YH15<br>—                                                                                | 09984<br>—                      | YH15-3/4<br>YH15-7/8                              | 46189<br>46190                   |
| 16                                     | 2.000                                                       | .875<br>1.000                     | 1.56         | .88   |                             | YH16<br>—                                                                                | 09986<br>—                      | YH16-7/8<br>YH16-1                                | 46191<br>46192                   |
| 18                                     | 2.250                                                       | .875<br>1.000<br>1.125            | 1.81         | .88   |                             | YH18<br>—<br>—                                                                           | 09988<br>—<br>—                 | YH18-7/8<br>YH18-1<br>YH18-1-1/8                  | 46193<br>46194<br>46195          |
| 20                                     | 2.500                                                       | .875<br>1.000<br>1.125            | 2.06         | .88   |                             | YH20<br>—<br>—                                                                           | 09990<br>—<br>—                 | YH20-7/8<br>YH20-1<br>YH20-1-1/8                  | 46196<br>46197<br>46198          |
| 22                                     | 2.750                                                       | .875<br>1.000<br>1.125            | 2.31         | .88   |                             | YH22<br>—<br>—                                                                           | 09992<br>—<br>—                 | YH22-7/8<br>YH22-1<br>YH22-1-1/8                  | 46199<br>46200<br>46201          |
| 24                                     | 3.000                                                       | .875<br>1.000<br>1.125            | 2.56         | .88   |                             | YH24<br>—<br>—                                                                           | 09994<br>—<br>—                 | YH24-7/8<br>YH24-1<br>YH24-1-1/8                  | 46202<br>46203<br>46204          |
| 28                                     | 3.500                                                       | .875                              | 3.06         | .88   |                             | YH28                                                                                     | 09996                           | —                                                 | —                                |
| 32                                     | 4.000                                                       | 1.000                             | 3.00         | .88   |                             | YH32C                                                                                    | 10666                           | —                                                 | —                                |
| 36                                     | 4.500                                                       | 1.000                             | 3.50         | .88   |                             | YH36C                                                                                    | 10668                           | —                                                 | —                                |
| CAST IRON                              |                                                             |                                   |              |       |                             |                                                                                          |                                 |                                                   |                                  |
| 40<br>44<br>48<br>56<br>60<br>64<br>72 | 5.000<br>5.500<br>6.000<br>7.000<br>7.500<br>8.000<br>9.000 | 1.000                             | 2.50         | 1.00  | B                           | YH40B<br>YH44B<br>YH48B                                                                  | 10670<br>10672<br>10674         | —<br>—<br>—                                       | —<br>—<br>—                      |
|                                        |                                                             |                                   |              |       |                             | C                                                                                        | YH56B<br>YH60<br>YH64B<br>YH72B | 10676<br>10678<br>10680<br>10682                  | —<br>—<br>—<br>—                 |
| 80<br>88<br>96<br>112<br>120<br>128    | 10.000<br>11.000<br>12.000<br>14.000<br>15.000<br>16.000    |                                   |              |       | 1.125                       |                                                                                          | 3.00<br>3.25                    | 1.25                                              | D                                |
|                                        |                                                             |                                   |              |       |                             |                                                                                          |                                 |                                                   |                                  |
| <b>6<br/>DIAMETRAL PITCH</b>           |                                                             |                                   |              |       |                             | Face = 2.000"<br>Outside Dia. = Pitch Dia. + .333"<br>Overall Length = 2.000" + Hub Proj |                                 |                                                   |                                  |
| STEEL                                  |                                                             |                                   |              |       |                             |                                                                                          |                                 |                                                   |                                  |
| 12<br>14                               | 2.000<br>2.333                                              | 1.000<br>1.000<br>1.125           | 1.46<br>1.79 | .88   | A                           | YJ12<br>YJ14<br>—                                                                        | 09998<br>10000<br>—             | YJ12-1<br>YJ14-1<br>YJ14-1-1/8                    | 46205<br>46206<br>46207          |
| 15                                     | 2.500                                                       | 1.000<br>1.125<br>1.1875<br>1.250 | 1.96         | .88   |                             | YJ15<br>—<br>—<br>—<br>—                                                                 | 10002<br>—<br>—<br>—<br>—       | YJ15-1<br>YJ15-1-1/8<br>YJ15-1-3/16<br>YJ15-1-1/4 | 46208<br>46209<br>46210<br>46211 |



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |



8 D.P.



6 D.P.

†All gears have standard keyway at 90° to setscrew. See Page 323.

### REFERENCE PAGES

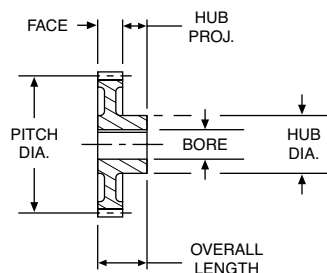
Alterations — 322  
Horsepower Ratings — 60, 61  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

# Spur Gears

## 6 and 5 Diametral Pitch (Steel & Cast Iron)

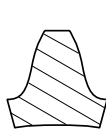
20° Pressure Angle (will not operate with 14-1/2° spurs)

A

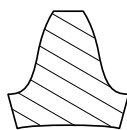


### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |



6 D.P.



5 D.P.

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 61, 62  
Lubrication — 322  
Materials — 323  
Selection Procedure — 49

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth     | Pitch<br>Dia. | Bore   | Hub   |       | Style<br>See<br>Page<br>323 | Without Keyway<br>or Setscrew       |              | With Keyway<br>and Setscrew† |              |       |   |   |
|------------------------|---------------|--------|-------|-------|-----------------------------|-------------------------------------|--------------|------------------------------|--------------|-------|---|---|
|                        |               |        | Dia.  | Proj. |                             | Catalog<br>Number                   | Item<br>Code | Catalog<br>Number            | Item<br>Code |       |   |   |
| <b>6</b>               |               |        |       |       |                             | Face = 2.000"                       |              |                              |              |       |   |   |
| <b>DIAMETRAL PITCH</b> |               |        |       |       |                             | Outside Dia. = Pitch Dia. + .333"   |              |                              |              |       |   |   |
|                        |               |        |       |       |                             | Overall Length = 2.000" + Hub Proj. |              |                              |              |       |   |   |
| <b>STEEL</b>           |               |        |       |       |                             |                                     |              |                              |              |       |   |   |
| 16                     | 2.667         | 1.000  | 2.13  | .88   | A                           | YJ16                                | 10004        | YJ16-1                       | 46212        |       |   |   |
|                        |               | 1.125  |       |       |                             | —                                   | —            | YJ16-1-1/8                   | 46213        |       |   |   |
|                        |               | 1.1875 |       |       |                             | —                                   | —            | YJ16-1-3/16                  | 46214        |       |   |   |
| 18                     | 3.000         | 1.000  | —     | —     |                             | YJ16-1-1/4                          | 46215        |                              |              |       |   |   |
|                        |               | 1.125  | YJ18  | 10006 |                             | YJ18-1                              | 46216        |                              |              |       |   |   |
|                        |               | 1.1875 | —     | —     |                             | YJ18-1-1/8                          | 46217        |                              |              |       |   |   |
| 21                     | 3.500         | 1.000  | —     | —     |                             | YJ18-1-3/16                         | 46218        |                              |              |       |   |   |
|                        |               | 1.125  | —     | —     |                             | YJ18-1-1/4                          | 46219        |                              |              |       |   |   |
|                        |               | 1.1875 | YJ21  | 10008 |                             | YJ21-1                              | 46220        |                              |              |       |   |   |
| 24                     | 4.000         | 1.000  | —     | —     |                             | YJ21-1-1/8                          | 46221        |                              |              |       |   |   |
|                        |               | 1.125  | —     | —     |                             | YJ21-1-3/16                         | 46222        |                              |              |       |   |   |
|                        |               | 1.1875 | —     | —     |                             | YJ21-1-1/4                          | 46223        |                              |              |       |   |   |
| 27                     | 4.500         | 1.125  | 3.50  | .88   | YJ24A                       | 10704                               | —            | —                            |              |       |   |   |
| 30                     | 5.000         | 1.125  | 3.50  | .88   | YJ27A                       | 10706                               | —            | —                            |              |       |   |   |
|                        |               |        |       |       | YJ30C                       | 10708                               | —            | —                            |              |       |   |   |
| <b>CAST IRON</b>       |               |        |       |       |                             |                                     |              |                              |              |       |   |   |
| 33                     | 5.500         | 1.125  | 3.00  | 1.50  | B                           | YJ33B                               | 10710        | —                            | —            |       |   |   |
| 36                     | 6.000         |        | 3.50  |       | A                           | YJ36B                               | 10712        | —                            | —            |       |   |   |
| 42                     | 7.000         | 1.250  | 3.50  | 1.50  | B                           | YJ42B                               | 10714        | —                            | —            |       |   |   |
| 48                     | 8.000         |        |       |       |                             | YJ48B                               | 10716        | —                            | —            |       |   |   |
| 54                     | 9.000         |        |       |       |                             | YJ54B                               | 10718        | —                            | —            |       |   |   |
| 60                     | 10.000        | 1.250  | 4.00  | 1.50  | C                           | YJ60B                               | 10720        | —                            | —            |       |   |   |
| 66                     | 11.000        |        |       |       |                             | YJ66B                               | 10722        | —                            | —            |       |   |   |
| 72                     | 12.000        |        |       |       | D                           | YJ72B                               | 10724        | —                            | —            |       |   |   |
| 84                     | 14.000        |        |       |       |                             | YJ84B                               | 10726        | —                            | —            |       |   |   |
| 96                     | 16.000        |        |       |       |                             | YJ96B                               | 10728        | —                            | —            |       |   |   |
| 108                    | 18.000        |        |       |       |                             | YJ108B                              | 10730        | —                            | —            |       |   |   |
| 120                    | 20.000        |        |       |       |                             | 1.375                               | 4.50         | 1.50                         | YJ120B       | 10732 | — | — |
|                        |               |        |       |       |                             |                                     |              |                              |              |       |   |   |
| <b>5</b>               |               |        |       |       |                             | Face = 2.500"                       |              |                              |              |       |   |   |
| <b>DIAMETRAL PITCH</b> |               |        |       |       |                             | Outside Dia. = Pitch Dia. + .400"   |              |                              |              |       |   |   |
|                        |               |        |       |       |                             | Overall Length = 2.500" + Hub Proj. |              |                              |              |       |   |   |
| <b>STEEL</b>           |               |        |       |       |                             |                                     |              |                              |              |       |   |   |
| 12                     | 2.400         | 1.125  | 1.78  | .88   | A                           | YK12                                | 10010        | —                            | —            |       |   |   |
| 14                     | 2.800         |        | 2.18  |       |                             | YK14                                | 10012        | —                            | —            |       |   |   |
| 15                     | 3.000         |        | 2.38  |       |                             | YK15                                | 10014        | —                            | —            |       |   |   |
| 16                     | 3.200         |        | 2.58  |       |                             | YK16                                | 10016        | —                            | —            |       |   |   |
| 18                     | 3.600         |        | 2.98  |       |                             | YK18                                | 10018        | —                            | —            |       |   |   |
| 20                     | 4.000         |        | 3.38  |       |                             | YK20                                | 10020        | —                            | —            |       |   |   |
| <b>CAST IRON</b>       |               |        |       |       |                             |                                     |              |                              |              |       |   |   |
| 24                     | 4.800         |        | 1.125 |       |                             | 3.75                                | 1.25         | A                            | YK24         | 10738 | — | — |
| 25                     | 5.000         | YK25B  |       | 10740 | —                           |                                     |              |                              | —            |       |   |   |
| 28                     | 5.600         | YK28   |       | 10742 | —                           |                                     |              |                              | —            |       |   |   |
| 30                     | 6.000         | YK30B  |       | 10744 | —                           |                                     |              |                              | —            |       |   |   |
| 35                     | 7.000         | 1.250  | 3.75  | 1.25  | B                           | YK35B                               | 10746        | —                            | —            |       |   |   |
| 40                     | 8.000         |        |       |       |                             | YK40B                               | 10748        | —                            | —            |       |   |   |
| 45                     | 9.000         |        | 4.00  | 1.25  | C                           | YK45B                               | 10750        | —                            | —            |       |   |   |
| 50                     | 10.000        |        |       |       |                             | YK50B                               | 10752        | —                            | —            |       |   |   |
| 60                     | 12.000        | 1.375  | 4.38  | 1.50  | D                           | YK60B                               | 10754        | —                            | —            |       |   |   |
| 70                     | 14.000        |        |       |       |                             | YK70B                               | 10756        | —                            | —            |       |   |   |
| 80                     | 16.000        |        |       |       |                             | YK80B                               | 10758        | —                            | —            |       |   |   |
| 100                    | 20.000        |        |       |       |                             | 1.500                               | 4.75         | 1.75                         | YK100B       | 10762 | — | — |
| 110                    | 22.000        | YK110B | 10764 | —     | —                           |                                     |              |                              |              |       |   |   |
| 120                    | 24.000        | YK120B | 10766 | —     | —                           |                                     |              |                              |              |       |   |   |
| 140                    | 28.000        | 1.625  | 5.00  | 2.00  |                             | YK140B                              | 10768        | —                            | —            |       |   |   |
| 160                    | 32.000        |        |       |       |                             | YK160B                              | 10770        | —                            | —            |       |   |   |
| 180                    | 36.000        |        |       |       |                             | YK180B                              | 10772        | —                            | —            |       |   |   |
|                        |               |        |       |       |                             |                                     |              |                              |              |       |   |   |

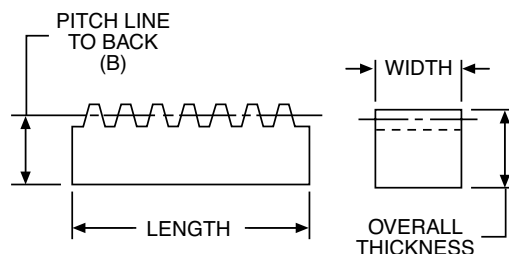
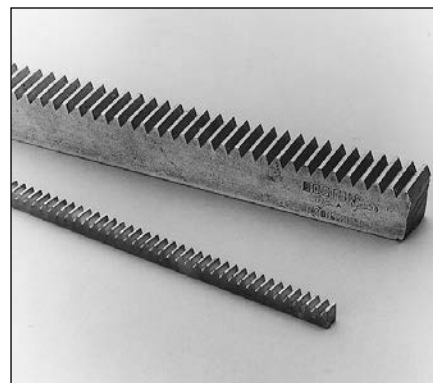
†All gears have standard keyway at 90° to setscrew. See Page 323.

## 20 through 4 Diametral Pitch (Steel)

20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

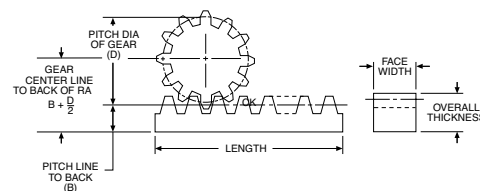
| Overall Thickness      | Pitch Line to Back (B) | Nominal Length (Feet) | Mating Spur Gear Page No.  | Steel              |                |
|------------------------|------------------------|-----------------------|----------------------------|--------------------|----------------|
|                        |                        |                       |                            | Catalog Number     | Item Code      |
| <b>20</b>              |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - .500"</b>  |                    |                |
| .500                   | .450                   | 4<br>6                | 42                         | L2020-4<br>L2020-6 | 12758<br>12760 |
| <b>16</b>              |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - .750"</b>  |                    |                |
| .750                   | .688                   | 4<br>6                | 43                         | L2016-4<br>L2016-6 | 12762<br>12764 |
| <b>12</b>              |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - 1.000"</b> |                    |                |
| 1.000                  | .917                   | 4<br>6                | 43 – 44                    | L2012-4<br>L2012-6 | 37320<br>37322 |
| <b>10</b>              |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - 1.250"</b> |                    |                |
| 1.250                  | 1.150                  | 4<br>6                | 44                         | L2010-4<br>L2010-6 | 37316<br>37318 |
| <b>8</b>               |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - 1.500"</b> |                    |                |
| 1.500                  | 1.375                  | 4<br>6                | 45                         | L208-4<br>L208-6   | 37312<br>37314 |
| <b>6</b>               |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - 2.000"</b> |                    |                |
| 1.500                  | 1.333                  | 4<br>6                | 45 – 46                    | L206-4<br>L206-6   | 37308<br>37310 |
| <b>5</b>               |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - 2.500"</b> |                    |                |
| 1.500                  | 1.300                  | 4<br>6                | 46                         | L205-4<br>L205-6   | 37304<br>37306 |
| <b>4</b>               |                        |                       |                            |                    |                |
| <b>DIAMETRAL PITCH</b> |                        |                       | <b>FACE WIDTH - 3.500"</b> |                    |                |
| 2.000                  | 1.750                  | 4<br>6                | –                          | L204-4<br>L204-6   | 37300<br>37302 |



### STANDARD TOLERANCES

| DIMENSION  | TOLERANCE              |
|------------|------------------------|
| LENGTH†    | All +1.000 - .000      |
| FACE WIDTH | 1/2 - 3/4 +.000 - .002 |
|            | 1 - 1-1/2 +.000 - .003 |
|            | 2 - 2-1/2 +.000 - .004 |
|            | 3-1/2 +.000 - .006     |

†Ends not machined. Tolerance allows for cutting and matching.

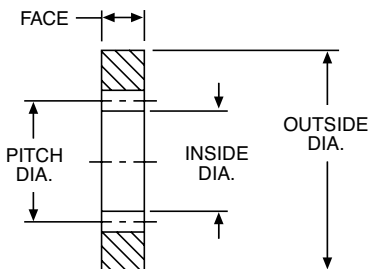


### REFERENCE PAGES

Alterations — 322  
Lubrication — 322  
Materials — 323

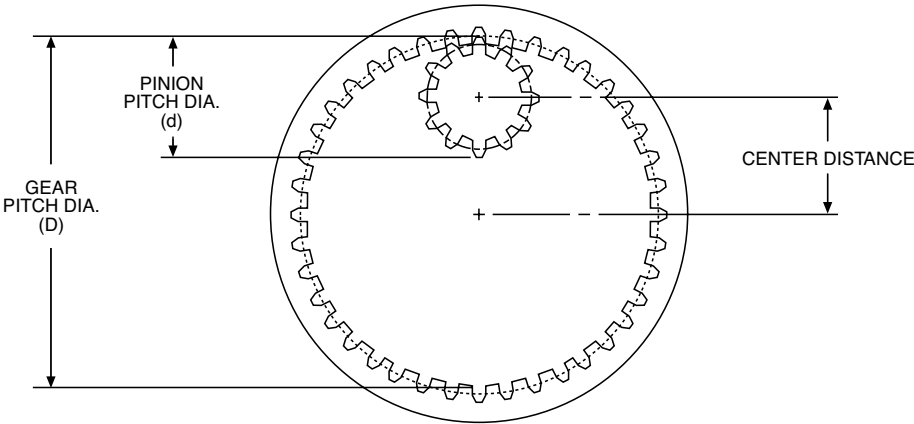
# Internal Gears

## 64 through 24 Diametral Pitch (Brass) 20° Pressure Angle (will not operate with 14-1/2° spurs)



### STANDARD TOLERANCES

| DIMENSION |          |     | TOLERANCE    |
|-----------|----------|-----|--------------|
| I.D.      | 64 Pitch | All | +.004 – .000 |
|           | 48 Pitch | All | +.005 – .000 |
|           | 32 Pitch | All | +.006 – .000 |
|           | 24 Pitch | All | +.008 – .000 |
| O.D.      | All      |     | +.001 + .003 |



$$\text{CENTER DISTANCE} = \frac{D - d}{2}$$

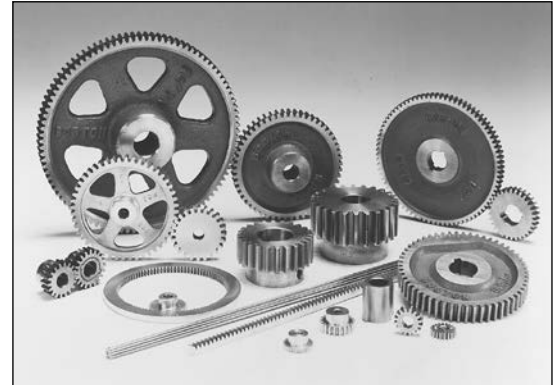
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth              | Pitch Dia. | O.D.  | I.D.  | Catalog Number            | Item Code |
|---------------------------|------------|-------|-------|---------------------------|-----------|
| <b>64 DIAMETRAL PITCH</b> |            |       |       | <b>FACE WIDTH - .125"</b> |           |
| 64                        | 1.000      | 1.500 | .980  | YI6464                    | 12030     |
| 96                        | 1.500      | 2.000 | 1.480 | YI6496                    | 12032     |
| 128                       | 2.000      | 2.750 | 1.980 | YI64128                   | 12034     |
| 192                       | 3.000      | 3.750 | 2.980 | YI64192                   | 12036     |
| <b>48 DIAMETRAL PITCH</b> |            |       |       | <b>FACE WIDTH - .125"</b> |           |
| 48                        | 1.000      | 1.500 | .974  | YI4848                    | 12020     |
| 72                        | 1.500      | 2.000 | 1.474 | YI4872                    | 12022     |
| 96                        | 2.000      | 2.750 | 1.974 | YI4896                    | 12024     |
| 144                       | 3.000      | 3.750 | 2.974 | YI48144                   | 12026     |
| 192                       | 4.000      | 4.750 | 3.974 | YI48192                   | 12028     |
| <b>32 DIAMETRAL PITCH</b> |            |       |       | <b>FACE WIDTH - .188"</b> |           |
| 48                        | 1.500      | 2.000 | 1.461 | YI3248                    | 12010     |
| 64                        | 2.000      | 2.750 | 1.961 | YI3264                    | 12012     |
| 96                        | 3.000      | 3.750 | 2.961 | YI3296                    | 12014     |
| 128                       | 4.000      | 4.750 | 3.961 | YI32128                   | 12016     |
| 192                       | 6.000      | 6.750 | 5.961 | YI32192                   | 12018     |
| <b>24 DIAMETRAL PITCH</b> |            |       |       | <b>FACE WIDTH - .250"</b> |           |
| 36                        | 1.500      | 2.250 | 1.450 | YI2436                    | 12000     |
| 48                        | 2.000      | 2.750 | 1.950 | YI2448                    | 12002     |
| 72                        | 3.000      | 3.750 | 2.950 | YI2472                    | 12004     |
| 96                        | 4.000      | 4.750 | 3.950 | YI2496                    | 12006     |
| 144                       | 6.000      | 6.750 | 5.950 | YI24144                   | 12008     |

NOTE: The difference in tooth numbers between Gear and Pinion should not be less than 12.

Boston spur gears are designed to transmit motion or power between parallel shafts. Configurations include spur, rack, pinion wire, stem pinions and internal gears; most with a selection of bores, keyways and setscrews. Styles include plain, web, web with lightening holes or spoked. Change gears have consecutive numbers of teeth for reduction uses.

Boston fine-pitch spur gears are available in Delrin and Brass. Configurations include spur, rack, pinion wire and internal gears; most with a selection of bores, keyways, and setscrews. Styles include plain, web with lightening holes or spoked.



A

## Selection Procedure

1. Determine service factor.
  - a. Using application Classification Chart, pages 331-332, determine service factor or
  - b. With knowledge of operating conditions and load classification, select service factor from Table 1 below.

### Design HP = Application Load X Service Factor (Table 1)

3. Select spur gear pinion with horsepower capacity equal to (or greater than) design horsepower determined in Step 2. 14½° Pressure Angle Spur Gears—Page 50 to Page 57. 20° Pressure Angle Spur Gears— Page 58 to Page 62.
4. Select a driven spur gear with a catalog rating equal to or greater than the horsepower determined in Step 2. All ratings are predicated on gears properly lubricated and maintained.

## Selection Hints

- A. Select pinion having pitch diameter at least twice the shaft diameter.
- B. Pinion number of teeth should be greater than 16 for 14½°PA and 13 for 20°PA to avoid excessive under-cutting.
- C. For tooth numbers or RPMs not on Chart, interpolation of horsepower is adequate.
- D. Pitchline velocities above 1000 FPM are not recommended for metallic spur gears. The Selection Chart reflects this in the lack of ratings for larger numbers of teeth at higher RPM's. Ratings to the right of heavy line are not recommended, as suggested maximum velocity is exceeded, and should be used for interpolation purposes only.

TABLE 1

| Service Factor | Operating Conditions                                                                               |
|----------------|----------------------------------------------------------------------------------------------------|
| .8             | Uniform — not more than 15 minutes in 2 hours.                                                     |
| 1.0            | Moderate Shock — not more than 15 minutes in 2 hours.<br>Uniform — not more than 10 hours per day. |
| 1.25           | Moderate Shock — not more than 10 hours per day.<br>Uniform — more than 10 hours per day.          |
| 1.50           | Heavy Shock — not more than 15 minutes in 2 hours.<br>Moderate Shock — more than 10 hours per day. |
| 1.75           | Heavy Shock — not more than 10 hours per day.                                                      |
| 2.0            | Heavy Shock — more than 10 hours per day.                                                          |

Heavy shock loads and/or severe wear conditions may require the use of higher service factors. Consultation with factory is recommended in these applications.

# Spur Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 32 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

3/16" FACE

REFERENCE PAGE 19.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 16           | .003   | 7.4    | .01    | 7.3    | .01     | 7.3    | .02     | 7.1    | .03     | 7.0    | .06     | 6.6    | .09     | 6.3    | .11      | 5.9    | .15      | 5.4    | .24      | 4.2    |
| 18           | .003   | 8.9    | .01    | 8.8    | .01     | 8.7    | .03     | 8.5    | .04     | 8.3    | .07     | 7.8    | .10     | 7.3    | .13      | 6.9    | .18      | 6.1    | .27      | 4.7    |
| 20           | .004   | 10.2   | .01    | 10.2   | .02     | 10.1   | .03     | 9.8    | .05     | 9.6    | .08     | 8.9    | .12     | 8.3    | .15      | 7.8    | .20      | 6.9    | .30      | 5.2    |
| 22           | .005   | 11.7   | .01    | 11.6   | .02     | 11.4   | .04     | 11.1   | .05     | 10.8   | .09     | 9.9    | .13     | 9.3    | .16      | 8.7    | .22      | 7.6    | .32      | 5.7    |
| 24           | .01    | 13.0   | .01    | 12.9   | .02     | 12.7   | .04     | 12.3   | .06     | 11.9   | .10     | 10.9   | .14     | 10.1   | .18      | 9.4    | .24      | 8.3    | .34      | 6.0    |
| 26           | .01    | 14.5   | .01    | 14.4   | .02     | 14.1   | .04     | 13.7   | .06     | 13.3   | .12     | 12.0   | .16     | 11.1   | .20      | 10.2   | .26      | 8.9    | .37      | 6.4    |
| 28           | .01    | 15.9   | .01    | 15.1   | .02     | 15.5   | .05     | 14.9   | .07     | 14.5   | .12     | 13.1   | .17     | 12.0   | .21      | 11.0   | .27      | 9.5    | .39      | 6.8    |
| 30           | .01    | 17.3   | .01    | 17.0   | .03     | 16.7   | .05     | 16.1   | .07     | 15.5   | .13     | 13.9   | .18     | 12.7   | .22      | 11.7   | .29      | 10.0   | .40      | 7.0    |
| 32           | .01    | 18.9   | .01    | 18.7   | .03     | 18.3   | .06     | 17.6   | .08     | 16.9   | .14     | 15.2   | .20     | 13.7   | .24      | 12.6   | .31      | 10.7   | .43      | 7.4    |
| 40           | .01    | 24.5   | .02    | 24.2   | .04     | 23.6   | .07     | 22.4   | .10     | 21.3   | .18     | 18.7   | .24     | 16.7   | .29      | 15     | .36      | 12.5   | .48      | 8.4    |
| 48           | .01    | 29.9   | .02    | 29.4   | .05     | 28.5   | .09     | 26.8   | .12     | 25.4   | .21     | 21.8   | .27     | 19.1   | .32      | 17     | .40      | 13.9   | .52      | 9.0    |
| 56           | .01    | 35.7   | .03    | 35     | .05     | 33.8   | .10     | 31.5   | .14     | 29.6   | .24     | 24.9   | .31     | 21.6   | .36      | 18.9   | .44      | 15.3   | .55      | 9.7    |
| 64           | .02    | 41.4   | .03    | 40.6   | .06     | 38.9   | .11     | 36     | .16     | 33.5   | .26     | 27.8   | .34     | 23.7   | .39      | 20.7   | .47      | 16.5   | .58      | 10.2   |
| 80           | .02    | 52.4   | .04    | 51     | .08     | 48.5   | .14     | 44.2   | .19     | 40.6   | .31     | 32.5   | .39     | 27.2   | .44      | 23.3   | .52      | 18.2   |          |        |
| 96           | .02    | 62.6   | .05    | 60.6   | .09     | 57.1   | .16     | 51.2   | .22     | 46.4   | .34     | 36.2   | .42     | 29.6   | .48      | 25.1   | .55      | 19.2   |          |        |
| 128          | .03    | 83.9   | .06    | 80.6   | .12     | 74.6   | .21     | 64.9   | .27     | 57.5   | .41     | 42.7   | .49     | 34     | .54      | 28.3   |          |        |          |        |
| 160          | .04    | 106    | .08    | 101    | .15     | 92.1   | .25     | 78.2   | .32     | 67.8   | .46     | 48.6   | .54     | 37.9   |          |        |          |        |          |        |
| 192          | .05    | 126    | .09    | 119    | .17     | 107    | .28     | 88.4   | .36     | 75.4   | .50     | 52.4   | .57     | 40.1   |          |        |          |        |          |        |

### 24 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1/4" FACE

REFERENCE PAGE 20.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12           | .004   | 10.9   | .01    | 10.8   | .02     | 10.7   | .03     | 10.5   | .05     | 10.3   | .09     | 9.7    | .13     | 9.2    | .17      | 8.7    | .22      | 7.9    | .35      | 6.1    |
| 14           | .01    | 14.2   | .01    | 14.1   | .02     | 13.9   | .04     | 13.6   | .06     | 13.3   | .12     | 12.4   | .17     | 11.6   | .21      | 10.9   | .28      | 9.8    | .43      | 7.5    |
| 15           | .01    | 15.8   | .01    | 15.7   | .02     | 15.5   | .05     | 15.1   | .07     | 14.7   | .13     | 13.7   | .18     | 12.8   | .23      | 12     | .31      | 10.7   | .46      | 8.0    |
| 16           | .01    | 17.5   | .01    | 17.4   | .03     | 17.2   | .05     | 16.7   | .08     | 16.2   | .14     | 15     | .20     | 14     | .25      | 13.1   | .33      | 11.6   | .49      | 8.6    |
| 18           | .01    | 20.9   | .02    | 20.7   | .03     | 20.4   | .06     | 19.8   | .09     | 19.2   | .17     | 17.6   | .23     | 16.3   | .29      | 15.1   | .38      | 13.3   | .55      | 9.7    |
| 20           | .01    | 24.3   | .02    | 24.1   | .04     | 23.7   | .07     | 22.9   | .11     | 22.1   | .19     | 20.1   | .26     | 18.5   | .33      | 17.1   | .42      | 14.8   | .61      | 10.6   |
| 21           | .01    | 26.1   | .02    | 25.8   | .04     | 25.4   | .08     | 24.5   | .11     | 23.6   | .20     | 21.4   | .28     | 19.6   | .34      | 18.1   | .45      | 15.6   | .63      | 11.0   |
| 24           | .01    | 30.7   | .02    | 30.4   | .05     | 29.7   | .09     | 28.5   | .13     | 27.5   | .23     | 24.6   | .32     | 22.3   | .39      | 20.4   | .50      | 17.4   | .69      | 12.0   |
| 30           | .02    | 40.7   | .03    | 40.2   | .06     | 39.2   | .12     | 37.2   | .17     | 35.5   | .30     | 31.1   | .40     | 27.7   | .48      | 24.9   | .60      | 20.8   | .80      | 13.9   |
| 36           | .02    | 51.2   | .04    | 50.4   | .08     | 48.8   | .15     | 46     | .21     | 43.5   | .36     | 37.3   | .47     | 32.7   | .55      | 29.1   | .68      | 23.9   | .89      | 15.5   |
| 42           | .02    | 60.7   | .05    | 59.6   | .09     | 59.5   | .17     | 53.6   | .24     | 50.3   | .40     | 42.4   | .52     | 36.6   | .61      | 32.3   | .74      | 26     | .94      | 16.5   |
| 48           | .03    | 70.4   | .05    | 68.9   | .11     | 66.2   | .19     | 61.3   | .27     | 57     | .45     | 47.2   | .58     | 40.3   | .67      | 35.1   | .80      | 28     | .99      | 17.4   |
| 60           | .04    | 90     | .07    | 87.7   | .13     | 83.3   | .24     | 75.9   | .33     | 69.6   | .53     | 55.9   | .67     | 46.6   | .76      | 40     | .89      | 31.2   |          |        |
| 72           | .04    | 109    | .08    | 106    | .16     | 99.8   | .28     | 89.5   | .39     | 81     | .60     | 63.2   | .74     | 51.8   | .84      | 43.9   | .96      | 33.6   |          |        |
| 96           | .06    | 147    | .11    | 141    | .21     | 130    | .36     | 113    | .48     | 100    | .71     | 74.7   | .85     | 59.5   | .94      | 49.5   |          |        |          |        |
| 120          | .07    | 185    | .14    | 175    | .25     | 159    | .43     | 135    | .56     | 118    | .80     | 84.3   | .94     | 65.7   | 1.07     | 56.4   |          |        |          |        |
| 144          | .09    | 219    | .16    | 207    | .29     | 185    | .49     | 153    | .62     | 131    | .86     | 90.8   | .99     | 69.6   |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\* Torque Ratings (Lb. Ins.).

Ratings for brass gears are approximately 50% of steel ratings with same face width.

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 20 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

3/8" FACE

REFERENCE PAGE 20.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11           | .01    | 21.6   | .02    | 21.4   | .03     | 21.2   | .07     | 20.7   | .10     | 20.2   | .18     | 18.9   | .25     | 17.8   | .32      | 16.8   | .43      | 15.1   | .66      | 11.6   |
| 12           | .01    | 23.5   | .02    | 23.4   | .04     | 23     | .07     | 22.5   | .10     | 21.9   | .19     | 20.5   | .27     | 19.2   | .34      | 18     | .46      | 16.1   | .70      | 12.2   |
| 13           | .01    | 26.9   | .02    | 26.8   | .04     | 26.4   | .08     | 25.7   | .12     | 25     | .22     | 23.2   | .31     | 21.6   | .39      | 20.3   | .51      | 17.9   | .77      | 13.4   |
| 14           | .01    | 30.7   | .02    | 30.5   | .05     | 30     | .09     | 29.1   | .13     | 28.3   | .25     | 26.1   | .35     | 24.2   | .43      | 22.6   | .57      | 20     | .84      | 14.7   |
| 15           | .01    | 34.2   | .03    | 33.9   | .05     | 33.4   | .10     | 32.3   | .15     | 31.4   | .27     | 28.8   | .38     | 26.6   | .47      | 24.7   | .62      | 21.7   | .90      | 15.8   |
| 16           | .02    | 37.8   | .03    | 37.5   | .06     | 36.8   | .11     | 35.7   | .16     | 34.5   | .30     | 31.6   | .41     | 29     | .51      | 26.9   | .67      | 23.4   | .97      | 16.9   |
| 18           | .02    | 45.1   | .04    | 44.7   | .07     | 43.8   | .13     | 42.3   | .19     | 40.8   | .35     | 36.9   | .48     | 33.7   | .59      | 31     | .76      | 26.7   | 1.08     | 18.9   |
| 20           | .02    | 52.4   | .04    | 51.9   | .08     | 50.8   | .15     | 48.7   | .22     | 46.9   | .40     | 42     | .54     | 38     | .66      | 34.8   | .85      | 29.7   | 1.18     | 20.6   |
| 22           | .02    | 59.5   | .05    | 58.8   | .09     | 57.5   | .17     | 54.9   | .25     | 52.7   | .45     | 46.8   | .60     | 42     | .73      | 38.2   | .92      | 32.3   | 1.26     | 22.1   |
| 24           | .03    | 66.3   | .05    | 65.4   | .10     | 63.8   | .19     | 60.8   | .28     | 58     | .49     | 51.1   | .65     | 45.6   | .78      | 41.2   | .99      | 34.6   | 1.33     | 23.3   |
| 25           | .03    | 70.5   | .06    | 69.5   | .11     | 67.7   | .20     | 64.4   | .29     | 61.4   | .51     | 53.8   | .68     | 47.9   | .82      | 43.1   | 1.03     | 36     | 1.38     | 24.0   |
| 28           | .03    | 81.2   | .06    | 80     | .12     | 77.7   | .23     | 73.4   | .33     | 69.7   | .57     | 60.3   | .76     | 53.2   | .91      | 47.5   | 1.12     | 39.2   | 1.47     | 25.7   |
| 30           | .03    | 87.8   | .07    | 86.4   | .13     | 83.7   | .25     | 78.9   | .36     | 74.6   | .61     | 64     | .80     | 56.1   | .95      | 50     | 1.17     | 40.9   | 1.52     | 26.6   |
| 32           | .04    | 96.3   | .08    | 94.7   | .15     | 91.6   | .27     | 86     | .39     | 81     | .66     | 69.1   | .86     | 60.2   | 1.02     | 53.3   | 1.24     | 43.4   | 1.59     | 27.8   |
| 35           | .04    | 107    | .08    | 105    | .16     | 101    | .30     | 94.7   | .42     | 88.9   | .71     | 74.9   | .92     | 64.7   | 1.09     | 57     | 1.31     | 46     | 1.66     | 29.1   |
| 36           | .04    | 110    | .09    | 108    | .17     | 104    | .31     | 97.1   | .43     | 91     | .73     | 76.4   | .94     | 65.8   | 1.10     | 57.8   | 1.33     | 46.5   | 1.68     | 29.3   |
| 40           | .05    | 124    | .10    | 122    | .19     | 117    | .34     | 108    | .48     | 101    | .79     | 83.5   | 1.02    | 71.2   | 1.18     | 62.1   | 1.41     | 49.4   | 1.75     | 30.7   |
| 48           | .06    | 151    | .12    | 148    | .22     | 141    | .41     | 128    | .56     | 118    | .91     | 95.4   | 1.14    | 80     | 1.31     | 69.8   | 1.54     | 53.8   |          |        |
| 50           | .06    | 158    | .12    | 154    | .23     | 146    | .42     | 133    | .58     | 122    | .93     | 98     | 1.17    | 81.7   | 1.34     | 70.1   | 1.56     | 54.6   |          |        |
| 60           | .08    | 193    | .15    | 187    | .28     | 176    | .50     | 158    | .68     | 143    | 1.06    | 112    | 1.31    | 91.6   | 1.48     | 77.6   | 1.70     | 59.5   |          |        |
| 64           | .08    | 209    | .16    | 203    | .30     | 190    | .54     | 169    | .73     | 153    | 1.12    | 118    | 1.37    | 96     | 1.54     | 80.9   |          |        |          |        |

### 20 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

3/8" FACE

REFERENCE PAGE 21.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 70           | .05    | 137    | .10    | 132    | .20     | 123    | .35     | 109    | .46     | 97.5   | .71     | 74.2   | .86     | 60     | .96      | 50.2   |          |        |          |        |
| 72           | .06    | 140    | .11    | 136    | .20     | 126    | .35     | 111    | .47     | 99.4   | .72     | 75.3   | .87     | 60.6   | .97      | 50.7   |          |        |          |        |
| 80           | .06    | 158    | .12    | 152    | .22     | 141    | .39     | 123    | .52     | 108    | .77     | 80.7   | .92     | 64.3   | 1.02     | 53.4   |          |        |          |        |
| 84           | .07    | 166    | .13    | 159    | .23     | 147    | .40     | 127    | .53     | 112    | .79     | 82.7   | .94     | 65.5   | 1.03     | 54.3   |          |        |          |        |
| 90           | .07    | 177    | .13    | 169    | .25     | 155    | .42     | 133    | .56     | 117    | .81     | 85.4   | .96     | 67.2   |          |        |          |        |          |        |
| 96           | .07    | 189    | .14    | 180    | .26     | 164    | .44     | 140    | .58     | 122    | .84     | 87.9   | .98     | 68.8   |          |        |          |        |          |        |
| 100          | .08    | 196    | .15    | 186    | .27     | 170    | .46     | 144    | .59     | 125    | .85     | 89.5   | 1.00    | 69.7   |          |        |          |        |          |        |
| 112          | .09    | 222    | .17    | 210    | .30     | 189    | .50     | 158    | .65     | 136    | .91     | 95.5   | 1.05    | 73.6   |          |        |          |        |          |        |
| 120          | .09    | 237    | .18    | 223    | .32     | 200    | .53     | 166    | .67     | 141    | .93     | 98.1   | 1.07    | 75.1   |          |        |          |        |          |        |
| 140          | .11    | 273    | .20    | 255    | .36     | 225    | .58     | 183    | .73     | 153    | .99     | 104    |         |        |          |        |          |        |          |        |
| 144          | .11    | 281    | .21    | 262    | .37     | 230    | .59     | 186    | .74     | 156    | 1.00    | 105    |         |        |          |        |          |        |          |        |
| 160          | .13    | 317    | .23    | 294    | .41     | 256    | .64     | 203    | .80     | 168    | 1.06    | 111    |         |        |          |        |          |        |          |        |
| 180          | .14    | 353    | .26    | 324    | .44     | 278    | .69     | 217    | .85     | 178    | 1.10    | 115    |         |        |          |        |          |        |          |        |
| 200          | .15    | 388    | .28    | 354    | .48     | 300    | .73     | 230    | .89     | 187    | 1.13    | 119    |         |        |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

# Spur Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 16 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1/2" FACE

REFERENCE PAGE 21 & 22.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11        | .02    | 44.9   | .04    | 44.5   | .07     | 43.9   | .14     | 42.7   | .20     | 41.5   | .36     | 38.3   | .51     | 35.6   | .63      | 33.2   | .84      | 29.4   | 1.24     | 21.7   |
| 12        | .02    | 48.9   | .04    | 48.5   | .08     | 47.8   | .15     | 46.3   | .21     | 44.9   | .39     | 41.2   | .54     | 38.1   | .67      | 35.4   | .89      | 31     | 1.29     | 22.6   |
| 13        | .02    | 56.1   | .04    | 55.6   | .09     | 54.7   | .17     | 52.9   | .24     | 51.2   | .44     | 46.7   | .61     | 42.9   | .76      | 39.7   | .99      | 34.6   | 1.42     | 24.9   |
| 14        | .03    | 63.8   | .05    | 63.2   | .10     | 62     | .19     | 59.8   | .28     | 57.8   | .50     | 52.4   | .68     | 47.9   | .84      | 44.2   | 1.09     | 38.2   | 1.55     | 27.1   |
| 15        | .03    | 71.1   | .06    | 70.3   | .11     | 68.9   | .21     | 66.4   | .30     | 63.9   | .55     | 57.6   | .75     | 52.5   | .92      | 48.1   | 1.18     | 41.3   | 1.66     | 29.0   |
| 16        | .03    | 78.7   | .06    | 77.8   | .12     | 76.2   | .23     | 73.1   | .33     | 70.3   | .60     | 63     | .82     | 57.1   | .99      | 52.2   | 1.27     | 44.5   | 1.77     | 30.9   |
| 18        | .04    | 93.8   | .07    | 99.6   | .14     | 90.5   | .27     | 86.5   | .39     | 82.8   | .70     | 73.4   | .94     | 65.9   | 1.14     | 59.8   | 1.44     | 50.4   | 1.96     | 34.3   |
| 20        | .04    | 109    | .09    | 107    | .17     | 105    | .32     | 99     | .45     | 94.9   | .79     | 83.2   | 1.06    | 74.1   | 1.27     | 66.7   | 1.59     | 55.7   | 2.13     | 37.2   |
| 22        | .05    | 124    | .10    | 122    | .19     | 118    | .36     | 112    | .51     | 106    | .88     | 92.3   | 1.16    | 81.5   | 1.39     | 72.9   | 1.72     | 60.3   | 2.27     | 39.7   |
| 24        | .05    | 138    | .11    | 135    | .21     | 131    | .39     | 124    | .56     | 117    | .96     | 100    | 1.26    | 88     | 1.49     | 78.3   | 1.83     | 64.2   | 2.38     | 41.7   |
| 26        | .06    | 154    | .12    | 151    | .23     | 146    | .43     | 137    | .61     | 129    | 1.04    | 110    | 1.36    | 95.4   | 1.61     | 84.4   | 1.96     | 68.6   | 2.51     | 43.9   |
| 28        | .07    | 168    | .13    | 165    | .25     | 160    | .47     | 149    | .66     | 140    | 1.12    | 118    | 1.45    | 102    | 1.71     | 89.6   | 2.06     | 72.3   | 2.62     | 45.8   |
| 30        | .07    | 182    | .14    | 179    | .27     | 172    | .51     | 160    | .71     | 149    | 1.19    | 125    | 1.53    | 107    | 1.79     | 93.8   | 2.15     | 75.1   | 2.69     | 47.1   |
| 32        | .08    | 200    | .16    | 196    | .30     | 188    | .55     | 174    | .77     | 162    | 1.28    | 134    | 1.63    | 114    | 1.90     | 99.7   | 2.27     | 79.4   | 2.81     | 49.3   |
| 36        | .09    | 228    | .18    | 223    | .34     | 213    | .62     | 196    | .86     | 181    | 1.40    | 147    | 1.77    | 124    | 2.05     | 107    | 2.42     | 84.6   |          |        |
| 40        | .10    | 258    | .20    | 251    | .38     | 239    | .69     | 217    | .95     | 200    | 1.52    | 160    | 1.91    | 134    | 2.18     | 115    | 2.55     | 89.4   |          |        |
| 48        | .12    | 314    | .24    | 304    | .45     | 286    | .81     | 257    | 1.11    | 232    | 1.73    | 181    | 2.12    | 149    | 2.40     | 126    | 2.76     | 96.5   |          |        |

### 16 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1/2" FACE

REFERENCE PAGE 22.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 54        | .09    | 217    | .17    | 209    | .31     | 196    | .55     | 173    | .74     | 156    | 1.13    | 119    | 1.38    | 96.6   | 1.54     | 81.1   |          |        |          |        |
| 56        | .09    | 224    | .17    | 216    | .32     | 202    | .57     | 178    | .76     | 160    | 1.16    | 121    | 1.40    | 98.1   | 1.57     | 82.2   |          |        |          |        |
| 60        | .10    | 239    | .18    | 231    | .34     | 214    | .60     | 188    | .80     | 167    | 1.20    | 126    | 1.44    | 100    | 1.60     | 84.2   |          |        |          |        |
| 64        | .10    | 260    | .20    | 249    | .37     | 231    | .64     | 201    | .85     | 178    | 1.26    | 132    | 1.50    | 105    | 1.67     | 87.5   |          |        |          |        |
| 72        | .12    | 290    | .22    | 277    | .40     | 255    | .69     | 219    | .91     | 192    | 1.33    | 140    | 1.57    | 110    |          |        |          |        |          |        |
| 80        | .13    | 327    | .25    | 311    | .45     | 283    | .76     | 240    | .99     | 208    | 1.42    | 149    | 1.66    | 116    |          |        |          |        |          |        |
| 84        | .14    | 342    | .26    | 325    | .47     | 294    | .79     | 248    | 1.02    | 214    | 1.45    | 152    | 1.69    | 118    |          |        |          |        |          |        |
| 96        | .15    | 388    | .29    | 365    | .52     | 327    | .86     | 271    | 1.10    | 231    | 1.53    | 161    | 1.76    | 123    |          |        |          |        |          |        |
| 112       | .18    | 455    | .34    | 425    | .60     | 376    | .97     | 304    | 1.22    | 256    | 1.65    | 173    |         |        |          |        |          |        |          |        |
| 120       | .19    | 486    | .36    | 452    | .63     | 396    | 1.01    | 318    | 1.26    | 265    | 1.69    | 177    |         |        |          |        |          |        |          |        |
| 128       | .20    | 516    | .38    | 477    | .66     | 415    | 1.05    | 330    | 1.30    | 274    | 1.72    | 181    |         |        |          |        |          |        |          |        |
| 144       | .23    | 574    | .42    | 527    | .72     | 453    | 1.12    | 353    | 1.38    | 289    | 1.79    | 188    |         |        |          |        |          |        |          |        |
| 160       | .26    | 648    | .47    | 590    | .79     | 500    | 1.22    | 384    | 1.48    | 311    | 1.89    | 198    |         |        |          |        |          |        |          |        |
| 192       | .307   | 762    | .54    | 683    | .90     | 566    | 1.34    | 421    | 1.60    | 335    |         |        |         |        |          |        |          |        |          |        |

### 16 DIAMETRAL PITCH NON-METALLIC

14½° PRESSURE ANGLE

1/2" FACE

REFERENCE PAGE 22.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 16        |        |        |        |        |         |        | .06     | 19     | .09     | 19     | .15     | 16     | .20     | 14     | .25      | 13     | .32      | 11     | .56      | 9      |
| 20        |        |        |        |        |         |        | .09     | 28     | .12     | 30     | .20     | 21     | .26     | 18     | .32      | 17     | .42      | 15     | .69      | 12     |
| 24        |        |        |        |        |         |        | .11     | 34     | .15     | 31     | .24     | 25     | .31     | 22     | .38      | 20     | .50      | 17     | .82      | 14     |
| 32        |        |        |        |        |         |        | .14     | 44     | .19     | 40     | .31     | 32     | .40     | 28     | .49      | 26     | .65      | 23     | 1.12     | 20     |
| 40        |        |        |        |        |         |        | .18     | 57     | .24     | 50     | .38     | 40     | .49     | 34     | .62      | 32     | .82      | 29     | 1.41     | 25     |
| 48        |        |        |        |        |         |        | .21     | 63     | .28     | 58     | .44     | 46     | .60     | 40     | .72      | 37     | .96      | 33     | 1.65     | 29     |
| 64        |        |        |        |        |         |        | .26     | 82     | .34     | 71     | .54     | 57     | .72     | 50     | .88      | 46     | 1.20     | 42     |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.

They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

\*Torque Ratings (Lb. Ins.).

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 12 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

¾" FACE

REFERENCE PAGE 22.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11        | .05    | 119    | .09    | 118    | .18     | 116    | .35     | 112    | .51     | 108    | .93     | 97     | 1.27    | 88.6   | 1.55     | 81.5   | 2.00     | 70     | 2.82     | 49.4   |
| 12        | .05    | 130    | .10    | 129    | .20     | 126    | .38     | 120    | .55     | 116    | .99     | 104    | 1.35    | 94.4   | 1.64     | 86.3   | 2.10     | 73.6   | 2.92     | 51.1   |
| 13        | .06    | 149    | .12    | 147    | .23     | 144    | .44     | 138    | .63     | 132    | 1.12    | 118    | 1.51    | 106    | 1.83     | 96.3   | 2.33     | 81.6   | 3.19     | 55.9   |
| 14        | .07    | 169    | .13    | 167    | .26     | 163    | .49     | 156    | .71     | 149    | 1.25    | 131    | 1.68    | 118    | 2.03     | 107    | 2.56     | 89.6   | 3.46     | 60.6   |
| 15        | .07    | 189    | .15    | 186    | .29     | 181    | .55     | 172    | .78     | 164    | 1.37    | 144    | 1.83    | 128    | 2.20     | 116    | 2.76     | 96.6   | 3.69     | 64.6   |
| 16        | .08    | 209    | .16    | 206    | .32     | 200    | .60     | 190    | .86     | 180    | 1.50    | 157    | 1.99    | 139    | 2.38     | 125    | 2.96     | 103    | 3.91     | 68.5   |
| 18        | .10    | 249    | .19    | 245    | .38     | 237    | .71     | 224    | 1.01    | 242    | 1.73    | 182    | 2.28    | 159    | 2.70     | 142    | 3.32     | 116    | 4.31     | 75.4   |
| 20        | .11    | 289    | .23    | 284    | .44     | 274    | .82     | 257    | 1.15    | 215    | 1.95    | 205    | 2.54    | 178    | 2.99     | 157    | 3.64     | 127    | 4.65     | 81.4   |
| 21        | .12    | 310    | .24    | 304    | .47     | 293    | .87     | 274    | 1.22    | 257    | 2.06    | 216    | 2.67    | 187    | 3.14     | 164    | 3.80     | 133    | 4.81     | 84.3   |
| 22        | .13    | 328    | .26    | 322    | .49     | 310    | .92     | 288    | 1.28    | 270    | 2.15    | 226    | 2.78    | 195    | 3.25     | 171    | 3.92     | 137    | 4.93     | 86.2   |
| 24        | .14    | 365    | .28    | 357    | .54     | 343    | 1.01    | 317    | 1.41    | 296    | 2.33    | 245    | 2.98    | 209    | 3.47     | 182    | 4.14     | 145    | 5.14     | 90.0   |
| 30        | .19    | 483    | .37    | 470    | .71     | 447    | 1.29    | 407    | 1.78    | 373    | 2.85    | 299    | 3.57    | 250    | 4.09     | 215    | 4.78     | 167    |          |        |
| 32        | .21    | 529    | .41    | 514    | .77     | 488    | 1.40    | 442    | 1.92    | 403    | 3.05    | 320    | 3.80    | 266    | 4.32     | 227    | 5.02     | 176    |          |        |
| 36        | .24    | 605    | .46    | 586    | .88     | 552    | 1.57    | 495    | 2.13    | 448    | 3.33    | 349    | 4.09    | 286    | 4.62     | 243    | 5.31     | 186    |          |        |
| 40        | .27    | 682    | .52    | 659    | .98     | 617    | 1.74    | 547    | 2.34    | 492    | 3.59    | 377    | 4.37    | 306    | 4.90     | 257    |          |        |          |        |
| 42        | .28    | 715    | .55    | 689    | 1.02    | 644    | 1.80    | 568    | 2.42    | 509    | 3.69    | 387    | 4.46    | 312    | 4.99     | 262    |          |        |          |        |

### 12 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

¾" FACE

REFERENCE PAGE 23.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 48        | .20    | 497    | .38    | 477    | .70     | 441    | 1.22    | 384    | 1.62    | 340    | 2.41    | 253    | 2.88    | 201    | 3.19     | 167    |          |        |          |        |
| 54        | .23    | 571    | .43    | 545    | .79     | 500    | 1.36    | 430    | 1.79    | 377    | 2.62    | 275    | 3.09    | 216    | 3.40     | 178    |          |        |          |        |
| 60        | .25    | 631    | .48    | 600    | .87     | 546    | 1.47    | 463    | 1.91    | 402    | 2.74    | 288    | 3.21    | 224    |          |        |          |        |          |        |
| 64        | .27    | 683    | .51    | 647    | .93     | 586    | 1.56    | 493    | 2.02    | 425    | 2.87    | 301    | 3.33    | 233    |          |        |          |        |          |        |
| 72        | .30    | 762    | .57    | 718    | 1.02    | 644    | 1.69    | 533    | 2.17    | 455    | 3.01    | 316    | 3.46    | 242    |          |        |          |        |          |        |
| 84        | .36    | 896    | .66    | 837    | 1.17    | 739    | 1.90    | 598    | 2.40    | 503    | 3.24    | 340    |         |        |          |        |          |        |          |        |
| 96        | .40    | 1014   | .74    | 938    | 1.30    | 817    | 2.06    | 649    | 2.56    | 538    | 3.39    | 356    |         |        |          |        |          |        |          |        |
| 108       | .46    | 1148   | .84    | 1054   | 1.44    | 906    | 2.24    | 706    | 2.76    | 579    | 3.58    | 376    |         |        |          |        |          |        |          |        |
| 112       | .47    | 1187   | .86    | 1087   | 1.47    | 929    | 2.29    | 720    | 2.80    | 588    | 3.62    | 379    |         |        |          |        |          |        |          |        |
| 120       | .50    | 1264   | .91    | 1150   | 1.55    | 975    | 2.37    | 748    | 2.89    | 607    | 3.69    | 387    |         |        |          |        |          |        |          |        |
| 144       | .59    | 1487   | 1.06   | 1333   | 1.75    | 1103   | 2.61    | 821    | 3.11    | 654    | 3.86    | 406    |         |        |          |        |          |        |          |        |
| 168       | .69    | 1745   | 1.22   | 1541   | 1.98    | 1248   | 2.87    | 905    | 3.38    | 710    |         |        |         |        |          |        |          |        |          |        |

### 12 DIAMETRAL PITCH NON-METALLIC

14½° PRESSURE ANGLE

¾" FACE

REFERENCE PAGE 23.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 15        |        |        |        |        |         |        | .13     | 41     | .20     | 42     | .34     | 36     | .45     | 31     | .56      | 29     | .72      | 25     | 1.15     | 20     |
| 18        |        |        |        |        |         |        | .19     | 60     | .26     | 54     | .43     | 45     | .56     | 39     | .68      | 36     | .90      | 31     | 1.44     | 25     |
| 21        |        |        |        |        |         |        | .23     | 72     | .31     | 65     | .50     | 52     | .66     | 46     | .81      | 42     | 1.06     | 37     | 1.80     | 31     |
| 24        |        |        |        |        |         |        | .27     | 85     | .36     | 76     | .58     | 60     | .76     | 53     | .92      | 48     | 1.22     | 42     | 2.07     | 36     |
| 30        |        |        |        |        |         |        | .34     | 107    | .44     | 92     | .73     | 76     | .95     | 66     | 1.14     | 60     | 1.56     | 54     | 2.64     | 46     |
| 36        |        |        |        |        |         |        | .40     | 126    | .52     | 109    | .82     | 86     | 1.13    | 79     | 1.36     | 71     | 1.83     | 64     | 3.18     | 56     |
| 48        |        |        |        |        |         |        | .51     | 161    | .66     | 138    | 1.05    | 110    | 1.39    | 97     | 1.70     | 89     | 2.33     | 81     |          |        |
| 60        |        |        |        |        |         |        | .60     | 189    | .80     | 168    | 1.29    | 135    | 1.72    | 120    | 2.13     | 112    | 2.95     | 103    |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.

They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

\*Torque Ratings (Lb. Ins.).

# Spur Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 10 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 23.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11        | .09    | 229    | .18    | 226    | .35     | 221    | .67     | 211    | .96     | 202    | 1.71    | 179    | 2.31    | 162    | 2.80     | 147    | 3.55     | 124    | 4.85     | 85     |
| 12        | .10    | 249    | .20    | 246    | .38     | 240    | .73     | 229    | 1.04    | 218    | 1.83    | 192    | 2.45    | 172    | 2.95     | 155    | 3.71     | 130    | 5.00     | 88     |
| 14        | .13    | 325    | .25    | 320    | .49     | 311    | .93     | 294    | 1.33    | 279    | 2.30    | 241    | 3.04    | 213    | 3.62     | 190    | 4.49     | 157    | 5.89     | 103    |
| 15        | .14    | 362    | .28    | 356    | .55     | 345    | 1.03    | 325    | 1.46    | 307    | 2.51    | 264    | 3.30    | 231    | 3.92     | 206    | 4.82     | 169    | 6.25     | 109    |
| 16        | .16    | 400    | .31    | 393    | .60     | 381    | 1.13    | 357    | 1.60    | 337    | 2.73    | 287    | 3.57    | 250    | 4.22     | 221    | 5.15     | 180    | 6.62     | 116    |
| 18        | .19    | 447    | .37    | 468    | .72     | 451    | 1.33    | 420    | 1.87    | 394    | 3.15    | 330    | 4.07    | 285    | 4.76     | 250    | 5.75     | 201    | 7.25     | 127    |
| 20        | .22    | 553    | .43    | 542    | .83     | 520    | 1.53    | 481    | 2.13    | 448    | 3.53    | 371    | 4.52    | 317    | 5.26     | 276    | 6.28     | 220    | 7.79     | 136    |
| 24        | .28    | 698    | .54    | 681    | 1.03    | 648    | 1.88    | 592    | 2.59    | 545    | 4.19    | 440    | 5.26    | 369    | 6.04     | 317    | 7.09     | 248    |          |        |
| 25        | .29    | 742    | .57    | 722    | 1.09    | 687    | 1.98    | 625    | 2.73    | 574    | 4.38    | 460    | 5.49    | 384    | 6.28     | 330    | 7.34     | 257    |          |        |
| 28        | .34    | 854    | .66    | 829    | 1.24    | 784    | 2.24    | 707    | 3.06    | 644    | 4.83    | 507    | 5.98    | 419    | 6.79     | 357    | 7.85     | 275    |          |        |
| 30        | .37    | 922    | .71    | 893    | 1.34    | 842    | 2.39    | 754    | 3.25    | 683    | 5.07    | 533    | 6.24    | 437    | 7.05     | 370    | 8.10     | 283    |          |        |
| 32        | .40    | 1010   | .78    | 977    | 1.46    | 917    | 2.59    | 817    | 3.51    | 737    | 5.41    | 569    | 6.61    | 463    | 7.44     | 391    |          |        |          |        |
| 35        | .45    | 1123   | .86    | 1083   | 1.60    | 1011   | 2.83    | 893    | 3.80    | 799    | 5.79    | 608    | 7.01    | 491    | 7.83     | 411    |          |        |          |        |
| 36        | .46    | 1153   | .88    | 1111   | 1.64    | 1036   | 2.89    | 912    | 3.88    | 815    | 5.87    | 617    | 7.09    | 496    | 7.91     | 415    |          |        |          |        |

### 10 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 24.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 40        | .31    | 780    | .59    | 749    | 1.10    | 693    | 1.92    | 603    | 2.54    | 534    | 3.79    | 398    | 4.52    | 317    | 5.01     | 263    |          |        |          |        |
| 42        | .32    | 818    | .62    | 783    | 1.15    | 722    | 1.99    | 626    | 2.63    | 552    | 3.88    | 407    | 4.61    | 323    | 5.09     | 267    |          |        |          |        |
| 45        | .35    | 889    | .67    | 850    | 1.24    | 780    | 2.13    | 670    | 2.79    | 587    | 4.08    | 428    | 4.81    | 337    |          |        |          |        |          |        |
| 48        | .38    | 946    | .71    | 901    | 1.31    | 823    | 2.23    | 701    | 2.91    | 611    | 4.20    | 441    | 4.92    | 345    |          |        |          |        |          |        |
| 50        | .39    | 983    | .74    | 935    | 1.35    | 851    | 2.29    | 722    | 2.98    | 626    | 4.27    | 449    | 4.99    | 350    |          |        |          |        |          |        |
| 54        | .43    | 1083   | .82    | 1029   | 1.48    | 931    | 2.48    | 782    | 3.21    | 674    | 4.53    | 476    | 5.26    | 368    |          |        |          |        |          |        |
| 55        | .44    | 1105   | .83    | 1046   | 1.50    | 945    | 2.51    | 791    | 3.24    | 681    | 4.57    | 480    | 5.29    | 371    |          |        |          |        |          |        |
| 60        | .48    | 1199   | .90    | 1130   | 1.61    | 1013   | 2.66    | 839    | 3.41    | 716    | 4.73    | 497    | 5.43    | 381    |          |        |          |        |          |        |
| 64        | .51    | 1297   | .97    | 1217   | 1.72    | 1084   | 2.82    | 890    | 3.59    | 755    | 4.93    | 518    |         |        |          |        |          |        |          |        |
| 70        | .56    | 1410   | 1.04   | 1316   | 1.84    | 1162   | 2.99    | 942    | 3.77    | 792    | 5.10    | 535    |         |        |          |        |          |        |          |        |
| 72        | .57    | 1447   | 1.07   | 1349   | 1.88    | 1187   | 3.04    | 958    | 3.82    | 803    | 5.15    | 541    |         |        |          |        |          |        |          |        |
| 80        | .64    | 1623   | 1.19   | 1502   | 2.07    | 1308   | 3.30    | 1039   | 4.10    | 861    | 5.43    | 570    |         |        |          |        |          |        |          |        |
| 84        | .67    | 1697   | 1.24   | 1565   | 2.15    | 1355   | 3.39    | 1069   | 4.10    | 882    | 5.51    | 579    |         |        |          |        |          |        |          |        |
| 90        | .72    | 1807   | 1.32   | 1659   | 2.26    | 1425   | 3.53    | 1111   | 4.34    | 911    | 5.63    | 591    |         |        |          |        |          |        |          |        |
| 96        | .76    | 1916   | 1.39   | 1750   | 2.37    | 1492   | 3.65    | 1152   | 4.46    | 938    | 5.73    | 602    |         |        |          |        |          |        |          |        |
| 100       | .79    | 1988   | 1.44   | 1810   | 2.44    | 1535   | 3.74    | 1177   | 4.54    | 955    | 5.80    | 609    |         |        |          |        |          |        |          |        |
| 110       | .87    | 2203   | 1.58   | 1990   | 2.64    | 1667   | 3.99    | 1258   | 4.81    | 1011   | 6.05    | 636    |         |        |          |        |          |        |          |        |
| 120       | .94    | 2380   | 1.69   | 2133   | 2.80    | 1766   | 4.17    | 1314   | 4.98    | 1047   | 6.18    | 650    |         |        |          |        |          |        |          |        |
| 140       | 1.08   | 2724   | 1.91   | 2405   | 3.09    | 1949   | 4.48    | 1413   | 5.27    | 1108   |         |        |         |        |          |        |          |        |          |        |
| 144       | 1.11   | 2791   | 1.95   | 2457   | 3.15    | 1983   | 4.54    | 1430   | 5.33    | 1119   |         |        |         |        |          |        |          |        |          |        |
| 160       | 1.24   | 3132   | 2.16   | 2727   | 3.44    | 2166   | 4.87    | 1535   | 5.66    | 1188   |         |        |         |        |          |        |          |        |          |        |
| 180       | 1.37   | 3459   | 2.36   | 2971   | 3.68    | 2318   | 5.11    | 1609   | 5.87    | 1233   |         |        |         |        |          |        |          |        |          |        |

### 10 DIAMETRAL PITCH NON-METALLIC

14½° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 23.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 15        |        |        |        |        |         |        | .27     | 85     | .38     | 80     | .63     | 66     | .83     | 58     | 1.00     | 52     | 1.31     | 46     | 2.08     | 36     |
| 18        |        |        |        |        |         |        | .33     | 104    | .47     | 99     | .78     | 82     | 1.02    | 71     | 1.24     | 65     | 1.63     | 57     | 2.60     | 45     |
| 20        |        |        |        |        |         |        | .40     | 126    | .54     | 113    | .88     | 92     | 1.15    | 80     | 1.39     | 73     | 1.85     | 65     | 3.12     | 55     |
| 25        |        |        |        |        |         |        | .51     | 161    | .67     | 140    | 1.09    | 114    | 1.42    | 99     | 1.73     | 90     | 2.32     | 81     | 4.00     | 70     |
| 30        |        |        |        |        |         |        | .62     | 195    | .81     | 170    | 1.29    | 135    | 1.69    | 118    | 2.07     | 109    | 2.80     | 98     | 4.89     | 86     |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

\*Torque Ratings (Lb. Ins.).

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 8 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 24.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11           | .18    | 446    | .35    | 439    | .68     | 427    | 1.28    | 404    | 1.82    | 383    | 3.16    | 332    | 4.19    | 294    | 5.00     | 263    | 6.21     | 217    | 8.17     | 143    |
| 12           | .19    | 485    | .38    | 478    | .73     | 463    | 1.38    | 436    | 1.96    | 412    | 3.37    | 354    | 4.43    | 310    | 5.26     | 276    | 6.47     | 226    | 8.39     | 147    |
| 14           | .25    | 632    | .49    | 620    | .95     | 599    | 1.77    | 559    | 2.49    | 524    | 4.21    | 442    | 5.45    | 382    | 6.40     | 336    | 7.75     | 271    | 9.81     | 172    |
| 15           | .28    | 703    | .55    | 690    | 1.05    | 664    | 1.96    | 617    | 2.74    | 576    | 4.58    | 481    | 5.90    | 413    | 6.89     | 362    | 8.29     | 290    | 10.39    | 182    |
| 16           | .31    | 778    | .60    | 762    | 1.16    | 731    | 2.15    | 677    | 3.00    | 630    | 4.97    | 522    | 6.36    | 445    | 7.39     | 388    | 8.83     | 309    | 10.96    | 192    |
| 18           | .37    | 927    | .72    | 905    | 1.37    | 865    | 2.52    | 794    | 3.49    | 734    | 5.69    | 598    | 7.20    | 504    | 8.30     | 436    | 9.80     | 343    |          |        |
| 20           | .43    | 1075   | .83    | 1047   | 1.58    | 996    | 2.88    | 907    | 3.96    | 832    | 6.35    | 667    | 7.96    | 557    | 9.10     | 478    | 10.64    | 372    |          |        |
| 22           | .48    | 1219   | .94    | 1184   | 1.78    | 1121   | 3.21    | 1012   | 4.39    | 923    | 6.95    | 730    | 8.62    | 603    | 9.79     | 514    | 11.34    | 397    |          |        |
| 24           | .54    | 1355   | 1.04   | 1313   | 1.96    | 1237   | 3.52    | 1109   | 4.78    | 1004   | 7.46    | 783    | 9.17    | 642    | 10.36    | 544    | 11.90    | 417    |          |        |
| 28           | .66    | 1655   | 1.27   | 1596   | 2.37    | 1490   | 4.18    | 1316   | 5.61    | 1178   | 8.53    | 896    | 10.33   | 723    | 11.54    | 606    |          |        |          |        |
| 30           | .71    | 1786   | 1.36   | 1718   | 2.53    | 1598   | 4.44    | 1400   | 5.93    | 1247   | 8.93    | 938    | 10.73   | 752    | 11.94    | 627    |          |        |          |        |
| 32           | .78    | 1957   | 1.49   | 1878   | 2.76    | 1738   | 4.80    | 1513   | 6.38    | 1340   | 9.49    | 997    | 11.34   | 794    | 12.56    | 660    |          |        |          |        |

### 8 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 25.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 36           | .53    | 1339   | 1.01   | 1279   | 1.86    | 1174   | 3.20    | 1009   | 4.21    | 884    | 6.14    | 645    | 7.25    | 507    |          |        |          |        |          |        |
| 40           | .60    | 1508   | 1.14   | 1434   | 2.07    | 1305   | 3.51    | 1107   | 4.57    | 961    | 6.55    | 688    | 7.66    | 536    |          |        |          |        |          |        |
| 42           | .63    | 1579   | 1.19   | 1498   | 2.16    | 1358   | 3.63    | 1145   | 4.71    | 989    | 6.69    | 703    | 7.78    | 545    |          |        |          |        |          |        |
| 44           | .67    | 1681   | 1.26   | 1591   | 2.28    | 1437   | 3.82    | 1204   | 4.93    | 1036   | 6.95    | 730    | 8.05    | 564    |          |        |          |        |          |        |
| 48           | .72    | 1824   | 1.36   | 1719   | 2.44    | 1540   | 4.05    | 1275   | 5.18    | 1088   | 7.19    | 756    | 8.27    | 579    |          |        |          |        |          |        |
| 54           | .83    | 2092   | 1.55   | 1958   | 2.75    | 1735   | 4.48    | 1413   | 5.67    | 1192   | 7.72    | 811    |         |        |          |        |          |        |          |        |
| 56           | .86    | 2164   | 1.60   | 2021   | 2.83    | 1784   | 4.59    | 1446   | 5.78    | 1215   | 7.83    | 822    |         |        |          |        |          |        |          |        |
| 60           | .92    | 2307   | 1.70   | 2145   | 2.98    | 1880   | 4.79    | 1508   | 5.99    | 1259   | 8.01    | 842    |         |        |          |        |          |        |          |        |
| 64           | .99    | 2492   | 1.83   | 2307   | 3.19    | 2008   | 5.06    | 1595   | 6.30    | 1323   | 8.33    | 875    |         |        |          |        |          |        |          |        |
| 72           | 1.10   | 2775   | 2.02   | 2548   | 3.47    | 2188   | 5.42    | 1707   | 6.66    | 1399   | 8.64    | 908    |         |        |          |        |          |        |          |        |
| 80           | 1.23   | 3107   | 2.24   | 2828   | 3.81    | 2398   | 5.84    | 1839   | 7.10    | 1492   | 9.06    | 952    |         |        |          |        |          |        |          |        |
| 84           | 1.29   | 3246   | 2.34   | 2943   | 3.94    | 2481   | 5.99    | 1887   | 7.25    | 1523   | 9.18    | 965    |         |        |          |        |          |        |          |        |
| 88           | 1.34   | 3384   | 2.42   | 3056   | 4.06    | 2561   | 6.13    | 1933   | 7.39    | 1553   | 9.30    | 976    |         |        |          |        |          |        |          |        |
| 96           | 1.45   | 3656   | 2.60   | 3277   | 4.31    | 2713   | 6.41    | 2019   | 7.65    | 1608   | 9.50    | 998    |         |        |          |        |          |        |          |        |
| 112          | 1.69   | 4256   | 2.98   | 3757   | 4.83    | 3045   | 7.01    | 2207   | 8.24    | 1731   |         |        |         |        |          |        |          |        |          |        |
| 120          | 1.79   | 4517   | 3.14   | 3960   | 5.04    | 3176   | 7.22    | 2275   | 8.44    | 1773   |         |        |         |        |          |        |          |        |          |        |
| 128          | 1.89   | 4773   | 3.30   | 4155   | 5.24    | 3300   | 7.42    | 2339   | 8.62    | 1811   |         |        |         |        |          |        |          |        |          |        |
| 144          | 2.09   | 5272   | 3.59   | 4528   | 5.60    | 3532   | 7.78    | 2452   |         |        |         |        |         |        |          |        |          |        |          |        |
| 160          | 2.33   | 5868   | 3.95   | 4980   | 6.07    | 3828   | 8.28    | 2610   |         |        |         |        |         |        |          |        |          |        |          |        |

### 8 DIAMETRAL PITCH NON-METALLIC

14½° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 24.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 16           |        |        |        |        |         |        | .56     | 176    | .76     | 160    | 1.23    | 129    | 1.61    | 112    | 1.96     | 103    | 2.60     | 91     | 4.39     | 77     |
| 18           |        |        |        |        |         |        | .61     | 192    | .88     | 185    | 1.41    | 148    | 1.84    | 129    | 2.25     | 118    | 3.00     | 105    | 4.71     | 82     |
| 20           |        |        |        |        |         |        | .74     | 233    | .99     | 208    | 1.59    | 167    | 2.08    | 146    | 2.54     | 133    | 3.40     | 119    | 5.84     | 102    |
| 24           |        |        |        |        |         |        | .90     | 283    | 1.19    | 250    | 1.90    | 200    | 2.50    | 175    | 3.06     | 160    | 4.13     | 144    | 7.22     | 126    |
| 28           |        |        |        |        |         |        | 1.06    | 334    | 1.38    | 290    | 2.20    | 231    | 2.91    | 204    | 3.57     | 187    | 4.86     | 170    |          |        |

### 6 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 25.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11           | .38    | 946    | .74    | 928    | 1.42    | 893    | 2.64    | 832    | 3.70    | 778    | 6.20    | 652    | 8.01    | 561    | 9.37     | 492    | 11.29    | 395    | 14.19    | 249    |
| 12           | .41    | 1030   | .80    | 1008   | 1.54    | 968    | 2.84    | 896    | 3.97    | 834    | 6.57    | 691    | 8.41    | 589    | 9.78     | 514    | 11.69    | 409    | 14.51    | 254    |
| 14           | .53    | 1340   | 1.04   | 1308   | 1.98    | 1247   | 3.62    | 1142   | 5.01    | 1053   | 8.12    | 853    | 10.24   | 717    | 11.77    | 618    | 13.85    | 485    |          |        |
| 15           | .59    | 1491   | 1.15   | 1452   | 2.19    | 1381   | 3.99    | 1257   | 5.49    | 1154   | 8.81    | 925    | 11.03   | 773    | 12.62    | 663    | 14.75    | 517    |          |        |
| 16           | .65    | 1648   | 1.27   | 1603   | 2.41    | 1519   | 4.37    | 1376   | 5.98    | 1257   | 9.51    | 999    | 11.83   | 828    | 13.47    | 708    | 15.65    | 548    |          |        |
| 18           | .78    | 1962   | 1.51   | 1902   | 2.84    | 1792   | 5.10    | 1606   | 6.92    | 1455   | 10.80   | 1135   | 13.28   | 930    | 15.00    | 788    | 17.23    | 603    |          |        |
| 20           | .90    | 2273   | 1.74   | 2196   | 3.26    | 2057   | 5.79    | 1825   | 7.81    | 1640   | 11.97   | 1258   | 14.57   | 1020   | 16.33    | 858    |          |        |          |        |
| 21           | .97    | 2436   | 1.86   | 2349   | 3.48    | 2194   | 6.15    | 1937   | 8.25    | 1734   | 12.56   | 1319   | 15.20   | 1065   | 16.99    | 892    |          |        |          |        |
| 24           | 1.13   | 2860   | 2.18   | 2745   | 4.03    | 2541   | 7.02    | 2212   | 9.32    | 1958   | 13.87   | 1457   | 16.57   | 1160   | 18.35    | 964    |          |        |          |        |
| 27           | 1.32   | 3335   | 2.53   | 3186   | 4.64    | 2924   | 7.97    | 2512   | 10.48   | 2201   | 15.29   | 1606   | 18.05   | 1264   |          |        |          |        |          |        |
| 30           | 1.49   | 3761   | 2.84   | 3576   | 5.17    | 3255   | 8.76    | 2761   | 11.41   | 2396   | 16.35   | 1717   | 19.10   | 1338   |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

# Spur Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 6 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 26.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 32        | .98    | 2470   | 1.86   | 2341   | 3.36    | 2120   | 5.66    | 1783   | 7.32    | 1539   | 10.38   | 1090   | 12.06   | 844    |          |        |          |        |          |        |
| 33        | 1.01   | 2543   | 1.91   | 2406   | 3.45    | 2173   | 5.78    | 1821   | 7.46    | 1567   | 10.51   | 1104   |         |        |          |        |          |        |          |        |
| 36        | 1.12   | 2813   | 2.10   | 2650   | 3.77    | 2375   | 6.24    | 1967   | 7.99    | 1678   | 11.09   | 1165   |         |        |          |        |          |        |          |        |
| 40        | 1.25   | 3163   | 2.35   | 2962   | 4.17    | 2628   | 6.80    | 2144   | 8.62    | 1811   | 11.76   | 1235   |         |        |          |        |          |        |          |        |
| 42        | 1.31   | 3310   | 2.45   | 3090   | 4.33    | 2728   | 7.02    | 2211   | 8.85    | 1858   | 11.97   | 1257   |         |        |          |        |          |        |          |        |
| 48        | 1.51   | 3814   | 2.80   | 3530   | 4.88    | 3073   | 7.75    | 2441   | 9.64    | 2025   | 12.75   | 1339   |         |        |          |        |          |        |          |        |
| 54        | 1.73   | 4364   | 3.18   | 4005   | 5.46    | 3440   | 8.52    | 2683   | 10.47   | 2199   | 13.59   | 1427   |         |        |          |        |          |        |          |        |
| 60        | 1.90   | 4801   | 3.47   | 4371   | 5.88    | 3706   | 9.02    | 2842   | 10.97   | 2305   | 14.00   | 1471   |         |        |          |        |          |        |          |        |
| 64        | 2.05   | 5177   | 3.72   | 4688   | 6.26    | 3944   | 9.50    | 2993   | 11.48   | 2411   | 14.50   | 1523   |         |        |          |        |          |        |          |        |
| 66        | 2.11   | 5322   | 3.81   | 4807   | 6.39    | 4027   | 9.65    | 3040   | 11.62   | 2442   | 14.62   | 1536   |         |        |          |        |          |        |          |        |
| 72        | 2.28   | 5750   | 4.09   | 5153   | 6.77    | 4267   | 10.08   | 3175   | 12.03   | 2528   | 14.94   | 1569   |         |        |          |        |          |        |          |        |
| 84        | 2.66   | 6695   | 4.69   | 5912   | 7.60    | 4790   | 11.02   | 3473   | 12.96   | 2724   |         |        |         |        |          |        |          |        |          |        |
| 96        | 2.98   | 7510   | 5.19   | 6538   | 8.24    | 5193   | 11.68   | 3680   | 13.56   | 2849   |         |        |         |        |          |        |          |        |          |        |
| 108       | 3.35   | 8436   | 5.75   | 7246   | 8.97    | 5652   | 12.45   | 3924   | 14.31   | 3006   |         |        |         |        |          |        |          |        |          |        |
| 120       | 3.65   | 9205   | 6.19   | 7806   | 9.50    | 5987   | 12.96   | 4083   |         |        |         |        |         |        |          |        |          |        |          |        |
| 144       | 4.23   | 10664  | 7.01   | 8831   | 10.43   | 6571   | 13.79   | 4347   |         |        |         |        |         |        |          |        |          |        |          |        |

### 5 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1-3/4" FACE

REFERENCE PAGE 26.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11        | .63    | 1583   | 1.23   | 1546   | 2.35    | 1479   | 4.31    | 1360   | 5.99    | 1258   | 9.79    | 1028   | 12.41   | 869    | 14.33    | 753    | 16.96    | 594    |          |        |
| 12        | .68    | 1723   | 1.33   | 1680   | 2.54    | 1600   | 4.64    | 1462   | 6.40    | 1345   | 10.33   | 1085   | 12.99   | 910    | 14.91    | 783    | 17.49    | 613    |          |        |
| 14        | .89    | 2241   | 1.73   | 2176   | 3.26    | 2057   | 5.89    | 1855   | 8.04    | 1689   | 12.68   | 1332   | 15.70   | 1099   | 17.82    | 936    | 20.60    | 721    |          |        |
| 15        | .99    | 2491   | 1.92   | 2415   | 3.61    | 2275   | 6.47    | 2039   | 8.79    | 1847   | 13.71   | 1441   | 16.86   | 1181   | 19.05    | 1000   | 21.88    | 766    |          |        |
| 16        | 1.09   | 2754   | 2.11   | 2664   | 3.97    | 2501   | 7.07    | 2227   | 9.56    | 2008   | 14.76   | 1550   | 18.03   | 1262   | 20.27    | 1065   |          |        |          |        |
| 18        | 1.30   | 3275   | 2.50   | 3156   | 4.67    | 2942   | 8.22    | 2590   | 11.01   | 2313   | 16.68   | 1752   | 20.13   | 1410   | 22.46    | 1179   |          |        |          |        |
| 20        | 1.50   | 3793   | 2.89   | 3640   | 5.35    | 3370   | 9.31    | 2934   | 12.36   | 2597   | 18.40   | 1933   | 21.98   | 1539   | 24.34    | 1279   |          |        |          |        |

### 5 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1-3/4" FACE

REFERENCE PAGE 26.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 24        | 1.13   | 2859   | 2.16   | 2723   | 3.95    | 2487   | 6.73    | 2120   | 8.79    | 1847   | 12.69   | 1333   | 14.88   | 1042   |          |        |          |        |          |        |
| 25        | 1.20   | 3034   | 2.29   | 2885   | 4.17    | 2626   | 7.07    | 2227   | 9.20    | 1933   | 13.19   | 1385   | 15.41   | 1079   |          |        |          |        |          |        |
| 30        | 1.49   | 3752   | 2.80   | 3534   | 5.03    | 3168   | 8.32    | 2623   | 10.66   | 2238   | 14.80   | 1554   | 17.00   | 1191   |          |        |          |        |          |        |
| 35        | 1.80   | 4548   | 3.37   | 4246   | 5.95    | 3749   | 9.64    | 3038   | 12.15   | 2554   | 16.44   | 1727   |         |        |          |        |          |        |          |        |
| 40        | 2.08   | 5242   | 3.85   | 4852   | 6.70    | 4224   | 10.65   | 3356   | 13.25   | 2783   | 17.53   | 1841   |         |        |          |        |          |        |          |        |
| 45        | 2.36   | 5947   | 4.33   | 5459   | 7.44    | 4689   | 11.60   | 3657   | 14.27   | 2997   | 18.52   | 1945   |         |        |          |        |          |        |          |        |
| 50        | 2.60   | 6543   | 4.73   | 5956   | 8.01    | 5051   | 12.29   | 3874   | 14.95   | 3142   | 19.08   | 2005   |         |        |          |        |          |        |          |        |
| 55        | 2.90   | 7321   | 5.25   | 6612   | 8.79    | 5539   | 13.27   | 4182   | 15.99   | 3359   | 20.11   | 2112   |         |        |          |        |          |        |          |        |
| 60        | 3.14   | 7910   | 5.62   | 7089   | 9.31    | 5870   | 13.86   | 4368   | 16.56   | 3478   | 20.55   | 2159   |         |        |          |        |          |        |          |        |
| 70        | 3.65   | 9213   | 6.45   | 8135   | 10.46   | 6592   | 15.16   | 4779   | 17.84   | 3748   |         |        |         |        |          |        |          |        |          |        |
| 80        | 4.17   | 10514  | 7.26   | 9153   | 11.54   | 7270   | 16.35   | 5152   | 18.99   | 3989   |         |        |         |        |          |        |          |        |          |        |
| 100       | 5.03   | 12671  | 8.52   | 10745  | 13.08   | 8241   | 17.84   | 5620   |         |        |         |        |         |        |          |        |          |        |          |        |

### 4 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 27.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11        | 1.11   | 2810   | 2.17   | 2730   | 4.10    | 2584   | 7.41    | 2334   | 10.13   | 2128   | 16.01   | 1682   | 19.86   | 1391   | 22.57    | 1185   | 26.14    | 915    |          |        |
| 12        | 1.21   | 3057   | 2.35   | 2963   | 4.43    | 2792   | 7.94    | 2502   | 10.79   | 2266   | 16.83   | 1768   | 20.69   | 1449   | 23.37    | 1228   | 26.85    | 940    |          |        |
| 14        | 1.58   | 3971   | 3.04   | 3831   | 5.67    | 3577   | 10.02   | 3158   | 13.46   | 2827   | 20.48   | 2151   | 24.79   | 1736   | 27.70    | 1455   |          |        |          |        |
| 15        | 1.75   | 4414   | 3.37   | 4247   | 6.26    | 3948   | 10.98   | 3461   | 14.67   | 3081   | 22.06   | 2318   | 26.52   | 1857   | 29.50    | 1550   |          |        |          |        |
| 16        | 1.93   | 4876   | 3.71   | 4680   | 6.87    | 4332   | 11.97   | 3772   | 15.90   | 3339   | 23.66   | 2485   | 28.26   | 1979   | 31.30    | 1644   |          |        |          |        |
| 18        | 2.30   | 5794   | 4.39   | 5535   | 8.06    | 5080   | 13.85   | 4364   | 18.20   | 3824   | 26.56   | 2790   | 31.35   | 2196   |          |        |          |        |          |        |
| 20        | 2.66   | 6703   | 5.06   | 6373   | 9.21    | 5802   | 15.61   | 4920   | 20.33   | 4271   | 29.13   | 3060   | 34.04   | 2384   |          |        |          |        |          |        |
| 22        | 3.01   | 7579   | 5.69   | 7173   | 10.28   | 6478   | 17.22   | 5427   | 22.23   | 4670   | 31.33   | 3291   | 36.29   | 2541   |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.

They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 4 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 27.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 24           | 2.00   | 5042   | 3.77   | 4750   | 6.75    | 4257   | 11.19   | 3525   | 14.32   | 3008   | 19.88   | 2089   | 22.84   | 1600   |          |        |          |        |          |        |
| 28           | 2.43   | 6129   | 4.54   | 5723   | 8.02    | 5053   | 12.99   | 4094   | 16.38   | 3441   | 22.16   | 2328   |         |        |          |        |          |        |          |        |
| 30           | 2.62   | 6599   | 4.87   | 6135   | 8.53    | 5378   | 13.69   | 4314   | 17.14   | 3601   | 22.92   | 2408   |         |        |          |        |          |        |          |        |
| 32           | 2.86   | 7211   | 5.30   | 6675   | 9.22    | 5811   | 14.65   | 4616   | 18.22   | 3829   | 24.11   | 2534   |         |        |          |        |          |        |          |        |
| 36           | 3.25   | 8187   | 5.96   | 7514   | 10.24   | 6454   | 15.98   | 5034   | 19.64   | 4126   | 25.49   | 2677   |         |        |          |        |          |        |          |        |
| 40           | 3.64   | 9177   | 6.63   | 8354   | 11.24   | 7085   | 17.24   | 5433   | 20.97   | 4406   | 26.77   | 2812   |         |        |          |        |          |        |          |        |
| 42           | 3.80   | 9588   | 6.90   | 8694   | 11.63   | 7328   | 17.69   | 5575   | 21.42   | 4499   | 27.12   | 2849   |         |        |          |        |          |        |          |        |
| 44           | 4.04   | 10181  | 7.29   | 9195   | 12.22   | 7703   | 18.46   | 5816   | 22.24   | 4672   | 27.97   | 2938   |         |        |          |        |          |        |          |        |
| 48           | 4.36   | 10999  | 7.82   | 9858   | 12.95   | 8163   | 19.28   | 6074   | 23.02   | 4837   | 28.58   | 3002   |         |        |          |        |          |        |          |        |
| 54           | 4.97   | 12530  | 8.81   | 11104  | 14.35   | 9045   | 20.94   | 6598   | 24.72   | 5193   |         |        |         |        |          |        |          |        |          |        |
| 56           | 5.13   | 12933  | 9.06   | 11419  | 14.68   | 9253   | 21.29   | 6708   | 25.04   | 5261   |         |        |         |        |          |        |          |        |          |        |
| 60           | 5.44   | 13727  | 9.55   | 12034  | 15.32   | 9652   | 21.94   | 6915   | 25.65   | 5388   |         |        |         |        |          |        |          |        |          |        |
| 64           | 5.86   | 14763  | 10.20  | 12852  | 16.20   | 10209  | 22.95   | 7233   | 26.66   | 5601   |         |        |         |        |          |        |          |        |          |        |
| 72           | 6.47   | 16305  | 11.11  | 14005  | 17.33   | 10923  | 24.07   | 7585   | 27.65   | 5810   |         |        |         |        |          |        |          |        |          |        |
| 80           | 7.18   | 18101  | 12.18  | 15350  | 18.68   | 11772  | 25.48   | 8029   |         |        |         |        |         |        |          |        |          |        |          |        |
| 84           | 7.47   | 18838  | 12.60  | 15877  | 19.17   | 12079  | 25.93   | 8170   |         |        |         |        |         |        |          |        |          |        |          |        |
| 88           | 7.76   | 19561  | 13.00  | 16387  | 19.63   | 12372  | 26.35   | 8304   |         |        |         |        |         |        |          |        |          |        |          |        |
| 96           | 8.32   | 20970  | 13.78  | 17365  | 20.50   | 12922  | 27.13   | 8548   |         |        |         |        |         |        |          |        |          |        |          |        |

### 3 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

3" FACE

REFERENCE PAGE 27.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 11           | 2.94   | 7421   | 5.67   | 7146   | 10.56   | 6652   | 18.55   | 5846   | 24.82   | 5213   | 37.47   | 3936   | 45.15   | 3162   | 50.30    | 2642   |          |        |          |        |
| 12           | 3.20   | 8067   | 6.14   | 7743   | 11.37   | 7167   | 19.80   | 6239   | 26.30   | 5524   | 39.14   | 4111   | 46.74   | 3273   | 51.78    | 2719   |          |        |          |        |
| 14           | 4.15   | 10462  | 7.92   | 9979   | 14.49   | 9134   | 24.79   | 7812   | 32.48   | 6824   | 47.09   | 4947   | 55.40   | 3880   |          |        |          |        |          |        |
| 15           | 4.61   | 11618  | 8.76   | 11046  | 15.96   | 10056  | 27.06   | 8528   | 35.24   | 7403   | 50.49   | 5304   | 59.01   | 4132   |          |        |          |        |          |        |
| 16           | 5.09   | 12825  | 9.64   | 12156  | 17.47   | 11008  | 29.38   | 9259   | 38.03   | 7989   | 53.89   | 5661   | 62.60   | 4383   |          |        |          |        |          |        |
| 18           | 6.03   | 15214  | 11.37  | 14333  | 20.38   | 12845  | 33.75   | 10637  | 43.20   | 9076   | 60.00   | 6303   | 68.93   | 4827   |          |        |          |        |          |        |
| 20           | 6.97   | 17570  | 13.05  | 16454  | 23.16   | 14599  | 37.80   | 11913  | 47.89   | 10062  | 65.33   | 6863   |         |        |          |        |          |        |          |        |
| 21           | 7.46   | 18795  | 13.92  | 17549  | 24.59   | 15495  | 39.84   | 12556  | 50.24   | 10554  | 67.96   | 7139   |         |        |          |        |          |        |          |        |

### 3 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

3" FACE

REFERENCE PAGE 27.

| No.<br>Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|--------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|              | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 24           | 5.23   | 13175  | 9.67   | 12195  | 16.84   | 10617  | 26.76   | 8433   | 33.30   | 6995   | 44.05   | 4627   | 22.84   | 1600   |          |        |          |        |          |        |
| 30           | 6.81   | 17164  | 12.40  | 15626  | 21.03   | 13251  | 32.25   | 10162  | 39.23   | 8241   | 50.07   | 5259   |         |        |          |        |          |        |          |        |
| 36           | 8.41   | 21199  | 15.07  | 18998  | 24.96   | 15732  | 37.15   | 11707  | 44.37   | 9322   | 55.08   | 5786   |         |        |          |        |          |        |          |        |
| 42           | 9.81   | 24721  | 17.32  | 21828  | 28.06   | 17687  | 40.69   | 12822  | 47.87   | 10056  |         |        |         |        |          |        |          |        |          |        |
| 48           | 11.20  | 28241  | 19.50  | 24586  | 30.99   | 19530  | 43.91   | 13838  | 51.00   | 10715  |         |        |         |        |          |        |          |        |          |        |
| 54           | 12.71  | 32043  | 21.83  | 27523  | 34.06   | 21466  | 47.30   | 14906  | 54.35   | 11417  |         |        |         |        |          |        |          |        |          |        |
| 60           | 13.87  | 34965  | 23.52  | 29651  | 36.08   | 22740  | 49.22   | 15509  |         |        |         |        |         |        |          |        |          |        |          |        |
| 72           | 16.35  | 41223  | 27.08  | 34136  | 40.30   | 25402  | 53.32   | 16803  |         |        |         |        |         |        |          |        |          |        |          |        |
| 84           | 18.76  | 47293  | 30.40  | 38322  | 44.08   | 27782  | 56.87   | 17923  |         |        |         |        |         |        |          |        |          |        |          |        |
| 96           | 20.75  | 52300  | 32.96  | 41545  | 46.71   | 29437  | 59.02   | 18597  |         |        |         |        |         |        |          |        |          |        |          |        |
| 108          | 22.99  | 57968  | 35.87  | 45212  | 49.81   | 31395  | 61.84   | 19486  |         |        |         |        |         |        |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

# Spur Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 20 DIAMETRAL PITCH STEEL

### 20° PRESSURE ANGLE

### 1/2" FACE

REFERENCE PAGE 42.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12        | .01    | 36.5   | .03    | 36.3   | .06     | 35.8   | .11     | 34.9   | .16     | 34.1   | .30     | 31.8   | .42     | 29.7   | .53      | 28.0   | .71      | 25.0   | 1.08     | 18.9   |
| 14        | .02    | 48.0   | .04    | 47.7   | .07     | 46.9   | .14     | 45.6   | .21     | 44.3   | .39     | 40.9   | .54     | 37.9   | .67      | 35.4   | .89      | 31.2   | 1.32     | 23.0   |
| 15        | .02    | 53.8   | .04    | 53.3   | .08     | 52.5   | .16     | 50.9   | .23     | 49.3   | .43     | 45.3   | .60     | 41.9   | .74      | 38.9   | .97      | 34.1   | 1.42     | 24.9   |
| 16        | .02    | 58.6   | .05    | 58.1   | .09     | 57.1   | .18     | 55.2   | .25     | 53.5   | .46     | 48.8   | .64     | 44.9   | .79      | 41.6   | 1.04     | 36.3   | 1.49     | 26.2   |
| 18        | .03    | 68.6   | .05    | 67.9   | .11     | 66.7   | .20     | 64.2   | .29     | 62.0   | .53     | 56.1   | .73     | 51.2   | .90      | 47.1   | 1.16     | 40.6   | 1.64     | 28.7   |
| 20        | .03    | 79.2   | .06    | 78.4   | .12     | 76.8   | .23     | 73.7   | .34     | 70.8   | .60     | 63.5   | .82     | 57.5   | 1.00     | 52.6   | 1.28     | 44.9   | 1.78     | 31.2   |
| 24        | .04    | 99.5   | .08    | 98.3   | .15     | 95.8   | .29     | 91.3   | .41     | 87.1   | .73     | 76.7   | .98     | 68.5   | 1.18     | 61.9   | 1.48     | 51.9   | 2.00     | 34.9   |
| 25        | .04    | 105    | .08    | 103    | .16     | 101    | .30     | 95.6   | .43     | 91.1   | .76     | 79.9   | 1.02    | 71.1   | 1.22     | 64.1   | 1.53     | 53.5   | 2.04     | 35.8   |
| 30        | .05    | 132    | .10    | 130    | .20     | 126    | .38     | 119    | .53     | 112    | .92     | 96.4   | 1.21    | 84.5   | 1.43     | 75.2   | 1.76     | 61.6   | 2.28     | 40.0   |
| 35        | .07    | 165    | .13    | 162    | .25     | 156    | .46     | 145    | .65     | 136    | 1.09    | 115    | 1.42    | 99.4   | 1.67     | 87.5   | 2.02     | 70.6   | 2.55     | 44.7   |
| 40        | .08    | 194    | .15    | 190    | .29     | 182    | .53     | 168    | .75     | 157    | 1.24    | 130    | 1.58    | 111    | 1.84     | 96.6   | 2.20     | 77.0   | 2.73     | 47.8   |
| 45        | .09    | 224    | .17    | 219    | .33     | 209    | .61     | 192    | .84     | 177    | 1.38    | 145    | 1.74    | 122    | 2.01     | 105    | 2.37     | 83.0   |          |        |
| 50        | .10    | 248    | .19    | 242    | .37     | 230    | .66     | 210    | .92     | 192    | 1.47    | 154    | 1.84    | 129    | 2.10     | 111    | 2.46     | 86.1   |          |        |
| 60        | .12    | 306    | .24    | 296    | .44     | 279    | .79     | 250    | 1.08    | 227    | 1.68    | 177    | 2.07    | 145    | 2.34     | 123    | 2.69     | 94.0   |          |        |
| 70        | .14    | 365    | .28    | 352    | .52     | 329    | .92     | 291    | 1.24    | 260    | 1.88    | 198    | 2.28    | 160    | 2.55     | 134    |          |        |          |        |

### 20 DIAMETRAL PITCH CAST IRON

### 20° PRESSURE ANGLE

### 1/2" FACE

REFERENCE PAGE 42.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 80        | .10    | 256    | .20    | 246    | .36     | 228    | .63     | 198    | .84     | 176    | 1.24    | 131    | 1.49    | 104    | 1.65     | 86.5   |          |        |          |        |
| 84        | .11    | 269    | .20    | 257    | .38     | 237    | .65     | 206    | .86     | 181    | 1.27    | 134    | 1.51    | 106    | 1.67     | 87.8   |          |        |          |        |
| 90        | .11    | 287    | .22    | 274    | .40     | 252    | .69     | 216    | .90     | 189    | 1.32    | 138    | 1.55    | 109    | 1.71     | 89.7   |          |        |          |        |
| 100       | .13    | 317    | .24    | 302    | .44     | 275    | .74     | 233    | .96     | 202    | 1.38    | 145    | 1.61    | 113    | 1.76     | 92.4   |          |        |          |        |
| 120       | .15    | 387    | .29    | 365    | .52     | 327    | .86     | 271    | 1.10    | 231    | 1.53    | 161    | 1.76    | 123    |          |        |          |        |          |        |
| 140       | .18    | 447    | .33    | 418    | .59     | 369    | .95     | 299    | 1.20    | 251    | 1.62    | 170    | 1.83    | 128    |          |        |          |        |          |        |
| 160       | .21    | 520    | .38    | 481    | .66     | 419    | 1.06    | 333    | 1.31    | 276    | 1.74    | 183    |         |        |          |        |          |        |          |        |
| 180       | .23    | 579    | .42    | 532    | .72     | 457    | 1.13    | 356    | 1.39    | 292    | 1.80    | 189    |         |        |          |        |          |        |          |        |
| 200       | .25    | 637    | .46    | 580    | .78     | 492    | 1.20    | 377    | 1.46    | 306    | 1.86    | 195    |         |        |          |        |          |        |          |        |

### 16 DIAMETRAL PITCH STEEL

### 20° PRESSURE ANGLE

### 3/4" FACE

REFERENCE PAGE 43.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12        | .03    | 85.5   | .07    | 84.7   | .13     | 83.4   | .26     | 80.9   | .37     | 78.4   | .69     | 72.0   | .95     | 66.5   | 1.18     | 61.8   | 1.55     | 54.2   | 2.26     | 39.5   |
| 14        | .04    | 112    | .09    | 111    | .17     | 109    | .33     | 105    | .48     | 102    | .88     | 92.2   | 1.20    | 84.4   | 1.48     | 77.7   | 1.92     | 67.2   | 2.73     | 47.7   |
| 15        | .05    | 126    | .10    | 124    | .19     | 122    | .37     | 117    | .54     | 113    | .97     | 102    | 1.33    | 92.8   | 1.62     | 85.2   | 2.09     | 73.1   | 2.93     | 51.3   |
| 16        | .05    | 136    | .11    | 135    | .21     | 133    | .40     | 127    | .58     | 122    | 1.04    | 110    | 1.42    | 99.4   | 1.73     | 90.8   | 2.21     | 77.5   | 3.07     | 53.8   |
| 18        | .06    | 160    | .13    | 158    | .25     | 155    | .47     | 148    | .67     | 142    | 1.19    | 125    | 1.61    | 113    | 1.94     | 102    | 2.46     | 86.2   | 3.35     | 58.6   |
| 20        | .07    | 185    | .14    | 183    | .28     | 178    | .54     | 169    | .77     | 161    | 1.35    | 141    | 1.80    | 126    | 2.16     | 113    | 2.70     | 94.7   | 3.62     | 63.3   |
| 24        | .09    | 233    | .18    | 229    | .35     | 222    | .66     | 209    | .94     | 198    | 1.62    | 170    | 2.12    | 149    | 2.52     | 132    | 3.10     | 108    | 4.02     | 70.4   |
| 28        | .11    | 283    | .22    | 278    | .43     | 268    | .79     | 250    | 1.12    | 235    | 1.88    | 198    | 2.44    | 171    | 2.87     | 151    | 3.47     | 122    | 4.40     | 77.0   |
| 30        | .12    | 308    | .24    | 302    | .46     | 291    | .86     | 270    | 1.20    | 253    | 2.01    | 211    | 2.59    | 181    | 3.02     | 159    | 3.63     | 127    | 4.55     | 79.7   |
| 32        | .13    | 340    | .26    | 333    | .51     | 320    | .94     | 296    | 1.31    | 275    | 2.17    | 228    | 2.78    | 195    | 3.23     | 170    | 3.86     | 135    | 4.79     | 83.9   |
| 36        | .16    | 395    | .31    | 385    | .58     | 368    | 1.07    | 338    | 1.49    | 312    | 2.42    | 254    | 3.06    | 215    | 3.53     | 186    | 4.17     | 146    | 5.09     | 89.1   |
| 40        | .18    | 452    | .35    | 440    | .66     | 418    | 1.21    | 381    | 1.66    | 349    | 2.67    | 280    | 3.34    | 234    | 3.82     | 201    | 4.47     | 156    | 5.37     | 94.1   |
| 48        | .22    | 556    | .43    | 539    | .81     | 508    | 1.44    | 455    | 1.96    | 412    | 3.06    | 322    | 3.76    | 264    | 4.25     | 223    | 4.88     | 171    |          |        |
| 56        | .26    | 665    | .51    | 642    | .95     | 599    | 1.68    | 529    | 2.25    | 474    | 3.43    | 360    | 4.15    | 291    | 4.64     | 244    |          |        |          |        |
| 60        | .28    | 711    | .54    | 684    | 1.01    | 636    | 1.77    | 557    | 2.36    | 496    | 3.55    | 373    | 4.27    | 299    | 4.75     | 250    |          |        |          |        |
| 64        | .31    | 779    | .59    | 748    | 1.10    | 692    | 1.91    | 602    | 2.54    | 533    | 3.78    | 397    | 4.51    | 316    | 5.00     | 263    |          |        |          |        |
| 72        | .35    | 872    | .66    | 833    | 1.21    | 764    | 2.08    | 656    | 2.74    | 575    | 4.00    | 420    | 4.72    | 330    |          |        |          |        |          |        |
| 80        | .39    | 991    | .75    | 943    | 1.36    | 858    | 2.31    | 728    | 3.01    | 632    | 4.31    | 453    | 5.04    | 353    |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 16 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

3/4" FACE

REFERENCE PAGE 43.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 96        | .28    | 707    | .53    | 666    | .95     | 597    | 1.57    | 494    | 2.01    | 421    | 2.79    | 293    | 3.20    | 224    |          |        |          |        |          |        |
| 128       | .38    | 949    | .70    | 879    | 1.21    | 765    | 1.93    | 608    | 2.40    | 504    | 3.17    | 333    | 3.56    | 249    |          |        |          |        |          |        |
| 144       | .42    | 1057   | .77    | 970    | 1.32    | 833    | 2.06    | 650    | 2.54    | 533    | 3.29    | 346    |         |        |          |        |          |        |          |        |
| 160       | .47    | 1195   | .86    | 1088   | 1.46    | 923    | 2.25    | 707    | 2.73    | 574    | 3.49    | 366    |         |        |          |        |          |        |          |        |
| 192       | .56    | 1406   | 1.00   | 1260   | 1.66    | 1044   | 2.46    | 777    | 2.94    | 618    | 3.65    | 384    |         |        |          |        |          |        |          |        |

### 12 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 43.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12        | .08    | 202    | .16    | 200    | .31     | 196    | .60     | 188    | .86     | 181    | 1.54    | 162    | 2.09    | 147    | 2.55     | 134    | 3.27     | 114    | 4.53     | 79.4   |
| 13        | .09    | 233    | .18    | 230    | .36     | 225    | .68     | 215    | .98     | 206    | 1.75    | 183    | 2.36    | 165    | 2.86     | 150    | 3.63     | 127    | 4.97     | 87.1   |
| 14        | .11    | 265    | .21    | 262    | .41     | 256    | .77     | 244    | 1.11    | 233    | 1.96    | 206    | 2.63    | 184    | 3.18     | 167    | 4.00     | 140    | 5.42     | 94.8   |
| 15        | .12    | 297    | .23    | 293    | .45     | 285    | .86     | 271    | 1.23    | 259    | 2.16    | 227    | 2.88    | 202    | 3.46     | 182    | 4.34     | 152    | 5.80     | 102    |
| 16        | .13    | 323    | .25    | 319    | .49     | 310    | .93     | 294    | 1.33    | 279    | 2.31    | 243    | 3.07    | 215    | 3.68     | 193    | 4.58     | 160    | 6.05     | 106    |
| 18        | .15    | 379    | .30    | 373    | .57     | 361    | 1.08    | 340    | 1.53    | 322    | 2.63    | 276    | 3.46    | 242    | 4.10     | 215    | 5.04     | 177    | 6.55     | 115    |
| 20        | .17    | 437    | .34    | 429    | .66     | 415    | 1.23    | 389    | 1.74    | 365    | 2.95    | 310    | 3.84    | 269    | 4.52     | 238    | 5.50     | 193    | 7.02     | 123    |
| 21        | .19    | 468    | .36    | 459    | .70     | 443    | 1.31    | 413    | 1.84    | 388    | 3.11    | 327    | 4.03    | 282    | 4.73     | 249    | 5.73     | 201    | 7.26     | 127    |
| 24        | .22    | 548    | .43    | 537    | .82     | 515    | 1.51    | 477    | 2.11    | 444    | 3.50    | 368    | 4.48    | 314    | 5.21     | 274    | 6.22     | 218    | 7.72     | 135    |
| 28        | .26    | 667    | .52    | 651    | .99     | 621    | 1.80    | 568    | 2.49    | 524    | 4.04    | 425    | 5.10    | 357    | 5.86     | 308    | 6.89     | 241    |          |        |
| 30        | .29    | 720    | .56    | 707    | 1.07    | 673    | 1.94    | 612    | 2.68    | 562    | 4.29    | 451    | 5.37    | 376    | 6.15     | 323    | 7.19     | 252    |          |        |
| 36        | .37    | 928    | .71    | 899    | 1.34    | 847    | 2.41    | 759    | 3.27    | 688    | 5.11    | 537    | 6.28    | 440    | 7.09     | 373    | 8.15     | 285    |          |        |
| 42        | .44    | 1112   | .85    | 1073   | 1.59    | 1001   | 2.81    | 884    | 3.77    | 792    | 5.73    | 602    | 6.94    | 486    | 7.76     | 407    |          |        |          |        |
| 48        | .52    | 1304   | .99    | 1252   | 1.84    | 1159   | 3.20    | 1009   | 4.25    | 893    | 6.33    | 665    | 7.56    | 529    | 8.37     | 440    |          |        |          |        |
| 54        | .60    | 1505   | 1.14   | 1437   | 2.09    | 1319   | 3.60    | 1133   | 4.73    | 993    | 6.90    | 724    | 8.14    | 570    |          |        |          |        |          |        |

### 12 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 44.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 60        | .40    | 998    | .75    | 949    | 1.37    | 864    | 2.32    | 733    | 3.03    | 636    | 4.34    | 456    | 5.07    | 355    |          |        |          |        |          |        |
| 66        | .45    | 1125   | .84    | 1064   | 1.53    | 961    | 2.56    | 805    | 3.30    | 693    | 4.65    | 488    | 5.38    | 377    |          |        |          |        |          |        |
| 72        | .48    | 1221   | .91    | 1150   | 1.64    | 1031   | 2.71    | 853    | 3.47    | 728    | 4.81    | 506    | 5.53    | 387    |          |        |          |        |          |        |
| 84        | .58    | 1450   | 1.07   | 1354   | 1.90    | 1196   | 3.07    | 969    | 3.88    | 814    | 5.24    | 551    |         |        |          |        |          |        |          |        |
| 96        | .65    | 1641   | 1.21   | 1519   | 2.10    | 1322   | 3.33    | 1050   | 4.15    | 871    | 5.49    | 576    |         |        |          |        |          |        |          |        |
| 108       | .75    | 1879   | 1.37   | 1725   | 2.35    | 1482   | 3.67    | 1156   | 4.51    | 947    | 5.85    | 615    |         |        |          |        |          |        |          |        |
| 120       | .82    | 2068   | 1.49   | 1882   | 2.53    | 1596   | 3.88    | 1224   | 4.73    | 993    | 6.03    | 634    |         |        |          |        |          |        |          |        |
| 132       | .89    | 2252   | 1.61   | 2034   | 2.70    | 1704   | 4.08    | 1287   | 4.92    | 1033   | 6.19    | 650    |         |        |          |        |          |        |          |        |
| 144       | .97    | 2433   | 1.73   | 2181   | 2.87    | 1806   | 4.26    | 1344   | 5.09    | 1070   | 6.32    | 664    |         |        |          |        |          |        |          |        |
| 168       | 1.13   | 2861   | 2.00   | 2526   | 3.25    | 2047   | 4.71    | 1484   | 5.54    | 1164   |         |        |         |        |          |        |          |        |          |        |
| 192       | 1.27   | 3209   | 2.22   | 2794   | 3.52    | 2219   | 4.99    | 1573   | 5.80    | 1218   |         |        |         |        |          |        |          |        |          |        |
| 216       | 1.41   | 3545   | 2.42   | 3045   | 3.77    | 2375   | 5.23    | 1649   | 6.01    | 1263   |         |        |         |        |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

# Spur Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 10 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 44.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12        | .14    | 363    | .28    | 358    | .55     | 349    | 1.06    | 333    | 1.51    | 318    | 2.66    | 280    | 3.57    | 250    | 4.30     | 226    | 5.40     | 189    | 7.27     | 127    |
| 14        | .19    | 477    | .37    | 469    | .72     | 456    | 1.37    | 431    | 1.95    | 409    | 3.37    | 354    | 4.46    | 312    | 5.31     | 279    | 6.58     | 230    | 8.63     | 151    |
| 15        | .21    | 533    | .42    | 525    | .81     | 509    | 1.52    | 479    | 2.16    | 453    | 3.70    | 389    | 4.87    | 341    | 5.78     | 303    | 7.10     | 249    | 9.22     | 161    |
| 16        | .23    | 580    | .45    | 571    | .88     | 552    | 1.64    | 518    | 2.32    | 488    | 3.96    | 416    | 5.18    | 363    | 6.12     | 321    | 7.47     | 262    | 9.60     | 168    |
| 18        | .27    | 679    | .53    | 667    | 1.02    | 642    | 1.90    | 599    | 2.67    | 561    | 4.48    | 471    | 5.79    | 406    | 6.79     | 356    | 8.19     | 287    | 10.33    | 181    |
| 20        | .31    | 784    | .61    | 768    | 1.17    | 737    | 2.16    | 682    | 3.02    | 635    | 5.00    | 526    | 6.41    | 449    | 7.45     | 391    | 8.90     | 311    | 11.04    | 193    |
| 24        | .39    | 983    | .76    | 958    | 1.45    | 913    | 2.65    | 834    | 3.65    | 767    | 5.89    | 619    | 7.41    | 519    | 8.50     | 447    | 9.98     | 349    |          |        |
| 25        | .41    | 1032   | .80    | 1005   | 1.52    | 956    | 2.76    | 870    | 3.80    | 799    | 6.10    | 641    | 7.64    | 535    | 8.74     | 459    | 10.21    | 358    |          |        |
| 28        | .47    | 1195   | .92    | 1161   | 1.74    | 1097   | 3.14    | 990    | 4.29    | 901    | 6.76    | 710    | 8.37    | 586    | 9.50     | 499    | 10.99    | 385    |          |        |
| 30        | .52    | 1300   | 1.00   | 1260   | 1.88    | 1187   | 3.38    | 1064   | 4.59    | 964    | 7.16    | 752    | 8.80    | 616    | 9.94     | 522    | 11.42    | 400    |          |        |
| 35        | .64    | 1615   | 1.24   | 1558   | 2.31    | 1454   | 4.08    | 1284   | 5.47    | 1150   | 8.33    | 875    | 10.08   | 706    | 11.27    | 592    |          |        |          |        |
| 40        | .75    | 1896   | 1.44   | 1820   | 2.67    | 1685   | 4.65    | 1467   | 6.18    | 1299   | 9.20    | 966    | 10.99   | 770    | 12.17    | 639    |          |        |          |        |
| 45        | .87    | 2190   | 1.66   | 2092   | 3.05    | 1920   | 5.23    | 1649   | 6.88    | 1445   | 10.04   | 1054   | 11.85   | 830    |          |        |          |        |          |        |
| 48        | .92    | 2328   | 1.76   | 2218   | 3.21    | 2026   | 5.48    | 1727   | 7.16    | 1504   | 10.33   | 1085   | 12.12   | 849    |          |        |          |        |          |        |
| 50        | .96    | 2420   | 1.83   | 2301   | 3.32    | 2095   | 5.64    | 1777   | 7.34    | 1542   | 10.52   | 1105   | 12.29   | 861    |          |        |          |        |          |        |

### 10 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 44.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 55        | .65    | 1638   | 1.23   | 1550   | 2.22    | 1400   | 3.72    | 1173   | 4.80    | 1009   | 6.77    | 711    | 7.84    | 549    |          |        |          |        |          |        |
| 60        | .71    | 1778   | 1.33   | 1675   | 2.38    | 1501   | 3.94    | 1243   | 5.05    | 1061   | 7.01    | 737    | 8.06    | 564    |          |        |          |        |          |        |
| 70        | .84    | 2114   | 1.57   | 1974   | 2.77    | 1743   | 4.48    | 1413   | 5.65    | 1187   | 7.65    | 803    |         |        |          |        |          |        |          |        |
| 80        | .98    | 2462   | 1.81   | 2279   | 3.15    | 1984   | 5.00    | 1576   | 6.22    | 1307   | 8.23    | 865    |         |        |          |        |          |        |          |        |
| 90        | 1.09   | 2742   | 2.00   | 2517   | 3.43    | 2162   | 5.35    | 1686   | 6.58    | 1382   | 8.54    | 897    |         |        |          |        |          |        |          |        |
| 100       | 1.20   | 3016   | 2.18   | 2746   | 3.70    | 2329   | 5.67    | 1786   | 6.89    | 1448   | 8.80    | 924    |         |        |          |        |          |        |          |        |
| 120       | 1.45   | 3650   | 2.59   | 3271   | 4.30    | 2709   | 6.40    | 2016   | 7.64    | 1605   | 9.48    | 996    |         |        |          |        |          |        |          |        |
| 140       | 1.66   | 4177   | 2.93   | 3688   | 4.74    | 2989   | 6.88    | 2167   | 8.09    | 1699   |         |        |         |        |          |        |          |        |          |        |
| 160       | 1.91   | 4814   | 3.32   | 4191   | 5.28    | 3329   | 7.49    | 2359   | 8.69    | 1826   |         |        |         |        |          |        |          |        |          |        |
| 200       | 2.30   | 5802   | 3.90   | 4920   | 5.99    | 3773   | 8.17    | 2573   |         |        |         |        |         |        |          |        |          |        |          |        |

### 8 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 45.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12        | .27    | 678    | .53    | 667    | 1.03    | 647    | 1.93    | 609    | 2.74    | 576    | 4.71    | 495    | 6.19    | 434    | 7.35     | 386    | 9.03     | 316    | 11.72    | 205    |
| 14        | .35    | 890    | .69    | 874    | 1.34    | 843    | 2.50    | 787    | 3.51    | 738    | 5.92    | 622    | 7.68    | 537    | 9.01     | 473    | 10.91    | 382    | 13.81    | 242    |
| 15        | .39    | 996    | .77    | 976    | 1.49    | 939    | 2.77    | 873    | 3.88    | 816    | 6.49    | 681    | 8.35    | 585    | 9.76     | 513    | 11.73    | 411    | 14.70    | 257    |
| 16        | .43    | 1084   | .84    | 1061   | 1.62    | 1018   | 2.99    | 943    | 4.18    | 877    | 6.92    | 727    | 8.85    | 620    | 10.30    | 541    | 12.30    | 431    |          |        |
| 18        | .50    | 1268   | .98    | 1238   | 1.88    | 1183   | 3.44    | 1086   | 4.77    | 1003   | 7.78    | 817    | 9.84    | 689    | 11.35    | 596    | 13.40    | 469    |          |        |
| 20        | .58    | 1462   | 1.13   | 1424   | 2.15    | 1354   | 3.91    | 1233   | 5.39    | 1131   | 8.64    | 908    | 10.82   | 758    | 12.38    | 650    | 14.47    | 507    |          |        |
| 22        | .66    | 1651   | 1.27   | 1604   | 2.41    | 1518   | 4.35    | 1371   | 5.95    | 1250   | 9.41    | 989    | 11.67   | 817    | 13.27    | 698    | 15.36    | 538    |          |        |
| 24        | .73    | 1831   | 1.41   | 1775   | 2.65    | 1672   | 4.75    | 1498   | 6.46    | 1357   | 10.08   | 1059   | 12.39   | 868    | 14.00    | 735    | 16.08    | 563    |          |        |
| 28        | .88    | 2224   | 1.70   | 2145   | 3.18    | 2003   | 5.61    | 1768   | 7.54    | 1583   | 11.47   | 1204   | 13.88   | 972    | 15.51    | 815    |          |        |          |        |
| 32        | 1.06   | 2664   | 2.03   | 2557   | 3.76    | 2367   | 6.54    | 2060   | 8.68    | 1824   | 12.92   | 1358   | 15.44   | 1081   | 17.10    | 898    |          |        |          |        |
| 36        | 1.22   | 3082   | 2.34   | 2944   | 4.29    | 2703   | 7.37    | 2321   | 9.68    | 2034   | 14.13   | 1484   | 16.68   | 1168   |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 8 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 45.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 40        | .84    | 2111   | 1.59   | 2007   | 2.90    | 1928   | 4.92    | 1550   | 6.40    | 1345   | 9.18    | 964    | 10.72   | 751    |          |        |          |        |          |        |
| 44        | .95    | 2384   | 1.79   | 2256   | 3.23    | 2038   | 5.42    | 1707   | 6.99    | 1469   | 9.86    | 1035   | 11.41   | 799    |          |        |          |        |          |        |
| 48        | 1.03   | 2587   | 1.93   | 2437   | 3.47    | 2184   | 5.74    | 1809   | 7.35    | 1543   | 10.20   | 1072   | 11.72   | 821    |          |        |          |        |          |        |
| 56        | 1.22   | 3080   | 2.28   | 2876   | 4.03    | 2539   | 6.53    | 2057   | 8.23    | 1729   | 11.14   | 1170   |         |        |          |        |          |        |          |        |
| 60        | 1.30   | 3283   | 2.42   | 3052   | 4.25    | 2676   | 6.81    | 2146   | 8.53    | 1792   | 11.40   | 1198   |         |        |          |        |          |        |          |        |
| 64        | 1.42   | 3588   | 2.64   | 3322   | 4.59    | 2892   | 7.29    | 2297   | 9.07    | 1905   | 12.00   | 1260   |         |        |          |        |          |        |          |        |
| 72        | 1.59   | 3997   | 2.91   | 3669   | 5.00    | 3151   | 7.80    | 2458   | 9.59    | 2014   | 12.44   | 1307   |         |        |          |        |          |        |          |        |
| 80        | 1.79   | 4525   | 3.27   | 4119   | 5.54    | 3493   | 8.50    | 2679   | 10.34   | 2173   | 13.20   | 1386   |         |        |          |        |          |        |          |        |
| 88        | 1.96   | 4929   | 3.53   | 4451   | 5.92    | 3729   | 8.93    | 2816   | 10.76   | 2262   | 13.54   | 1422   |         |        |          |        |          |        |          |        |
| 96        | 2.11   | 5325   | 3.79   | 4772   | 6.27    | 3952   | 9.33    | 2941   | 11.15   | 2341   | 13.83   | 1453   |         |        |          |        |          |        |          |        |
| 112       | 2.49   | 6266   | 4.39   | 5533   | 7.11    | 4483   | 10.31   | 3250   | 12.13   | 2549   |         |        |         |        |          |        |          |        |          |        |
| 120       | 2.64   | 6651   | 4.63   | 5830   | 7.42    | 4677   | 10.63   | 3351   | 12.43   | 2610   |         |        |         |        |          |        |          |        |          |        |
| 128       | 2.79   | 7028   | 4.85   | 6118   | 7.71    | 4860   | 10.93   | 3444   | 12.69   | 2667   |         |        |         |        |          |        |          |        |          |        |

### 6 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 45 & 46.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12        | .63    | 1559   | 1.24   | 1565   | 2.38    | 1502   | 4.41    | 1391   | 6.16    | 1294   | 10.20   | 1072   | 13.06   | 915    | 15.19    | 798    | 18.14    | 635    |          |        |
| 14        | .83    | 2097   | 1.62   | 2046   | 3.10    | 1951   | 5.67    | 1786   | 7.84    | 1647   | 12.70   | 1334   | 16.02   | 1122   | 18.42    | 967    | 21.67    | 759    |          |        |
| 15        | .93    | 2345   | 1.81   | 2284   | 3.45    | 2171   | 6.27    | 1977   | 8.64    | 1814   | 13.85   | 1455   | 17.35   | 1215   | 19.85    | 1043   | 23.20    | 812    |          |        |
| 16        | 1.01   | 2551   | 1.97   | 2480   | 3.73    | 2351   | 6.76    | 2129   | 9.26    | 1945   | 14.71   | 1545   | 18.30   | 1282   | 20.85    | 1095   | 24.21    | 848    |          |        |
| 18        | 1.18   | 2981   | 2.29   | 2889   | 4.32    | 2722   | 7.74    | 2440   | 10.52   | 2210   | 16.41   | 1724   | 20.18   | 1413   | 22.79    | 1197   | 26.18    | 917    |          |        |
| 21        | 1.46   | 3671   | 2.81   | 3541   | 5.25    | 3306   | 9.26    | 2919   | 12.44   | 2613   | 18.93   | 1988   | 22.91   | 1605   | 25.61    | 1345   |          |        |          |        |
| 24        | 1.70   | 4294   | 3.27   | 4122   | 6.05    | 3815   | 10.54   | 3322   | 14.00   | 2941   | 20.83   | 2188   | 24.88   | 1743   | 27.56    | 1448   |          |        |          |        |
| 27        | 1.98   | 4986   | 3.78   | 4763   | 6.94    | 4372   | 11.92   | 3755   | 15.66   | 3241   | 22.85   | 2400   | 26.98   | 1889   |          |        |          |        |          |        |
| 30        | 2.25   | 5660   | 4.27   | 5381   | 7.77    | 4899   | 13.18   | 4155   | 17.17   | 3607   | 24.60   | 2584   | 28.75   | 2013   |          |        |          |        |          |        |

### 6 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 46.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 33        | 1.53   | 3847   | 2.89   | 3641   | 5.22    | 3288   | 8.74    | 2755   | 11.28   | 2370   | 15.90   | 1670   | 18.42   | 1290   |          |        |          |        |          |        |
| 36        | 1.71   | 4316   | 3.23   | 4066   | 5.78    | 3644   | 9.58    | 3018   | 12.26   | 2575   | 17.02   | 1788   | 19.56   | 1370   |          |        |          |        |          |        |
| 42        | 2.04   | 5148   | 3.81   | 4807   | 6.73    | 4244   | 10.91   | 3439   | 13.76   | 2891   | 18.62   | 1955   |         |        |          |        |          |        |          |        |
| 48        | 2.38   | 6009   | 4.41   | 5563   | 7.68    | 4843   | 12.21   | 3847   | 15.19   | 3191   | 20.09   | 2111   |         |        |          |        |          |        |          |        |
| 54        | 2.74   | 6899   | 5.02   | 6333   | 8.63    | 5440   | 13.46   | 4243   | 16.55   | 3477   | 21.48   | 2256   |         |        |          |        |          |        |          |        |
| 60        | 3.01   | 7591   | 5.48   | 6910   | 9.30    | 5860   | 14.26   | 4494   | 17.35   | 3645   | 22.14   | 2326   |         |        |          |        |          |        |          |        |
| 66        | 3.38   | 8515   | 6.10   | 7691   | 10.22   | 6443   | 15.44   | 4864   | 18.60   | 3907   | 23.39   | 2457   |         |        |          |        |          |        |          |        |
| 72        | 3.65   | 9200   | 6.54   | 8245   | 10.83   | 6827   | 16.12   | 5080   | 19.26   | 4045   | 23.90   | 2511   |         |        |          |        |          |        |          |        |
| 84        | 4.30   | 10835  | 7.59   | 9566   | 12.30   | 7752   | 17.83   | 5620   | 20.98   | 4407   |         |        |         |        |          |        |          |        |          |        |
| 96        | 4.82   | 12152  | 8.39   | 10579  | 13.33   | 8404   | 18.90   | 5955   | 21.95   | 4611   |         |        |         |        |          |        |          |        |          |        |
| 108       | 5.47   | 13800  | 9.40   | 11583  | 14.67   | 9245   | 20.37   | 6420   | 23.41   | 4917   |         |        |         |        |          |        |          |        |          |        |
| 120       | 5.97   | 15059  | 10.13  | 12770  | 15.54   | 9793   | 21.20   | 6680   |         |        |         |        |         |        |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

# Spur Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

### 5 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

2-1/2" FACE

REFERENCE PAGE 46.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 12        | 1.14   | 2865   | 2.22   | 2794   | 4.22    | 2662   | 7.71    | 2431   | 10.65   | 2237   | 17.19   | 1805   | 21.61   | 1513   | 24.80    | 1302   | 29.09    | 1019   |          |        |
| 14        | 1.49   | 3756   | 2.89   | 3647   | 5.47    | 3449   | 9.87    | 3110   | 13.48   | 2832   | 21.25   | 2233   | 26.31   | 1843   | 29.87    | 1569   | 34.53    | 1209   |          |        |
| 15        | 1.67   | 4198   | 3.23   | 4069   | 6.08    | 3833   | 10.90   | 3435   | 14.81   | 3112   | 23.11   | 2427   | 28.41   | 1990   | 32.09    | 1686   | 36.87    | 1291   |          |        |
| 16        | 1.81   | 4565   | 3.50   | 4416   | 6.58    | 4146   | 11.72   | 3693   | 15.85   | 3329   | 24.47   | 2570   | 29.89   | 2093   | 33.61    | 1765   |          |        |          |        |
| 18        | 2.12   | 5332   | 4.08   | 5138   | 7.60    | 4789   | 13.38   | 4216   | 17.92   | 3766   | 27.15   | 2852   | 32.77   | 2295   | 36.56    | 1920   |          |        |          |        |
| 20        | 2.44   | 6141   | 4.68   | 5894   | 8.66    | 5456   | 15.07   | 4750   | 20.02   | 4205   | 29.79   | 3129   | 35.58   | 2492   | 39.41    | 2070   |          |        |          |        |

### 5 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

2-1/2" FACE

REFERENCE PAGE 46.

| No. Teeth | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|           | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| 24        | 1.82   | 4599   | 3.48   | 4381   | 6.35    | 4002   | 10.82   | 3411   | 14.15   | 2972   | 20.41   | 2144   | 23.95   | 1677   |          |        |          |        |          |        |
| 25        | 1.91   | 4826   | 3.64   | 4588   | 6.63    | 4177   | 11.24   | 3542   | 14.64   | 3075   | 20.97   | 2203   | 24.51   | 1716   |          |        |          |        |          |        |
| 28        | 2.21   | 5571   | 4.18   | 5267   | 7.54    | 4750   | 12.60   | 3970   | 16.23   | 3410   | 22.81   | 2396   | 26.37   | 1847   |          |        |          |        |          |        |
| 30        | 2.40   | 6050   | 4.52   | 5700   | 8.10    | 5108   | 13.42   | 4230   | 17.18   | 3609   | 23.86   | 2506   | 27.41   | 1920   |          |        |          |        |          |        |
| 35        | 2.97   | 7477   | 5.54   | 6982   | 9.78    | 6164   | 15.85   | 4995   | 19.98   | 4199   | 27.04   | 2840   |         |        |          |        |          |        |          |        |
| 40        | 3.47   | 8737   | 6.42   | 8087   | 11.17   | 7040   | 17.75   | 5593   | 22.08   | 4639   | 29.21   | 3068   |         |        |          |        |          |        |          |        |
| 45        | 3.98   | 10040  | 7.31   | 9216   | 12.56   | 7916   | 19.59   | 6174   | 24.09   | 5060   | 31.26   | 3284   |         |        |          |        |          |        |          |        |
| 50        | 4.38   | 11046  | 7.98   | 10056  | 13.53   | 8528   | 20.75   | 6540   | 25.25   | 5304   | 32.22   | 3384   |         |        |          |        |          |        |          |        |
| 60        | 5.32   | 13399  | 9.53   | 12008  | 15.78   | 9944   | 23.48   | 7400   | 28.05   | 5892   | 34.81   | 3657   |         |        |          |        |          |        |          |        |
| 70        | 6.27   | 15794  | 11.06  | 13945  | 17.93   | 11300  | 26.00   | 8192   | 30.58   | 6425   |         |        |         |        |          |        |          |        |          |        |
| 80        | 7.23   | 18229  | 12.59  | 15869  | 20.00   | 12605  | 28.34   | 8932   | 32.92   | 6916   |         |        |         |        |          |        |          |        |          |        |
| 100       | 8.71   | 21969  | 14.78  | 18630  | 22.67   | 14288  | 30.92   | 9745   |         |        |         |        |         |        |          |        |          |        |          |        |
| 110       | 9.68   | 24409  | 16.22  | 20449  | 24.50   | 15439  | 32.88   | 10362  |         |        |         |        |         |        |          |        |          |        |          |        |
| 120       | 10.38  | 26168  | 17.19  | 21669  | 25.58   | 16125  | 33.85   | 10666  |         |        |         |        |         |        |          |        |          |        |          |        |
| 140       | 11.70  | 29508  | 18.97  | 23910  | 27.50   | 17334  | 35.49   | 11182  |         |        |         |        |         |        |          |        |          |        |          |        |
| 160       | 13.30  | 33526  | 21.13  | 26631  | 29.94   | 18870  | 37.83   | 11921  |         |        |         |        |         |        |          |        |          |        |          |        |
| 180       | 14.49  | 36534  | 22.61  | 28495  | 31.40   | 19787  | 38.97   | 12281  |         |        |         |        |         |        |          |        |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

\*Torque Ratings (Lb. Ins.).

## Gear Gauge Set



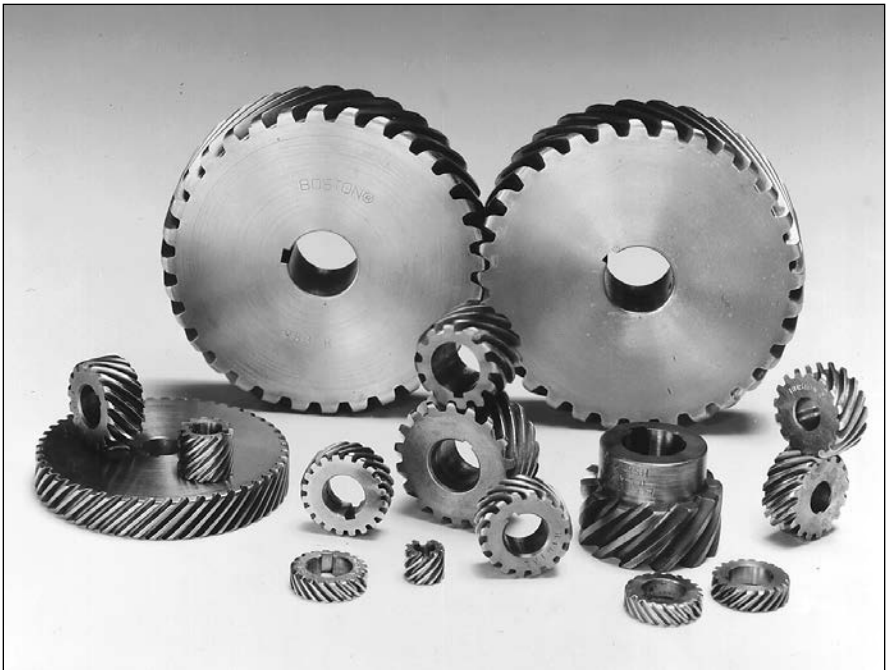
### 14-1/2° and 20° Pressure Angles

This handy, steel gear gauge set consists of 16 leaves — 24 gauges — to measure both 14-1/2° and 20° Pressure Angle tooth form, in diametral pitch sizes 64, 48, 32, 24, 20, 16, 12, 10, 8, 6, 5 and 4. Pitch sizes 8, 6, 5 and 4 both 14-1/2° and 20° are cut on individual leaves. Pitch sizes 64 through 10 inclusive, have both 14-1/2° and 20° Pressure Angles on a single leaf.

**SOLD ONLY AS A COMPLETE SET**

ORDER BY CATALOG NUMBER OR ITEM CODE

| Catalog Number | Item Code |
|----------------|-----------|
| Gear Gauge     | 06000     |



B

CATALOG NUMBER / DIMENSIONS ..... 64-65

SELECTION PROCEDURE..... 66

HORSEPOWER & TORQUE RATINGS..... 67-68

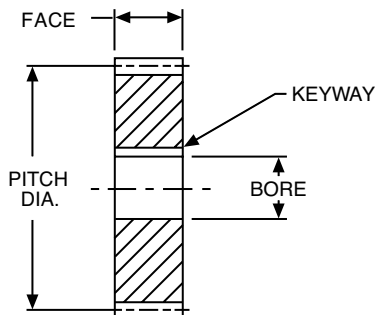
STOCK ALTERED / CUSTOM HELICAL GEARS ..... 3-5

HELICAL GEAR ENGINEERING INFORMATION..... 308-314

# Helical Gears

## 24 through 10 Transverse Diametral Pitch (Steel – Hardened)

14-1/2° Normal Pressure Angle – 45° Helix Angle



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 67  
Lubrication — 322  
Materials — 323  
Selection Procedure — 66

NOTE: Normal Diametral Pitch is equal to the Transverse Diametral Pitch divided by the cosine of the Helix Angle.

These gears are hardened all over, except as noted. Teeth on all steel gears are polished.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth           | Pitch<br>Dia. | Bore  | Keyway      | Style<br>See<br>Page<br>323 | RIGHT HAND                                      |              | LEFT HAND         |              |
|------------------------------|---------------|-------|-------------|-----------------------------|-------------------------------------------------|--------------|-------------------|--------------|
|                              |               |       |             |                             | Catalog<br>Number                               | Item<br>Code | Catalog<br>Number | Item<br>Code |
| <b>24</b>                    |               |       |             |                             | Face: 8-15 Teeth = .375"<br>18-72 Teeth = .250" |              |                   |              |
| TRANSVERSE DIAMETRICAL PITCH |               |       |             |                             |                                                 |              |                   |              |
| 8                            | .333          | .1875 | *           | A                           | H2408R                                          | 18268        | H2408L            | 18270        |
| 10                           | .417          | .250  | **          |                             | H2410R                                          | 18272        | H2410L            | 18274        |
| 12                           | .500          |       |             |                             | H2412R                                          | 18276        | H2412L            | 18278        |
| 15                           | .625          | .375  |             |                             | H2415R                                          | 18280        | H2415L            | 18282        |
| 18                           | .750          |       |             |                             | H2418R                                          | 18284        | H2418L            | 18286        |
| 20                           | .833          | .500  |             |                             | H2420R                                          | 18288        | H2420L            | 18290        |
| 24                           | 1.000         |       |             |                             | H2424R                                          | 18292        | H2424L            | 18294        |
| 30                           | 1.250         | .625  | 1/8 x 1/16  |                             | H2430R                                          | 18296        | H2430L            | 18298        |
| 36                           | 1.500         |       |             |                             | H2436R†                                         | 18300        | H2436L†           | 18302        |
| 48                           | 2.000         |       |             |                             | H2448R†                                         | 18304        | H2448L†           | 18306        |
| 60                           | 2.500         |       |             |                             | H2460R†                                         | 18308        | H2460L†           | 18310        |
| 72                           | 3.000         |       |             |                             | H2472R†                                         | 18312        | H2472L†           | 18314        |
| <b>20</b>                    |               |       |             |                             | Face:8-15 Teeth = .563"<br>18-72 Teeth = .375"  |              |                   |              |
| TRANSVERSE DIAMETRICAL PITCH |               |       |             |                             |                                                 |              |                   |              |
| 8                            | .400          | .250  | **          | A                           | H2008R                                          | 18228        | H2008L            | 18230        |
| 10                           | .500          | .3125 |             |                             | H2010R                                          | 18232        | H2010L            | 18234        |
| 12                           | .600          | .375  | 1/8 x 1/16  |                             | H2012R                                          | 18236        | H2012L            | 18238        |
| 15                           | .750          | .4375 |             |                             | H2015R                                          | 18240        | H2015L            | 18242        |
| 20                           | 1.000         | .500  |             |                             | H2020R                                          | 18244        | H2020L            | 18246        |
| 25                           | 1.250         | .625  |             |                             | H2025R                                          | 18248        | H2025L            | 18250        |
| 30                           | 1.500         | .750  | 3/16 x 3/32 |                             | H2030R†                                         | 18252        | H2030L†           | 18254        |
| 40                           | 2.000         |       |             |                             | H2040R†                                         | 18256        | H2040L†           | 18258        |
| 50                           | 2.500         |       |             |                             | H2050R†                                         | 18260        | H2050L†           | 18262        |
| 60                           | 3.000         |       |             |                             | H2060R†                                         | 18264        | H2060L†           | 18266        |
| <b>16</b>                    |               |       |             |                             | Face = .500"                                    |              |                   |              |
| TRANSVERSE DIAMETRICAL PITCH |               |       |             |                             |                                                 |              |                   |              |
| 12                           | .750          | .375  | 1/16 x 1/32 | A                           | H1612R                                          | 18200        | H1612L            | 18202        |
| 16                           | 1.000         | .500  | 1/8 x 1/16  |                             | H1616R                                          | 18204        | H1616L            | 18206        |
| 20                           | 1.250         |       |             |                             | H1620R                                          | 18208        | H1620L            | 18210        |
| 24                           | 1.500         |       |             |                             | H1624R†                                         | 18212        | H1624L†           | 18214        |
| 32                           | 2.000         |       |             |                             | H1632R†                                         | 18216        | H1632L†           | 18218        |
| 40                           | 2.500         |       |             |                             | H1640R†                                         | 18220        | H1640L†           | 18222        |
| 48                           | 3.000         |       |             |                             | H1648R†                                         | 18224        | H1648L†           | 18226        |
| <b>12</b>                    |               |       |             |                             | Face = .750"                                    |              |                   |              |
| TRANSVERSE DIAMETRICAL PITCH |               |       |             |                             |                                                 |              |                   |              |
| 12                           | 1.000         | .625  | 1/8 x 1/16  | A                           | H1212R                                          | 18170        | H1212L            | 18168        |
| 15                           | 1.250         |       |             |                             | H1215R                                          | 18174        | H1215L            | 18172        |
| 18                           | 1.500         |       |             |                             | H1218R†                                         | 18178        | H1218L†           | 18176        |
| 24                           | 2.000         |       |             |                             | H1224R†                                         | 18182        | H1224L†           | 18180        |
| 30                           | 2.500         |       |             |                             | H1230R†                                         | 18186        | H1230L†           | 18184        |
| 36                           | 3.000         |       |             |                             | H1236R†                                         | 18190        | H1236L†           | 18188        |
| <b>10</b>                    |               |       |             |                             | Face = .875"                                    |              |                   |              |
| TRANSVERSE DIAMETRICAL PITCH |               |       |             |                             |                                                 |              |                   |              |
| 8                            | .800          | .375  | 1/16 x 1/32 | A                           | H1008R                                          | 18130        | H1008L            | 18128        |
| 10                           | 1.000         | .500  | 1/8 x 1/16  |                             | H1010R                                          | 18134        | H1010L            | 18132        |
| 12                           | 1.200         | .625  |             |                             | H1012R                                          | 18138        | H1012L            | 18136        |
| 15                           | 1.500         | .750  | 3/16 x 3/32 |                             | H1015R†                                         | 18142        | H1015L†           | 18140        |
| 20                           | 2.000         |       |             |                             | H1020R†                                         | 18146        | H1020L†           | 18144        |
| 25                           | 2.500         |       |             |                             | H1025R†                                         | 18148        | H1025L†           | 18150        |
| 30                           | 3.000         |       |             |                             | H1030R†                                         | 18154        | H1030L†           | 18152        |
| 40                           | 4.000         |       |             |                             | H1040R†                                         | 18158        | H1040L†           | 18156        |

\*1/16" wide x .04" deep slot cut on end of gear for drive pin, not key.

\*\*3/32" wide x .06" deep slot cut on end of gear for drive pin, not key.

†Teeth only hardened.

## 8 and 6 Transverse Diametral Pitch (Bronze & Steel – Hardened)

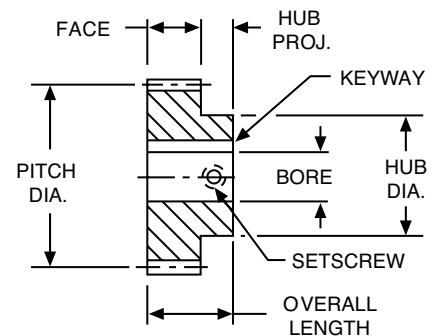
14-1/2° Normal Pressure Angle – 45° Helix Angle

All gears with hubs have setscrew at 90° to keyway. Steel gears have teeth only hardened, except as noted. Teeth on all steel gears are polished.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth                | Pitch<br>Dia. | Bore   | Hub    |       | Keyway      | Style<br>See<br>Page<br>323 | RIGHT HAND                                        |              | LEFT HAND         |              |       |
|-----------------------------------|---------------|--------|--------|-------|-------------|-----------------------------|---------------------------------------------------|--------------|-------------------|--------------|-------|
|                                   |               |        | Dia.   | Proj. |             |                             | Catalog<br>Number                                 | Item<br>Code | Catalog<br>Number | Item<br>Code |       |
| <b>8</b>                          |               |        |        |       |             |                             | Face without Hubs = 1.000"<br>-with Hubs = .750"  |              |                   |              |       |
| <b>TRANSVERSE DIAMETRAL PITCH</b> |               |        |        |       |             |                             | <b>Overall Length = Face + Hub Proj.</b>          |              |                   |              |       |
| <b>STEEL-HARDENED</b>             |               |        |        |       |             |                             |                                                   |              |                   |              |       |
| 8                                 | 1.000         | .500   | -      | -     | 1/8 x 1/16  | A                           | H808R'                                            | 18066        | H808L'            | 18064        |       |
| 10                                | 1.250         | .625   | -      | -     |             |                             | H810R'                                            | 18070        | H810L'            | 18068        |       |
| 12                                | 1.500         | .750   | -      | -     |             |                             | H812R                                             | 18074        | H812L             | 18072        |       |
| 16                                | 2.000         | .875   | -      | -     |             |                             | 3/16 x 3/32                                       | H816R        | 18078             | H816L        | 18076 |
| 20                                | 2.500         |        |        |       | H820R       | 18082                       |                                                   | H820L        | 18080             |              |       |
| 24                                | 3.000         |        |        |       | H824R       | 18086                       |                                                   | H824L        | 18084             |              |       |
| 32                                | 4.000         |        |        |       | H832R       | 18090                       |                                                   | H832L        | 18088             |              |       |
| 8                                 | 1.000         | .500   | .75    | .50   | 1/8 x 1/16  | A                           | HS808R'                                           | 18092        | HS808L'           | 18094        |       |
| 10                                | 1.250         | .625   | 1.00   | .50   |             |                             | HS810R'                                           | 18096        | HS810L'           | 18098        |       |
| 12                                | 1.500         | .750   | 1.25   | .50   |             |                             | HS812R'                                           | 18100        | HS812L'           | 18102        |       |
| 16                                | 2.000         | 1.000  | 1.62   | .50   |             |                             | 1/4 x 1/8                                         | HS816R       | 18104             | HS816L       | 18106 |
| 20                                | 2.500         |        | HS820R |       | 18108       | HS820L                      |                                                   | 18110        |                   |              |       |
| 24                                | 3.000         |        | HS824R |       | 18112       | HS824L                      |                                                   | 18114        |                   |              |       |
| 32                                | 4.000         |        | HS832R |       | 18116       | HS832L                      |                                                   | 18118        |                   |              |       |
| 40                                | 5.000         | 2.25   |        |       |             | HS840R                      | 18120                                             | HS840L       | 18122             |              |       |
| 48                                | 6.000         |        |        |       |             | HS848R                      | 18124                                             | HS848L       | 18126             |              |       |
| <b>BRONZE</b>                     |               |        |        |       |             |                             |                                                   |              |                   |              |       |
| 8                                 | 1.000         | .500   | .75    | .50   | 1/8 x 1/16  | A                           | HB808R                                            | 18356        | HB808L            | 18358        |       |
| 10                                | 1.250         | .625   | 1.00   | .50   |             |                             | HB810R                                            | 18360        | HB810L            | 18362        |       |
| 12                                | 1.500         | .750   | 1.24   | .50   |             |                             | HB812R                                            | 18364        | HB812L            | 18366        |       |
| 16                                | 2.000         | 1.000  | 1.62   | .50   |             |                             | 1/4 x 1/8                                         | HB816R       | 18368             | HB816L       | 18370 |
| 20                                | 2.500         |        | HB820R |       | 18372       | HB820L                      |                                                   | 18374        |                   |              |       |
| 24                                | 3.000         |        | HB824R |       | 18376       | HB824L                      |                                                   | 18378        |                   |              |       |
| 32                                | 4.000         |        | HB832R |       | 18380       | HB832L                      |                                                   | 18382        |                   |              |       |
| 40                                | 5.000         | 2.25   |        |       |             | HB840R                      | 18384                                             | HB840L       | 18386             |              |       |
| 48                                | 6.000         |        |        |       |             | HB848R                      | 18388                                             | HB848L       | 18390             |              |       |
| <b>6</b>                          |               |        |        |       |             |                             | Face without Hubs = 1.250"<br>-with Hubs = 1.000" |              |                   |              |       |
| <b>TRANSVERSE DIAMETRAL PITCH</b> |               |        |        |       |             |                             | <b>Overall Length = Face + Hub Proj.</b>          |              |                   |              |       |
| <b>STEEL-HARDENED</b>             |               |        |        |       |             |                             |                                                   |              |                   |              |       |
| 8                                 | 1.333         | .625   | -      | -     | 1/8 x 1/16  | A                           | H608R                                             | 18000        | H608L             | 18002        |       |
| 10                                | 1.667         | .750   | -      | -     |             |                             | HB610R                                            | 18004        | HB610L            | 18006        |       |
| 12                                | 2.000         | 1.000  | -      | -     |             |                             | 1/4 x 1/8                                         | H612R        | 18010             | H612L        | 18008 |
| 15                                | 2.500         |        |        |       |             |                             |                                                   | H615R        | 18014             | H615L        | 18012 |
| 18                                | 3.000         |        |        |       | H618R       | 18018                       |                                                   | H618L        | 18016             |              |       |
| 24                                | 4.000         |        |        |       | H624R       | 18022                       |                                                   | H624L        | 18020             |              |       |
| 8                                 | 1.333         | .625   | 1.00   | .75   | 1/8 x 1/16  | A                           | HS608R                                            | 18024        | HS608L            | 18026        |       |
| 9                                 | 1.500         | .750   | 1.18   | .75   |             |                             | HS609R                                            | 18028        | HS609L            | 18030        |       |
| 10                                | 1.667         | .750   | 1.34   | .75   |             |                             | HS610R                                            | 18032        | HS610L            | 18034        |       |
| 12                                | 2.000         | 1.000  | 1.62   | .75   |             |                             | HS612R                                            | 18036        | HS612L            | 18038        |       |
| 15                                | 2.500         | 1.250  | 2.00   | .75   | 5/16 x 5/32 | A                           | HS615R                                            | 18040        | HS615L            | 18042        |       |
| 18                                | 3.000         |        | 2.25   |       |             |                             | HS618R                                            | 18044        | HS618L            | 18046        |       |
| 20                                | 3.333         |        | 2.50   |       |             |                             | HS620R                                            | 18048        | HS620L            | 18050        |       |
| 24                                | 4.000         |        |        |       |             |                             | HS624R                                            | 18052        | HS624L            | 18054        |       |
| 30                                | 5.000         | HS630R |        | 18056 | HS630L      | 18058                       |                                                   |              |                   |              |       |
| 36                                | 6.000         | HS636R |        | 18060 | HS636L      | 18062                       |                                                   |              |                   |              |       |
| <b>BRONZE</b>                     |               |        |        |       |             |                             |                                                   |              |                   |              |       |
| 12                                | 2.000         | 1.000  | 1.62   | .75   | 1/4 x 1/8   | A                           | HB612R                                            | 18328        | HB612L            | 18330        |       |
| 15                                | 2.500         | 1.250  | 2.00   | .75   |             |                             | 5/16 x 5/32                                       | HB615R       | 18332             | HB615L       | 18334 |
| 18                                | 3.000         |        | 2.25   |       |             |                             |                                                   | HB618R       | 18336             | HB618L       | 18338 |
| 20                                | 3.333         |        | 2.50   |       |             |                             |                                                   | HB620R       | 18340             | HB620L       | 18342 |
| 24                                | 4.000         |        |        |       | HB624R      | 18344                       |                                                   | HB624L       | 18346             |              |       |
| 30                                | 5.000         | HB630R |        | 18348 | HB630L      | 18350                       |                                                   |              |                   |              |       |
| 36                                | 6.000         | HB636R |        | 18352 | HB636L      | 18354                       |                                                   |              |                   |              |       |

\*Hardened all over.



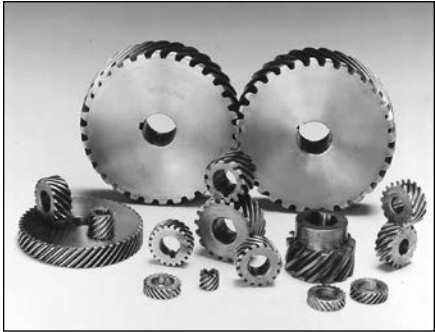
### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 67, 68  
Lubrication — 322  
Materials — 323  
Selection Procedure — 66

NOTE: Normal Diametral Pitch is equal to the Transverse Diametral Pitch divided by the cosine of the Helix Angle.



Boston standard stock helical gears are made with a 45° helix angle to transmit motion and/or power between non-intersecting shafts that are parallel or at 90° to each other. They are stocked both right and left-handed. For parallel shaft operation, helical gears having opposite hand helix angles are required, while for shafts at 90° the same hand helix must be used.

For parallel shaft applications, helical gears provide overlapping tooth contact. This results in a smoother, quieter operation and higher horsepower capacity than afforded by spur gears of comparable size.

For 90° shaft applications, the tooth contact area is very small which considerably limits the load capacity. Horsepower ratings are not tabulated in this catalog, for 90° applications.

Boston helical gears are top hobbed, resulting in extremely close concentricity between the pitch diameter and the outside diameter.

B

Selection Procedure

Approximate horsepower and torque ratings for selected sizes (numbers of teeth) at various operating speeds (RPM) are given for hardened steel helical gears. The ratings are based on the beam strength of the gear tooth. These ratings are for parallel shaft applications under normal operating conditions, that is: properly mounted and lubricated, carrying a smooth load for not more than 10 hours per day or a moderate shock load not more than 15 minutes in two hours (Service Factor 1.0). Refer to Table 1, below, for other types of service.

Ratings for gear sizes or speeds not listed may be interpolated from the values indicated. Pitchline velocities are limited as reflected by the lack of ratings for larger numbers of teeth at higher RPM's in the selection chart. Application in this area is not recommended.

Ref. Parallel shafts are approximately 98% efficient  
90° shafts are approximately 50% efficient

Horsepower ratings for bronze gears are approximately 33% of these ratings.

- 1. Determine service factor.
  - a. Using Application Classification Chart I, pages 331-332 determine service factor or
  - b. With knowledge of operating conditions and load classification, select service factor from Table 1.
- 2. Determine Design Horsepower.

**Design HP = Application Load × Service Factor (Table 1)**
- 3. Select pinion with horsepower capacity equal to (or greater than) design horsepower determined in Step 2. Reference Rating Pages 67, 68.
- 4. Select a driven gear with a catalog rating equal to (or greater than) the horsepower determined in Step 2.

TABLE 1

| Service Factor | Operating Conditions                                                                               |
|----------------|----------------------------------------------------------------------------------------------------|
| .8             | Uniform – not more than 15 minutes in 2 hours.                                                     |
| 1.0            | Moderate Shock – not more than 15 minutes in 2 hours.<br>Uniform – not more than 10 hours per day. |
| 1.25           | Moderate Shock – not more than 10 hours per day.<br>Uniform – more than 10 hours per day.          |
| 1.50           | Heavy Shock – not more than 15 minutes in 2 hours.<br>Moderate Shock – more than 10 hours per day. |
| 1.75           | Heavy Shock – not more than 10 hours per day.                                                      |
| 2.0            | Heavy Shock – more than 10 hours per day.                                                          |

Heavy shock loads and/or severe wear conditions may require the use of higher service factors. Consultation with factory is recommended in these applications.

## Approximate Horsepower and Torque\* Ratings For Class I Service (Service Factor = 1.0)

| No.<br>Teeth                                                                            | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        | 3600 RPM |        |
|-----------------------------------------------------------------------------------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
|                                                                                         | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque | H.P.     | Torque |
| <b>24 DIAMETRAL PITCH - 33.94 NORMAL DIAMETRAL PITCH HARDENED STEEL .250-.375" FACE</b> |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          |        |          |        |
| 8                                                                                       | .01    | 13.5   | .01    | 13.5   | .02     | 13.4   | .04     | 13.2   | .06     | 13.0   | .12     | 12.5   | .17     | 12.0   | .22      | 11.6   | .31      | 10.8   | .51      | 8.9    |
| 10                                                                                      | .01    | 18.0   | .01    | 17.9   | .03     | 17.8   | .06     | 17.4   | .08     | 17.1   | .16     | 16.3   | .22     | 15.5   | .28      | 14.8   | .39      | 13.6   | .62      | 10.9   |
| 12                                                                                      | .01    | 22.5   | .02    | 22.3   | .04     | 22.1   | .07     | 21.6   | .10     | 21.1   | .19     | 20.0   | .27     | 18.9   | .34      | 17.9   | .46      | 16.2   | .72      | 12.6   |
| 15                                                                                      | .01    | 29.1   | .02    | 28.9   | .05     | 28.5   | .09     | 27.8   | .13     | 27.1   | .24     | 25.2   | .34     | 23.5   | .42      | 22.0   | .56      | 19.6   | .84      | 14.8   |
| 18                                                                                      | .01    | 23.6   | .02    | 23.4   | .04     | 23.1   | .07     | 22.4   | .10     | 21.7   | .19     | 19.9   | .26     | 18.4   | .33      | 17.1   | .43      | 15.0   | .62      | 10.9   |
| 20                                                                                      | .01    | 26.8   | .02    | 26.5   | .04     | 26.1   | .08     | 25.2   | .12     | 24.3   | .21     | 22.2   | .29     | 20.4   | .36      | 18.8   | .47      | 16.3   | .67      | 11.7   |
| 24                                                                                      | .01    | 32.6   | .03    | 32.3   | .05     | 31.6   | .10     | 30.3   | .14     | 29.2   | .25     | 26.1   | .34     | 23.7   | .41      | 21.6   | .53      | 18.5   | .73      | 12.8   |
| 30                                                                                      | .02    | 41.3   | .03    | 40.8   | .06     | 39.7   | .12     | 37.8   | .17     | 36.0   | .30     | 31.6   | .40     | 28.1   | .48      | 25.3   | .60      | 21.1   | .81      | 14.1   |
| 36                                                                                      | .02    | 49.9   | .04    | 49.1   | .08     | 47.6   | .14     | 44.9   | .20     | 42.4   | .35     | 36.4   | .46     | 31.9   | .54      | 28.4   | .66      | 23.3   | .86      | 15.1   |
| 48                                                                                      | .03    | 67.0   | .05    | 65.6   | .10     | 63.0   | .19     | 58.3   | .26     | 54.3   | .43     | 45.0   | .55     | 38.4   | .64      | 33.5   | .76      | 26.6   | .94      | 16.5   |
| 60                                                                                      | .03    | 83.8   | .06    | 81.6   | .12     | 77.6   | .22     | 70.7   | .31     | 64.9   | .50     | 52.0   | .62     | 43.4   | .71      | 37.3   | .83      | 29.0   | 1.00     | 17.5   |
| 72                                                                                      | .04    | 101    | .08    | 97.7   | .15     | 92.1   | .26     | 82.5   | .36     | 74.8   | .56     | 58.3   | .68     | 47.8   | .77      | 40.5   | .89      | 31.0   | 1.00     | 18.2   |
| <b>20 DIAMETRAL PITCH - 28.28 NORMAL DIAMETRAL PITCH HARDENED STEEL .375-.563" FACE</b> |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          |        |          |        |
| 8                                                                                       | .01    | 29.2   | .02    | 29.1   | .05     | 28.8   | .09     | 28.4   | .13     | 27.9   | .25     | 26.6   | .36     | 25.4   | .46      | 24.3   | .64      | 22.3   | 1.00     | 18.0   |
| 10                                                                                      | .01    | 37.7   | .03    | 37.5   | .06     | 37.1   | .12     | 36.3   | .17     | 35.6   | .32     | 33.5   | .45     | 31.7   | .57      | 30.1   | .78      | 27.2   | 1.20     | 21.2   |
| 12                                                                                      | .02    | 48.5   | .04    | 48.2   | .08     | 47.5   | .15     | 46.4   | .22     | 45.2   | .40     | 42.2   | .56     | 39.5   | .71      | 37.1   | .95      | 33.2   | 1.44     | 25.1   |
| 15                                                                                      | .02    | 62.7   | .05    | 62.2   | .10     | 61.2   | .19     | 59.3   | .27     | 51.6   | .50     | 52.8   | .70     | 48.8   | .86      | 45.4   | 1.14     | 39.8   | 1.66     | 29.0   |
| 20                                                                                      | .02    | 57.7   | .05    | 57.1   | .09     | 55.9   | .17     | 53.7   | .25     | 51.6   | .44     | 46.2   | .60     | 41.9   | .73      | 38.3   | .93      | 32.7   | 1.30     | 22.7   |
| 25                                                                                      | .03    | 73.8   | .06    | 72.8   | .11     | 70.9   | .21     | 67.4   | .31     | 64.3   | .54     | 56.4   | .72     | 50.2   | .86      | 45.2   | 1.08     | 37.7   | 1.44     | 25.2   |
| 30                                                                                      | .04    | 89.1   | .07    | 87.6   | .13     | 85.0   | .25     | 80.0   | .36     | 75.7   | .62     | 65.0   | .81     | 56.9   | .96      | 50.7   | 1.19     | 41.5   | 1.54     | 27.0   |
| 40                                                                                      | .05    | 120    | .09    | 118    | .18     | 113    | .33     | 104    | .46     | 97.2   | .77     | 80.5   | .98     | 68.7   | 1.14     | 59.9   | 1.36     | 47.7   | 1.69     | 29.6   |
| 50                                                                                      | .06    | 151    | .12    | 147    | .22     | 139    | .40     | 127    | .55     | 117    | .89     | 93.4   | 1.11    | 78.0   | 1.27     | 66.9   | 1.49     | 52.1   | 1.79     | 31.4   |
| 60                                                                                      | .07    | 180    | .14    | 175    | .26     | 165    | .47     | 147    | .64     | 134    | .99     | 104    | 1.22    | 85.4   | 1.38     | 72.3   | 1.58     | 55.4   | 1.86     | 32.5   |
| <b>16 DIAMETRAL PITCH - 22.63 NORMAL DIAMETRAL PITCH HARDENED STEEL .500" FACE</b>      |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          |        |          |        |
| 12                                                                                      | .03    | 67.2   | .05    | 66.6   | .10     | 65.6   | .20     | 63.6   | .29     | 61.7   | .54     | 56.6   | .75     | 52.3   | .93      | 48.6   | 1.20     | 42.6   | 1.80     | 31.1   |
| 16                                                                                      | .04    | 93.4   | .07    | 92.4   | .14     | 90.5   | .28     | 86.9   | .40     | 83.5   | .71     | 74.8   | .97     | 67.8   | 1.18     | 62.0   | 1.51     | 52.9   | 2.10     | 36.7   |
| 20                                                                                      | .05    | 120    | .09    | 118    | .18     | 115    | .35     | 110    | .50     | 104    | .87     | 91.5   | 1.16    | 81.5   | 1.40     | 73.4   | 1.75     | 61.3   | 2.34     | 41.0   |
| 24                                                                                      | .06    | 146    | .11    | 144    | .22     | 139    | .42     | 131    | .59     | 124    | 1.00    | 107    | 1.33    | 93.3   | 1.58     | 83.0   | 1.94     | 68.1   | 2.52     | 44.2   |
| 32                                                                                      | .08    | 197    | .15    | 193    | .29     | 185    | .54     | 172    | .76     | 160    | 1.26    | 132    | 1.61    | 113    | 1.87     | 98.4   | 2.24     | 78.4   | 2.78     | 48.7   |
| 40                                                                                      | .10    | 249    | .19    | 242    | .37     | 230    | .67     | 210    | .92     | 193    | 1.47    | 154    | 1.84    | 129    | 2.11     | 111    | 2.46     | 86.2   | 3.00     | 51.8   |
| 48                                                                                      | .12    | 298    | .23    | 289    | .43     | 273    | .77     | 244    | 1.05    | 221    | 1.64    | 173    | 2.02    | 141    | 2.28     | 120    | 2.62     | 91.8   | 3.08     | 53.9   |
| <b>12 DIAMETRAL PITCH - 16.97 NORMAL DIAMETRAL PITCH HARDENED STEEL .750" FACE</b>      |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          |        |          |        |
| 12                                                                                      | .07    | 179    | .14    | 177    | .27     | 173    | .53     | 166    | .76     | 160    | 1.36    | 143.2  | 1.85    | 130    | 2.26     | 119    | 2.89     | 101    | 4.01     | 70.2   |
| 15                                                                                      | .09    | 231    | .18    | 228    | .35     | 222    | .67     | 211    | .96     | 201    | 1.68    | 176    | 2.24    | 157    | 2.69     | 142    | 3.37     | 118    | 4.51     | 79.0   |
| 18                                                                                      | .11    | 281    | .22    | 277    | .43     | 268    | .80     | 253    | 1.14    | 239    | 1.95    | 205    | 2.57    | 180    | 3.05     | 160    | 3.75     | 131    | 4.86     | 85.1   |
| 24                                                                                      | .15    | 387    | .30    | 379    | .58     | 364    | 1.07    | 337    | 1.49    | 313    | 2.47    | 260    | 3.16    | 222    | 3.68     | 193    | 4.39     | 154    | 5.45     | 95.5   |
| 30                                                                                      | .19    | 489    | .38    | 477    | .72     | 453    | 1.31    | 413    | 1.80    | 379    | 2.89    | 304    | 3.62    | 254    | 4.14     | 218    | 4.84     | 170    | 5.82     | 102    |
| 36                                                                                      | .23    | 589    | .45    | 571    | .85     | 538    | 1.53    | 482    | 2.08    | 437    | 3.24    | 341    | 3.99    | 279    | 4.50     | 237    | 5.17     | 181    | 6.08     | 106    |
| <b>10 DIAMETRAL PITCH - 14.14 NORMAL DIAMETRAL PITCH HARDENED STEEL .875" FACE</b>      |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          |        |          |        |
| 8                                                                                       | .07    | 181    | .14    | 179    | .28     | 176    | .54     | 171    | .79     | 165    | 1.44    | 151    | 1.78    | 139    | 2.45     | 129    | 3.20     | 112    | 4.62     | 80.9   |
| 10                                                                                      | .10    | 240    | .19    | 238    | .37     | 233    | .71     | 223    | 1.02    | 215    | 1.83    | 193    | 2.49    | 174    | 3.03     | 159    | 3.88     | 136    | 5.39     | 94.4   |
| 12                                                                                      | .12    | 300    | .23    | 296    | .46     | 288    | .87     | 275    | 1.25    | 262    | 2.20    | 231    | 2.95    | 206    | 3.55     | 186    | 4.46     | 156    | 6.01     | 105    |
| 15                                                                                      | .15    | 387    | .30    | 381    | .59     | 369    | 1.10    | 348    | 1.56    | 329    | 2.69    | 282    | 3.53    | 247    | 4.19     | 220    | 5.16     | 181    | 6.69     | 117    |
| 20                                                                                      | .21    | 533    | .41    | 522    | .79     | 501    | 1.47    | 464    | 2.05    | 432    | 3.40    | 357    | 4.35    | 305    | 5.06     | 266    | 6.05     | 212    | 7.51     | 131    |
| 25                                                                                      | .27    | 680    | .53    | 662    | 1.00    | 630    | 1.82    | 573    | 2.50    | 526    | 4.01    | 422    | 5.03    | 352    | 5.75     | 302    | 6.72     | 235    | 8.09     | 142    |
| 30                                                                                      | .32    | 818    | .63    | 793    | 1.19    | 747    | 2.12    | 669    | 2.89    | 606    | 4.50    | 473    | 5.54    | 388    | 6.25     | 328    | 7.18     | 252    | 8.44     | 148    |
| 40                                                                                      | .44    | 1097   | .84    | 1053   | 1.55    | 975    | 2.69    | 849    | 3.58    | 751    | 5.32    | 559    | 6.36    | 445    | 7.04     | 370    | 7.89     | 276    | 8.97     | 157    |
| <b>8 DIAMETRAL PITCH - 11.31 NORMAL DIAMETRAL PITCH HARDENED STEEL .750" FACE</b>       |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          |        |          |        |
| 8                                                                                       | .10    | 242    | .19    | 239    | .37     | 234    | .71     | 225    | 1.03    | 216    | 1.85    | 194    | 2.51    | 176    | 3.06     | 160    | 3.91     | 137    | 5.43     | 95     |
| 10                                                                                      | .13    | 321    | .25    | 317    | .49     | 309    | .93     | 293    | 1.33    | 280    | 2.53    | 245    | 3.12    | 218    | 3.74     | 197    | 4.69     | 164    | 6.27     | 110    |
| 12                                                                                      | .16    | 400    | .31    | 394    | .61     | 382    | 1.14    | 360    | 1.62    | 340    | 2.78    | 292    | 3.65    | 256    | 4.34     | 228    | 5.33     | 187    | 6.92     | 121    |
| 16                                                                                      | .22    | 555    | .43    | 543    | .83     | 521    | 1.53    | 483    | 2.14    | 447    | 3.54    | 372    | 4.53    | 318    | 5.27     | 277    | 6.30     | 221    | 7.82     | 137    |
| 20                                                                                      | .28    | 710    | .55    | 692    | 1.04    | 658    | 1.90    | 599    | 2.62    | 550    | 4.20    | 441    | 5.26    | 368    | 6.01     | 316    | 7.03     | 246    | 8.45     | 148    |
| 24                                                                                      | .34    | 862    | .66    | 836    | 1.25    | 787    | 2.24    | 706    | 3.04    | 639    | 4.75    | 499    | 5.84    | 409    | 6.59     | 346    | 7.57     | 265    | 8.90     | 156    |
| 32                                                                                      | .46    | 1160   | .88    | 1113   | 1.64    | 1031   | 2.85    | 897    | 3.78    | 794    | 5.63    | 591    | 6.72    | 471    | 7.44     | 391    | 8.34     | 292    |          |        |
| 40                                                                                      | .58    | 1454   | 1.10   | 1383   | 2.00    | 1259   | 3.39    | 1068   | 4.41    | 927    | 6.32    | 664    | 7.39    | 517    | 8.07     | 424    | 8.88     | 311    |          |        |
| 48                                                                                      | .69    | 1137   | 1.30   | 1636   | 2.33    | 1466   | 3.85    | 1214   | 4.93    | 1036   | 6.85    | 719    | 7.87    | 551    | 8.50     | 447    |          |        |          |        |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line exceed 1500 Feet per Minute and should be used for interpolation purposes only.

\*Torque Rating (Lb. Ins.)

# Helical Gears

## Approximate Horsepower and Torque\* Ratings

For Class I Service (Service Factor = 1.0)

| No.<br>Teeth                                                    | 25 RPM |        | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |             | 3600 RPM |        |  |
|-----------------------------------------------------------------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|-------------|----------|--------|--|
|                                                                 | H.P.   | Torque | H.P.   | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.    | Torque | H.P.     | Torque | H.P.     | Torque      | H.P.     | Torque |  |
| 8 DIAMETRAL PITCH – 11.31 NORMAL DIAMETRAL PITCH HARDENED STEEL |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          | 1.000" FACE |          |        |  |
| 8                                                               | .13    | 323    | .25    | 319    | .50     | 313    | .95     | 300    | 1.4     | 288    | 2.5     | 258    | 3.3     | 234    | 4.1      | 214    | 5.2      | 183         | 7.2      | 127    |  |
| 10                                                              | .17    | 428    | .34    | 422    | .65     | 412    | 1.20    | 391    | 1.8     | 373    | 3.1     | 327    | 4.2     | 291    | 5.0      | 262    | 6.3      | 219         | 8.4      | 146    |  |
| 12                                                              | .21    | 534    | .42    | 525    | .81     | 509    | 1.50    | 480    | 2.2     | 453    | 3.7     | 389    | 4.9     | 341    | 5.8      | 304    | 7.1      | 249         | 9.2      | 162    |  |
| 16                                                              | .29    | 740    | .57    | 725    | 1.1     | 696    | 2.00    | 644    | 2.9     | 599    | 4.7     | 496    | 6.1     | 423    | 7.0      | 370    | 8.4      | 294         | 10.4     | 182    |  |
| 20                                                              | .38    | 947    | .73    | 923    | 1.4     | 877    | 2.50    | 799    | 3.5     | 733    | 5.6     | 588    | 7.0     | 491    | 8.0      | 421    | 9.3      | 328         | 11.1     | 197    |  |
| 24                                                              | .46    | 1150   | .88    | 1114   | 1.7     | 1050   | 3.00    | 941    | 4.1     | 852    | 6.3     | 665    | 7.7     | 545    | 8.8      | 462    | 10.1     | 352         | 11.9     | 208    |  |
| 32                                                              | .61    | 1547   | 1.20   | 1485   | 2.2     | 1374   | 3.80    | 1196   | 5.0     | 1059   | 7.5     | 788    | 9.0     | 628    | 9.9      | 521    | 11.1     | 389         | 12.7     | 221    |  |
| 8 DIAMETRAL PITCH – 11.31 NORMAL DIAMETRAL PITCH BRONZE         |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          | .750" FACE  |          |        |  |
| 8                                                               | .04    | 97     | .08    | 95.8   | .15     | 93.8   | .29     | 90.0   | .41     | 86.5   | .74     | 77.5   | 1.00    | 70.2   | 1.22     | 64.2   | 1.56     | 54.8        | 2.17     | 38.0   |  |
| 10                                                              | .05    | 128    | .10    | 127    | .20     | 123    | .37     | 117    | .53     | 112    | .93     | 98.1   | 1.25    | 87.3   | 1.50     | 78.7   | 1.88     | 65.7        | 2.51     | 43.9   |  |
| 12                                                              | .06    | 160    | .12    | 158    | .24     | 153    | .46     | 144    | .65     | 136    | 1.11    | 117    | 1.46    | 102    | 1.73     | 91.1   | 2.13     | 74.7        | 2.77     | 48.4   |  |
| 16                                                              | .09    | 222    | .17    | 217    | .33     | 209    | .61     | 193    | .86     | 180    | 1.42    | 149    | 1.81    | 127    | 2.11     | 111    | 2.52     | 88.2        | 3.13     | 54.7   |  |
| 20                                                              | .11    | 284    | .22    | 277    | .42     | 263    | .76     | 240    | 1.05    | 220    | 1.68    | 176    | 2.10    | 147    | 2.41     | 126    | 2.81     | 98.4        | 3.38     | 59.2   |  |
| 24                                                              | .14    | 345    | .27    | 334    | .50     | 315    | .90     | 282    | 1.22    | 256    | 1.90    | 199    | 2.33    | 163    | 2.64     | 138    | 3.03     | 106         | 3.56     | 62.3   |  |
| 32                                                              | .18    | 464    | .35    | 445    | .65     | 412    | 1.14    | 359    | 1.51    | 318    | 2.75    | 236    | 2.69    | 188    | 2.98     | 156    | 3.34     | 117         |          |        |  |
| 40                                                              | .23    | 582    | .44    | 553    | .80     | 504    | 1.36    | 427    | 1.76    | 371    | 2.53    | 266    | 2.95    | 207    | 3.23     | 169    | 3.55     | 124         |          |        |  |
| 48                                                              | .28    | 695    | .52    | 655    | .93     | 587    | 1.54    | 486    | 1.97    | 414    | 2.74    | 288    | 3.15    | 220    | 3.40     | 179    |          |             |          |        |  |
| 6 DIAMETRAL PITCH – 8.48 NORMAL DIAMETRAL PITCH HARDENED STEEL  |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          | 1.000" FACE |          |        |  |
| 8                                                               | .01    | 572    | .45    | 564    | .87     | 548    | 1.65    | 520    | 2.35    | 494    | 4.09    | 430    | 5.44    | 381    | 6.50     | 342    | 8.09     | 283         | 10.70    | 187    |  |
| 9                                                               | .26    | 664    | .52    | 653    | 1.00    | 633    | 1.89    | 597    | 2.68    | 564    | 4.61    | 484    | 6.06    | 424    | 7.19     | 378    | 8.84     | 310         | 11.47    | 201    |  |
| 10                                                              | .30    | 758    | .59    | 745    | 1.14    | 720    | 2.14    | 674    | 3.02    | 634    | 5.11    | 537    | 6.66    | 466    | 7.84     | 412    | 9.54     | 334         | 12.17    | 213    |  |
| 12                                                              | .37    | 944    | .73    | 924    | 1.41    | 887    | 2.61    | 821    | 3.64    | 764    | 6.02    | 633    | 7.71    | 540    | 8.97     | 471    | 10.71    | 375         | 13.29    | 233    |  |
| 15                                                              | .48    | 1217   | .94    | 1185   | 1.79    | 1127   | 3.26    | 1026   | 4.48    | 942    | 7.19    | 755    | 9.00    | 630    | 10.30    | 541    | 12.04    | 421         | 14.48    | 253    |  |
| 18                                                              | .59    | 1478   | 1.14   | 1433   | 2.14    | 1350   | 3.84    | 1210   | 5.22    | 1096   | 8.14    | 855    | 10.00   | 700    | 11.30    | 593    | 12.98    | 454         | 15.25    | 267    |  |
| 20                                                              | .66    | 1670   | 1.28   | 1613   | 2.40    | 1511   | 4.25    | 1340   | 5.73    | 1204   | 8.79    | 924    | 10.69   | 749    | 11.99    | 630    | 13.65    | 478         |          |        |  |
| 24                                                              | .80    | 2024   | 1.54   | 1942   | 2.85    | 1798   | 4.97    | 1565   | 6.60    | 1386   | 9.82    | 1031   | 11.72   | 821    | 12.98    | 682    | 14.55    | 510         |          |        |  |
| 30                                                              | 1.01   | 2546   | 1.92   | 2420   | 3.50    | 2203   | 5.93    | 1868   | 7.72    | 1622   | 11.06   | 1162   | 12.92   | 905    | 14.11    | 741    | 15.54    | 544         |          |        |  |
| 36                                                              | 1.21   | 3048   | 2.28   | 2872   | 4.08    | 2573   | 6.76    | 2131   | 8.65    | 1818   | 12.02   | 1262   | 13.81   | 967    | 14.92    | 783    |          |             |          |        |  |
| 6 DIAMETRAL PITCH – 8.48 NORMAL DIAMETRAL PITCH HARDENED STEEL  |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          | 1.250" FACE |          |        |  |
| 8                                                               | .28    | 715    | .56    | 705    | 1.09    | 685    | 2.06    | 650    | 2.94    | 617    | 5.12    | 537    | 6.79    | 476    | 8.13     | 427    | 10.11    | 354         | 13.37    | 234    |  |
| 10                                                              | .38    | 948    | .74    | 931    | 1.43    | 899    | 2.67    | 842    | 3.77    | 792    | 6.39    | 672    | 8.32    | 583    | 9.80     | 515    | 11.93    | 418         | 15.22    | 266    |  |
| 12                                                              | .47    | 1180   | .92    | 1155   | 1.76    | 1109   | 3.26    | 1026   | 4.55    | 955    | 7.53    | 791    | 9.64    | 675    | 11.21    | 589    | 13.38    | 469         | 16.61    | 291    |  |
| 15                                                              | .60    | 1521   | 1.18   | 1482   | 2.24    | 1409   | 4.07    | 1282   | 5.60    | 1177   | 8.99    | 944    | 11.25   | 788    | 12.87    | 676    | 15.04    | 527         | 18.10    | 317    |  |
| 18                                                              | .73    | 1848   | 1.42   | 1791   | 2.68    | 1687   | 4.80    | 1512   | 6.52    | 1370   | 10.17   | 1068   | 12.50   | 876    | 14.12    | 742    | 16.22    | 568         | 19.06    | 334    |  |
| 24                                                              | 1.00   | 2529   | 1.93   | 2428   | 3.57    | 2247   | 6.21    | 1956   | 8.24    | 1732   | 12.27   | 1289   | 14.65   | 1026   | 16.23    | 852    | 18.19    | 637         |          |        |  |
| 6 DIAMETRAL PITCH – 8.48 NORMAL DIAMETRAL PITCH BRONZE          |        |        |        |        |         |        |         |        |         |        |         |        |         |        |          |        |          | 1.000" FACE |          |        |  |
| 12                                                              | .15    | 378    | .29    | 370    | .56     | 355    | 1.04    | 328    | 1.46    | 306    | 2.41    | 253    | 3.08    | 216    | 3.59     | 188    | 4.28     | 150         | 5.32     | 93.1   |  |
| 15                                                              | .19    | 487    | .38    | 474    | .72     | 451    | 1.30    | 410    | 1.79    | 377    | 2.88    | 302    | 3.60    | 252    | 4.12     | 216    | 4.81     | 169         | 5.79     | 101    |  |
| 18                                                              | .23    | 591    | .45    | 513    | .86     | 540    | 1.54    | 484    | 2.09    | 439    | 3.25    | 342    | 4.00    | 280    | 4.52     | 237    | 5.19     | 182         | 6.10     | 107    |  |
| 20                                                              | .26    | 668    | .51    | 645    | .96     | 604    | 1.70    | 536    | 2.29    | 482    | 3.52    | 369    | 4.28    | 300    | 4.80     | 252    | 5.46     | 191         |          |        |  |
| 24                                                              | .32    | 810    | .62    | 777    | 1.14    | 719    | 1.99    | 626    | 2.64    | 554    | 3.93    | 412    | 4.69    | 328    | 5.19     | 273    | 5.82     | 204         |          |        |  |
| 30                                                              | .40    | 1018   | .77    | 968    | 1.40    | 881    | 2.37    | 747    | 3.09    | 649    | 4.42    | 465    | 5.17    | 362    | 5.65     | 296    | 6.22     | 218         |          |        |  |
| 36                                                              | .48    | 1219   | .91    | 1149   | 1.63    | 1029   | 2.70    | 852    | 3.46    | 727    | 4.81    | 505    | 5.52    | 387    | 5.97     | 313    |          |             |          |        |  |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line exceed 1500 Feet per Minute and should be used for interpolation purposes only.

\*Torque Rating (Lb. Ins.)



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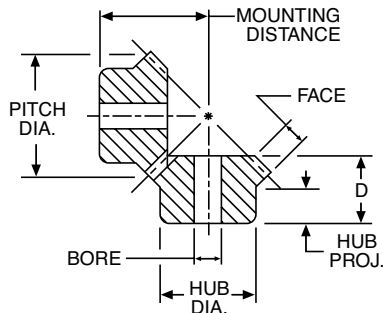
# Miter Gears

## 48 through 20 Diametral Pitch (Nylon, Brass, Stainless Steel & Steel – Unhardened)

1:1 Ratio 20° Pressure Angle



All gears have “Coniflex”® tooth form, except as noted.



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### STANDARD TOLERANCES\*

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

\*Brass and Steel only.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth            | Pitch Dia. | Face | Bore  | MD *  | D    | Hub |     | Catalog Number  | Item Code | Catalog Number | Item Code | Catalog Number     | Item Code | Catalog Number      | Item Code |
|-------------------------|------------|------|-------|-------|------|-----|-----|-----------------|-----------|----------------|-----------|--------------------|-----------|---------------------|-----------|
|                         |            |      |       |       |      |     |     | Dia.            | Proj.     |                |           |                    |           |                     |           |
| 48<br>DIAMETRICAL PITCH |            |      |       |       |      |     |     | MOLDED<br>NYLON |           | BRASS          |           | STAINLESS<br>STEEL |           | STEEL<br>UNHARDENED |           |
| 15                      | .312       | .07  | .125  | .312  | .215 | .25 | .13 | GP4815†‡        | 54096     | G460Y†         | 12126     | GSS460Y†           | 49984     | —                   | —         |
| 18                      | .375       | .08  | .125  | .406  | .286 | .33 | .19 | GP4818Y†        | 54097     | —              | —         | —                  | —         | —                   | —         |
|                         |            |      |       |       |      | .31 | .16 | —               | —         | G461Y†         | 12128     | GSS461Y†           | 49985     | L94Y†               | 12140     |
| 24                      | .500       | .08  | .1875 | .531  | .375 | .38 | .25 | GP4824Y†        | 54098     | —              | —         | —                  | —         | —                   | —         |
| 32<br>DIAMETRICAL PITCH |            |      |       |       |      |     |     |                 |           |                |           |                    |           |                     |           |
| 16                      | .500       | .12  | .1875 | .500  | .349 | .41 | .19 | GP3216Y†        | 54099     | G462Y†         | 12114     | GSS462Y†           | 49986     | L97Y†               | 12146     |
| 24                      | .750       | .14  | .1875 | .688  | .406 | .50 | .19 | GP3224Y†        | 54100     | —              | —         | —                  | —         | —                   | —         |
|                         |            |      |       |       | .427 | .50 | .25 | —               | —         | G463Y†         | 12116     | GSS463Y†           | 49987     | L95Y†               | 12142     |
| 30<br>DIAMETRICAL PITCH |            |      |       |       |      |     |     |                 |           |                |           |                    |           |                     |           |
| 15                      | .500       | .12  | .1875 | .500  | .349 | .41 | .19 | —               | —         | —              | —         | —                  | —         | L93Y                | 12138     |
| 24<br>DIAMETRICAL PITCH |            |      |       |       |      |     |     |                 |           |                |           |                    |           |                     |           |
| 24                      | 1.000      | .20  | .250  | .906  | .567 | .62 | .19 | GP2424Y†        | 54101     | —              | —         | —                  | —         | —                   | —         |
|                         |            |      |       |       |      |     | .28 | —               | —         | G464Y          | 12100     | —                  | —         | L96Y                | 12144     |
| 30                      | 1.250      | .23  | .250  | 1.031 | .590 | .62 | .31 | GP2430Y†        | 54102     | G465Y          | 12102     | —                  | —         | —                   | —         |
| 36                      | 1.500      | .23  | .3125 | 1.188 | .620 | .69 | .31 | GP2436Y†        | 54103     | G466Y          | 12104     | —                  | —         | —                   | —         |
| 20<br>DIAMETRICAL PITCH |            |      |       |       |      |     |     |                 |           |                |           |                    |           |                     |           |
| 12                      | .600       | .13  | .250  | .672  | .489 | .50 | .31 | —               | —         | —              | —         | —                  | —         | L98Y                | 12148     |

\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

†Not “Coniflex” tooth form. Can be furnished with “Coniflex” tooth on special order.

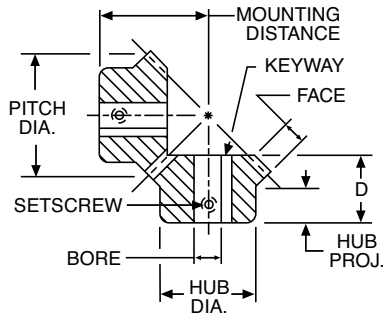
‡Acetal.

## 16 through 10 Diametral Pitch (Nylon & Steel – Unhardened & Hardened)

1:1 Ratio 20° Pressure Angle

All gears have “Coniflex”® tooth form, except as noted.

All hardened steel gears have teeth only hardened, except as noted, and are equipped with standard keyways and setscrews.



### STANDARD TOLERANCES\*

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

\*Steel only.

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 80, 81  
Lubrication — 322  
Materials — 323  
Selection Procedure — 79

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of<br>Teeth         | Pitch<br>Dia. | Face | Bore                          | MD<br>* | D     | Hub  |       | Catalog<br>Number | Item<br>Code     | Catalog<br>Number                | Item<br>Code                     | Catalog<br>Number             | Item<br>Code            |
|-------------------------|---------------|------|-------------------------------|---------|-------|------|-------|-------------------|------------------|----------------------------------|----------------------------------|-------------------------------|-------------------------|
|                         |               |      |                               |         |       | Dia. | Proj. |                   |                  |                                  |                                  |                               |                         |
| 16<br>DIAMETRICAL PITCH |               |      |                               |         |       |      |       | MOLDED<br>NYLON   |                  | STEEL<br>UNHARDENED              |                                  | STEEL<br>HARDENED             |                         |
| 12                      | .750          | .16  | .3125                         | .812    | .583  | .62  | .38   | —                 | —                | L99Y                             | 12150                            | —                             | —                       |
| 16                      | 1.000         | .23  | .375                          | 1.062   | .755  | .75  | .44   | GP1616Y†          | 54104            | L110Y                            | 12174                            | HLK110Y**                     | 12326                   |
| 20                      | 1.250         | .28  | .4375                         | 1.250   | .849  | 1.00 | .50   | —                 | —                | L111Y                            | 12176                            | —                             | —                       |
| 24                      | 1.500         | .32  | .500                          | 1.375   | .880  | 1.00 | .50   | —                 | —                | L112Y                            | 12156                            | —                             | —                       |
| 32                      | 2.000         | .39  | .500                          | 1.562   | .875  | 1.25 | .38   | GP1632Y†‡         | 54105            | —                                | —                                | —                             | —                       |
| 14<br>DIAMETRICAL PITCH |               |      |                               |         |       |      |       |                   |                  |                                  |                                  |                               |                         |
| 14                      | 1.000         | .20  | .375<br>.4375                 | 1.062   | .739  | .88  | .50   | —<br>—            | —<br>—           | L124Y<br>L100Y                   | 12202<br>12152                   | —<br>—                        | —<br>—                  |
| 12<br>DIAMETRICAL PITCH |               |      |                               |         |       |      |       |                   |                  |                                  |                                  |                               |                         |
| 15                      | 1.250         | .29  | .375<br>.4375<br>.500         | 1.250   | .864  | 1.00 | .50   | —<br>—<br>—       | —<br>—<br>—      | L125Y<br>L126Y<br>L101Y          | 12204<br>12206<br>12154          | —<br>—<br>HLK101Y**           | —<br>—<br>12328         |
| 18                      | 1.500         | .33  | .500<br>.625                  | 1.500   | 1.021 | 1.25 | .63   | —<br>—            | —<br>—           | L127Y<br>L102Y                   | 12208<br>12158                   | —<br>HLK102Y                  | —<br>12330              |
| 21                      | 1.750         | .40  | .500<br>.5625<br>.625<br>.750 | 1.750   | 1.192 | 1.38 | .69   | —<br>—<br>—<br>—  | —<br>—<br>—<br>— | L119Y<br>L120Y<br>L121Y<br>L133Y | 12190<br>12192<br>12194<br>12218 | —<br>—<br>HLK121Y<br>—        | —<br>—<br>12334<br>—    |
| 24                      | 2.000         | .44  | .500                          | 1.875   | 1.224 | 1.31 | .69   | —                 | —                | L113Y                            | 12178                            | —                             | —                       |
| 30                      | 2.500         | .55  | .625                          | 2.312   | 1.489 | 1.62 | .84   | —                 | —                | L114Y                            | 12180                            | HLK114Y                       | 12332                   |
| 10<br>DIAMETRICAL PITCH |               |      |                               |         |       |      |       |                   |                  |                                  |                                  |                               |                         |
| 20                      | 2.000         | .45  | .500<br>.625<br>.750          | 2.000   | 1.364 | 1.62 | .81   | —<br>—<br>—       | —<br>—<br>—      | L128Y<br>L129Y<br>L103Y          | 12210<br>12212<br>12160          | —<br>HLK129Y<br>HLK103Y       | —<br>12348<br>12344     |
| 25                      | 2.500         | .56  | .750<br>.875<br>1.000         | 2.438   | 1.630 | 2.00 | .94   | —<br>—<br>—       | —<br>—<br>—      | L130Y<br>L104Y<br>L131Y          | 12214<br>12162<br>12216          | HLK130Y<br>HLK104Y<br>HLK131Y | 12350<br>12346<br>12352 |

\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

†Not “Coniflex” tooth form.

\*\*Hardened all over.

‡Nylon (Mineral Filled).

# Miter Gears

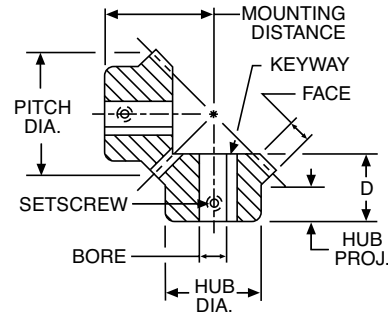
## 8 through 4 Diametral Pitch (Steel – Unhardened, Hardened & Cast Iron)

1:1 Ratio 20° Pressure Angle



All gears have “Coniflex”® tooth form, except as noted.

All hardened steel gears have teeth only hardened, except as noted, and are equipped with standard keyways and setscrews. All unhardened steel gears have no keyway and no setscrew.



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 80, 81  
Lubrication — 322  
Materials — 323  
Selection Procedure — 79

### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth             | Pitch Dia. | Face       | Bore                     | MD *                    | D                       | Hub                  |                     | Catalog Number            | Item Code               | Catalog Number                 | Item Code               | Catalog Number     | Item Code           |
|--------------------------|------------|------------|--------------------------|-------------------------|-------------------------|----------------------|---------------------|---------------------------|-------------------------|--------------------------------|-------------------------|--------------------|---------------------|
|                          |            |            |                          |                         |                         | Dia.                 | Proj.               |                           |                         |                                |                         |                    |                     |
| <b>8 DIAMETRAL PITCH</b> |            |            |                          |                         |                         |                      |                     |                           |                         |                                |                         |                    |                     |
|                          |            |            |                          |                         |                         |                      |                     |                           | <b>STEEL UNHARDENED</b> |                                | <b>STEEL HARDENED</b>   |                    | <b>CAST IRON</b>    |
| 24                       | 3.000      | .66<br>.68 | .750<br>1.000<br>1.250   | 2.562<br>2.750          | 1.583<br>1.786          | 1.75<br>2.50         | .81<br>1.00         | L115Y<br>L105Y-A<br>L116Y | 12182<br>12164<br>12184 | HLK115Y<br>HLK105YA<br>HLK116Y | 12366<br>12362<br>12368 | —<br>—<br>—        | —<br>—<br>—         |
| 28                       | 3.500      | .77        | 1.000<br>1.1875<br>1.250 | 3.250                   | 2.099                   | 2.50                 | 1.25                | L117Y<br>L132Y<br>L106Y   | 12186<br>12196<br>12166 | HLK117Y<br>HLK132Y<br>HLK106Y  | 12370<br>12374<br>12364 | —<br>—<br>—        | —<br>—<br>—         |
| 32                       | 4.000      | .85<br>.85 | .875<br>1.000<br>.875    | 2.875<br>3.625<br>3.438 | 1.724<br>2.286<br>2.098 | 2.00<br>3.00<br>2.25 | .88<br>1.13<br>1.12 | —<br>L123Y<br>—           | —<br>12200<br>—         | —<br>HLK123Y<br>—              | —<br>12372<br>—         | OA828Y-1<br>—<br>— | 12418<br>—<br>12420 |
| <b>6 DIAMETRAL PITCH</b> |            |            |                          |                         |                         |                      |                     |                           |                         |                                |                         |                    |                     |
| 24                       | 4.000      | .87        | 1.250<br>1.500           | 3.625                   | 2.317                   | 3.00                 | 1.31                | L118Y<br>L107Y            | 12188<br>12168          | HLK118Y<br>HLK107Y             | 12386<br>12384          | OA624Y†<br>—       | 12412<br>—          |
| 27                       | 4.500      | .96        | 1.250<br>1.500           | 4.125                   | 2.630                   | 3.25                 | 1.50                | L134Y<br>L135Y            | 12220<br>12222          | —<br>—                         | —<br>—                  | —<br>—             | —<br>—              |
| 30                       | 5.000      | 1.16       | 1.000                    | 4.250                   | 2.640                   | 2.50                 | 1.38                | —                         | —                       | —                              | —                       | OA630Y-1           | 12414               |
| 36                       | 6.000      | 1.28       | 1.125                    | 4.625                   | 2.605                   | 2.88                 | 1.19                | —                         | —                       | —                              | —                       | OA636Y-1           | 12416               |
| <b>5 DIAMETRAL PITCH</b> |            |            |                          |                         |                         |                      |                     |                           |                         |                                |                         |                    |                     |
| 25                       | 5.000      | 1.12       | 1.375<br>1.500<br>1.750  | 4.625                   | 3.005                   | 3.50                 | 1.75                | L122Y<br>L136Y<br>L108Y   | 12198<br>12224<br>12170 | HLK122Y<br>—<br>HLK108Y        | 12398<br>—<br>12396     | —<br>OA525Y<br>—   | —<br>12408<br>—     |
| <b>4 DIAMETRAL PITCH</b> |            |            |                          |                         |                         |                      |                     |                           |                         |                                |                         |                    |                     |
| 24                       | 6.000      | 1.35       | 1.500<br>1.750           | 5.500                   | 3.567                   | 4.00                 | 1.94                | L137Y<br>L109Y            | 12226<br>12172          | —<br>HLK109Y                   | —<br>12404              | —<br>OA424Y**      | —<br>12406          |
| 28                       | 7.000      | 1.43       | 2.000                    | 6.000                   | 3.630                   | 5.00                 | 1.94                | L138Y                     | 12228                   | —                              | —                       | —                  | —                   |

\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

†Hub Dia. — 2.750"

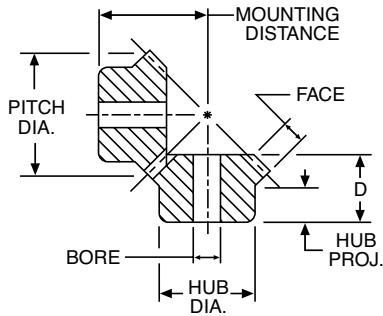
\*\*Hub Proj. — 2.000"

# Spiral Miter Gears

## 18 through 5 Diametral Pitch (Steel – Unhardened & Hardened)

1:1 Ratio 20° Pressure Angle – 35° Spiral Angle

All hardened steel gears have teeth only hardened, except as noted, and are equipped with standard keyways and set-screws.



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 83  
Lubrication — 322  
Materials — 323  
Selection Procedure — 79

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of<br>Teeth       | Pitch<br>Dia. | Face | Bore   | MD<br>* | D     | Hub  |       | Catalog<br>Number        | Item<br>Code   | Catalog<br>Number          | Item<br>Code   |
|-----------------------|---------------|------|--------|---------|-------|------|-------|--------------------------|----------------|----------------------------|----------------|
|                       |               |      |        |         |       | Dia. | Proj. |                          |                |                            |                |
| 18<br>DIAMETRAL PITCH |               |      |        |         |       |      |       | STEEL<br>UNHARDENED      |                | STEEL<br>HARDENED          |                |
| 18                    | 1.000         | .22  | .375   | 1.062   | .739  | .75  | .44   | LSA110Y-R<br>LSA110Y-L   | 12310<br>12312 | HLSK110Y-R†<br>HLSK110Y-L† | 12322<br>12324 |
| 12<br>DIAMETRAL PITCH |               |      |        |         |       |      |       |                          |                |                            |                |
| 15                    | 1.250         | .30  | .500   | 1.250   | .864  | 1.00 | .50   | LSA101Y-R<br>LSA101Y-L   | 12282<br>12284 | HLSK101Y-R†<br>HLSK101Y-L† | 12336<br>12338 |
| 18                    | 1.500         | .34  | .625   | 1.500   | 1.021 | 1.25 | .56   | LSA102Y-R<br>LSA102Y-L   | 12286<br>12288 | HLSK102Y-R<br>HLSK102Y-L   | 12340<br>12342 |
| 10<br>DIAMETRAL PITCH |               |      |        |         |       |      |       |                          |                |                            |                |
| 20                    | 2.000         | .47  | .750   | 2.000   | 1.364 | 1.62 | .78   | LSA103Y-R<br>LSA103Y-L   | 12290<br>12292 | HLSK103Y-R<br>HLSK103Y-L   | 12354<br>12356 |
| 25                    | 2.500         | .58  | .875   | 2.438   | 1.630 | 2.00 | .91   | LSA104Y-R<br>LSA104Y-L   | 12294<br>12296 | HLSK104Y-R<br>HLSK104Y-L   | 12358<br>12360 |
| 8<br>DIAMETRAL PITCH  |               |      |        |         |       |      |       |                          |                |                            |                |
| 28                    | 3.500         | .78  | 1.1875 | 3.250   | 2.099 | 2.50 | 1.25  | LSA106Y-R<br>LSA106Y-L   | 12302<br>12304 | HLSK106Y-R<br>HLSK106Y-L   | 12376<br>12378 |
| 7<br>DIAMETRAL PITCH  |               |      |        |         |       |      |       |                          |                |                            |                |
| 21                    | 3.000         | .69  | 1.000  | 2.750   | 1.786 | 2.50 | .88   | LSA105YA-R<br>LSA105YA-L | 12298<br>12300 | HLSK105YA-R<br>HLSK105YA-L | 12380<br>12382 |
| 6<br>DIAMETRAL PITCH  |               |      |        |         |       |      |       |                          |                |                            |                |
| 24                    | 4.000         | .89  | 1.250  | 3.625   | 2.317 | 3.00 | 1.31  | LSA118Y-R<br>LSA118Y-L   | 12314<br>12316 | HLSK118Y-R<br>HLSK118Y-L   | 12392<br>12394 |
|                       |               |      | 1.500  |         |       |      |       | LSA107Y-R<br>LSA107Y-L   | 12306<br>12308 | HLSK107Y-R<br>HLSK107Y-L   | 12388<br>12390 |
|                       |               |      |        |         |       |      |       |                          |                |                            |                |
| 5<br>DIAMETRAL PITCH  |               |      |        |         |       |      |       |                          |                |                            |                |
| 25                    | 5.000         | 1.15 | 1.375  | 4.625   | 3.005 | 3.50 | 1.75  | LSA122Y-R<br>LSA122Y-L   | 12318<br>12320 | HLSK122Y-R<br>HLSK122Y-L   | 12400<br>12402 |

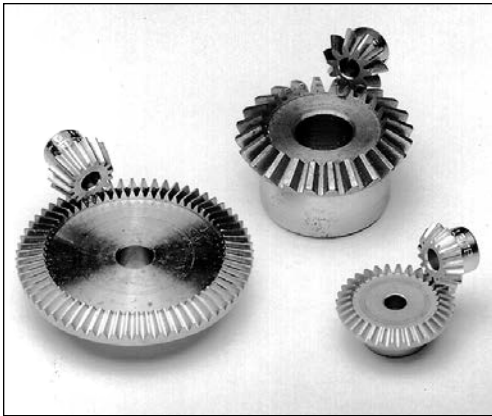
\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

†Hardened all over.

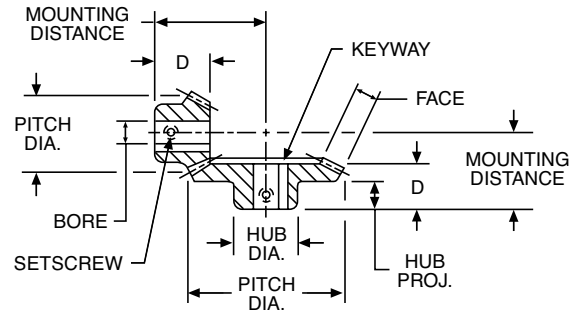
# Bevel Gears

## 48 through 20 Diametral Pitch (Brass, Stainless Steel & Steel – Hardened & Unhardened)

20° Pressure Angle



All gears have “Coniflex”® tooth form, except as noted. All hardened steel gears have teeth only hardened and are equipped with standard keyways and setscrews, except as noted.



### REFERENCE PAGES

Alterations — 322  
Lubrication — 322  
Materials — 323

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Ratio                   | No. of<br>Teeth         | Pitch<br>Dia.  | Face | Bore           | MD<br>*       | D            | Hub         |            | Catalog<br>Number    | Item<br>Code   | Catalog<br>Number        | Item<br>Code   |
|-------------------------|-------------------------|----------------|------|----------------|---------------|--------------|-------------|------------|----------------------|----------------|--------------------------|----------------|
|                         |                         |                |      |                |               |              | Dia.        | Proj.      |                      |                |                          |                |
| 48<br>DIAMETRICAL PITCH |                         |                |      |                |               |              |             |            | BRASS                |                | STAINLESS<br>STEEL       |                |
| 2:1                     | 36<br>18                | .750<br>.375   | .12  | .1875<br>.125  | .438<br>.594  | .257<br>.335 | .44<br>.28  | .19<br>.19 | G479Y-G†<br>G479Y-P† | 12136<br>12134 | GSS479Y-G†<br>GSS479Y-P† | 49991<br>49990 |
| 3:1                     | 36<br>12                | .750<br>.250   | .09  | .1875<br>.125  | .375<br>.562  | .257<br>.285 | .44<br>.22  | .19<br>.17 | G478Y-G†<br>G478Y-P† | 12132<br>12130 | GSS478Y-G†<br>GSS478Y-P† | 49989<br>49988 |
| 32<br>DIAMETRICAL PITCH |                         |                |      |                |               |              |             |            |                      |                |                          |                |
| 2:1                     | 32<br>16                | 1.000<br>.500  | .14  | .1875          | .594<br>.719  | .382<br>.365 | .56<br>.38  | .25<br>.17 | G481Y-G†<br>G481Y-P† | 12120<br>12118 | GSS481Y-G†<br>GSS481Y-P† | 49993<br>49992 |
| 4:1                     | 64<br>16                | 2.000<br>.500  | .24  | .3125<br>.1875 | .688<br>1.250 | .445<br>.500 | 1.00<br>.38 | .31<br>.22 | G486Y-G†<br>G486Y-P† | 12108<br>12106 | GSS486Y-G†<br>GSS486Y-P† | 49995<br>49994 |
| 24<br>DIAMETRICAL PITCH |                         |                |      |                |               |              |             |            |                      |                |                          |                |
| 2:1                     | 36<br>18                | 1.500<br>.750  | .24  | .250<br>.1875  | .781<br>1.062 | .460<br>.540 | .88<br>.56  | .31<br>.25 | G485Y-G<br>G485Y-P   | 12124<br>12122 | —<br>—                   | —<br>—         |
|                         | 48<br>24                | 2.000<br>1.000 | .26  | .3125<br>.250  | .938<br>1.375 | .507<br>.630 | 1.12<br>.69 | .31<br>.28 | G487Y-G<br>G487Y-P   | 12112<br>12110 | —<br>—                   | —<br>—         |
|                         | 20<br>DIAMETRICAL PITCH |                |      |                |               |              |             |            |                      |                |                          |                |
|                         |                         |                |      |                |               |              |             |            | STEEL<br>UNHARDENED  |                | STEEL<br>HARDENED        |                |
| 2:1                     | 20<br>10                | 1.000<br>.500  | .18  | .375<br>.1875  | .688<br>.750  | .460<br>.425 | .75<br>.41  | .31<br>.25 | L147Y-G<br>L147Y-P   | 12234<br>12236 | —<br>—                   | —<br>—         |
|                         | 20<br>10                | 1.000<br>.500  | .18  | .375<br>.1875  | .688<br>.750  | .460<br>.425 | .75<br>.41  | .31<br>.25 | —<br>—               | —<br>—         | HL147Y-G†<br>HL147Y-P†   | 11854<br>11856 |

\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

†Not “Coniflex” tooth form. Can be furnished with “Coniflex” tooth on special order.

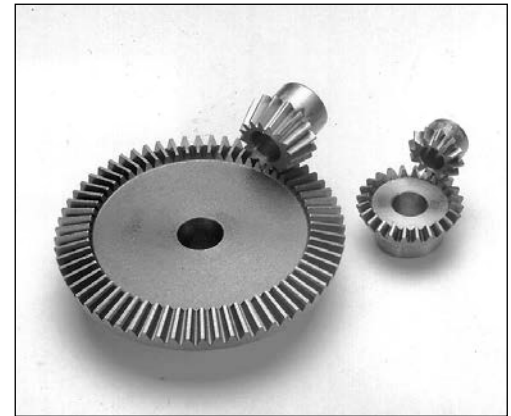
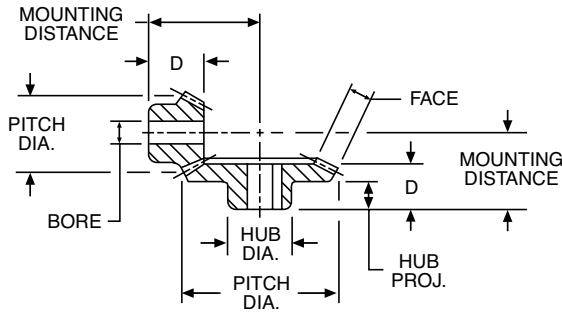
‡These gears have No. 47 (.0785) drilled hole in hub. No keyway or setscrew.

## 16 through 12 Diametral Pitch (Steel – Unhardened, Hardened & Cast Iron)

20° Pressure Angle

All gears have “Coniflex”® tooth form.

All Hardened steel gears have teeth only hardened and are equipped with standard keyways and setscrews, exact as noted.



### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 82  
Lubrication — 322  
Materials — 323  
Selection Procedure — 79

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Ratio                 | No. of<br>Teeth | Pitch<br>Dia.  | Face       | Bore          | MD<br>*        | D              | Hub         |            | Catalog<br>Number   | Item<br>Code   | Catalog<br>Number    | Item<br>Code   | Catalog<br>Number                | Item<br>Code   |
|-----------------------|-----------------|----------------|------------|---------------|----------------|----------------|-------------|------------|---------------------|----------------|----------------------|----------------|----------------------------------|----------------|
|                       |                 |                |            |               |                |                | Dia.        | Proj.      |                     |                |                      |                |                                  |                |
| 16<br>DIAMETRAL PITCH |                 |                |            |               |                |                |             |            | STEEL<br>UNHARDENED |                | STEEL<br>HARDENED    |                | CAST IRON GEARS<br>STEEL PINIONS |                |
| 1-1/2:1               | 24<br>16        | 1.500<br>1.000 | .26        | .500<br>.375  | 1.188<br>1.250 | .760<br>.740   | 1.12<br>.81 | .56<br>.44 | L146Y-G<br>L146Y-P  | 12230<br>12232 | —<br>—               | —<br>—         | —<br>—                           | —<br>—         |
|                       | 24<br>16        | 1.500<br>1.000 | .26        | .500<br>.375  | 1.188<br>1.250 | .750<br>.740   | 1.12<br>.81 | .56<br>.44 | —<br>—              | —<br>—         | HL146Y-G<br>HL146Y-P | 11850<br>11852 | —<br>—                           | —<br>—         |
| 2:1                   | 24<br>12        | 1.500<br>.750  | .20<br>.19 | .500<br>.375  | 1.000<br>1.125 | .625<br>.575   | 1.00<br>.66 | .44<br>.34 | L148Y-G<br>L148Y-P  | 12238<br>12240 | HL148Y-G<br>HL148Y-P | 11858<br>11860 | —<br>—                           | —<br>—         |
|                       | 32<br>16        | 2.000<br>1.000 | .36        | .500<br>.375  | 1.188<br>1.500 | .775<br>.845   | 1.12<br>.81 | .50<br>.44 | L149Y-G<br>L149Y-P  | 12242<br>12244 | HL149Y-G<br>HL149Y-P | 11862<br>11864 | —<br>—                           | —<br>—         |
| 3:1                   | 48<br>16        | 3.000<br>1.000 | .42        | .625<br>.4375 | 1.312<br>2.000 | .882<br>.920   | 1.50<br>.88 | .56<br>.47 | —<br>—              | —<br>—         | —<br>—               | —<br>—         | PA3316Y-G<br>PA3316Y-P           | 12484<br>12486 |
| 4:1                   | 64<br>16        | 4.000<br>1.000 | .49        | .625<br>.500  | 1.375<br>2.500 | .898<br>.990   | 2.25<br>.81 | .56<br>.47 | —<br>—              | —<br>—         | —<br>—               | —<br>—         | PA4416Y-G<br>PA4416Y-P           | 12492<br>12494 |
| 6:1                   | 96<br>16        | 6.000<br>1.000 | .62        | .625<br>.500  | 1.688<br>3.750 | 1.257<br>1.375 | 1.75<br>.94 | .88<br>.72 | —<br>—              | —<br>—         | —<br>—               | —<br>—         | PA6616Y-G<br>PA6616Y-P           | 12516<br>12518 |
| 14<br>DIAMETRAL PITCH |                 |                |            |               |                |                |             |            |                     |                |                      |                |                                  |                |
| 2:1                   | 28              | 2.000          | .36        | .500          | 1.375          | .945           | 1.62        | .66        | L150Y-G             | 12246          | HL150Y-G             | 11866          | —                                | —              |
|                       | 14              | 1.000          | .35        | .375<br>.500  | 1.625          | .965           | .81         | .56        | —<br>L150Y-P        | —<br>12248     | HL150Y-P<br>—        | 11868<br>—     | —<br>—                           | —<br>—         |
| 12<br>DIAMETRAL PITCH |                 |                |            |               |                |                |             |            |                     |                |                      |                |                                  |                |
| 1-1/2:1               | 27              | 2.250          | .42        | .500<br>.750  | 1.750          | 1.135          | 1.50        | .78        | L151Y-G<br>—        | 12250<br>—     | —<br>HL151Y-G        | —<br>11870     | —<br>—                           | —<br>—         |
|                       | 18              | 1.500          | .41        | .500          | 1.875          | 1.130          | 1.25        | .66        | L151Y-P             | 12254          | HL151Y-P             | 11872          | —                                | —              |
| 2:1                   | 36              | 3.000          | .54        | .625          | 1.875          | 1.275          | 2.12        | .88        | L152BY-G            | 12260          | —                    | —              | —                                | —              |
|                       | 18              | 1.500          | .54        | .500          | 2.375          | 1.385          | 1.31        | .81        | L152BY-P            | 12262          | —                    | —              | —                                | —              |
|                       | 36              | 3.000          | .54        | 1.000         | 1.875          | 1.275          | 2.12        | .88        | L152Y-G             | 12256          | HL152Y-G             | 11874          | —                                | —              |
|                       | 18              | 1.500          | .53        | .625<br>.750  | 2.375          | 1.375          | 1.31        | .81        | —<br>L152Y-P        | —<br>12258     | HL152Y-P<br>—        | 11876<br>—     | —<br>—                           | —<br>—         |

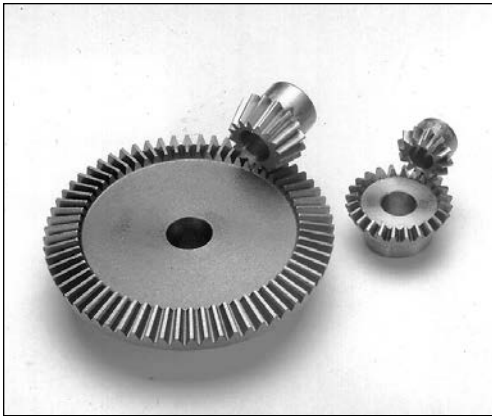
\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

†These gears have No. 47 (.0785) drilled hole in hub. No keyway or setscrew.

# Bevel Gears

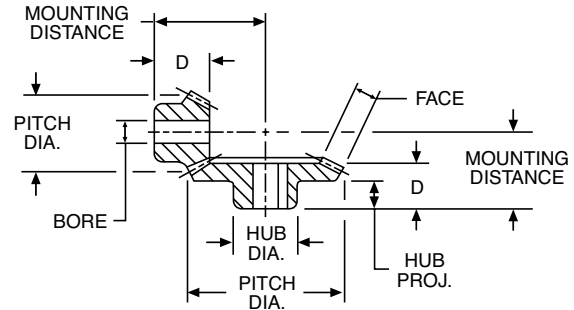
## 12 and 10 Diametral Pitch (Steel – Unhardened, Hardened & Cast Iron)

20° Pressure Angle



All gears have “Coniflex”® tooth form.

All Hardened steel gears have teeth only hardened and are equipped with standard keyways and setscrews.



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### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Ratio                   | No. of<br>Teeth | Pitch<br>Dia.  | Face           | Bore          | MD<br>*        | D              | Hub            |              | Catalog<br>Number   | Item<br>Code       | Catalog<br>Number    | Item<br>Code   | Catalog<br>Number                | Item<br>Code   |
|-------------------------|-----------------|----------------|----------------|---------------|----------------|----------------|----------------|--------------|---------------------|--------------------|----------------------|----------------|----------------------------------|----------------|
|                         |                 |                |                |               |                |                | Dia.           | Proj.        |                     |                    |                      |                |                                  |                |
| 12<br>DIAMETRICAL PITCH |                 |                |                |               |                |                |                |              | STEEL<br>UNHARDENED |                    | STEEL<br>HARDENED    |                | CAST IRON GEARS<br>STEEL PINIONS |                |
| 2:1                     | 36<br>18        | 3.000<br>1.500 | .47            | .625<br>.500  | 1.500<br>2.250 | .882<br>1.205  | 1.44<br>1.25   | .50<br>.69   | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA3212Y-G<br>PA3212Y-P           | 12480<br>12482 |
|                         | 48<br>24        | 4.000<br>2.000 | .59            | .625<br>.500  | 2.000<br>2.875 | 1.180<br>1.440 | 1.63<br>1.50   | .75          | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA4212Y-G<br>PA4212Y-P           | 12488<br>12490 |
| 3:1                     | 54<br>18        | 4.500<br>1.500 | .60            | .625<br>.500  | 1.750<br>3.000 | 1.063<br>1.350 | 1.75<br>1.25   | .75<br>.69   | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA45312Y-G<br>PA45312Y-P         | 12532<br>12534 |
| 4:1                     | 72<br>18        | 6.000<br>1.500 | .61            | .750<br>.500  | 2.000<br>3.750 | 1.320<br>1.365 | 2.00<br>1.25   | .95<br>.72   | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA6412Y-G<br>PA6412Y-P           | 12508<br>12510 |
| 6:1                     | 72<br>12        | 6.000<br>1.000 | .74            | .750<br>.500  | 1.750<br>3.750 | 1.320<br>1.495 | 2.00<br>.94    | .95<br>.72   | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA6612Y-G<br>PA6612Y-P           | 12512<br>12514 |
| 10<br>DIAMETRICAL PITCH |                 |                |                |               |                |                |                |              |                     |                    |                      |                |                                  |                |
| 1 1/2:1                 | 30              | 3.000          | .58            | .750<br>1.000 | 2.250          | 1.445          | 2.50           | 1.00         | L153Y-G<br>—        | 12264<br>—         | HL153Y-G             | 11878          | —                                | —              |
|                         | 20              | 2.000          | .58            | .750          | 2.500          | 1.525          | 1.75           | .91          | L153Y-P             | 12266              | HL153Y-P             | 11880          | —                                | —              |
| 2:1                     | 40<br>20        | 4.000<br>2.000 | .72            | .875<br>.750  | 2.500<br>3.125 | 1.695<br>1.805 | 3.00<br>1.75   | 1.19<br>1.06 | L155Y-G<br>L155Y-P  | 12268<br>12270     | —<br>—               | —<br>—         | —<br>—                           | —<br>—         |
|                         | 40<br>20        | 4.000<br>2.000 | .72            | 1.250<br>.875 | 2.500<br>3.125 | 1.695<br>1.805 | 3.00<br>1.75   | 1.19<br>1.06 | —<br>—              | —<br>—             | HL155Y-G<br>HL155Y-P | 11882<br>11884 | —<br>—                           | —<br>—         |
|                         | 50<br>25        | 5.000<br>2.500 | .71            | .750          | 2.625<br>3.375 | 1.600<br>1.555 | 2.00<br>2.00   | 1.00<br>.75  | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA5210Y-G<br>PA5210Y-P           | 12496<br>12498 |
|                         | 3:1             | 60<br>20       | 6.000<br>2.000 | .79           | 1.000<br>.875  | 2.750<br>4.375 | 1.865<br>2.155 | 3.00<br>1.75 | 1.38<br>1.31        | L157Y-G<br>L157Y-P | 12274<br>12276       | —<br>—         | —<br>—                           | —<br>—         |
| 60<br>20                |                 | 6.000<br>2.000 | .79            | .875<br>.750  | 2.750<br>4.375 | 1.913<br>2.155 | 3.00<br>1.75   | 1.38<br>1.31 | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA6310Y-G<br>PA6310Y-P           | 12500<br>12502 |
| 4:1                     | 60<br>15        | 6.000<br>1.500 | .73            | .875<br>.625  | 2.250<br>3.875 | 1.632<br>1.610 | 2.50<br>1.44   | 1.13<br>.84  | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA6410Y-G<br>PA6410Y-P           | 12504<br>12506 |
| 6:1                     | 90<br>15        | 9.000<br>1.500 | .86            | 1.000<br>.625 | 2.500<br>5.500 | 1.820<br>1.870 | 2.75<br>1.44   | 1.31<br>.97  | —<br>—              | —<br>—             | —<br>—               | —<br>—         | PA9610Y-G<br>PA9610Y-P           | 12524<br>12526 |

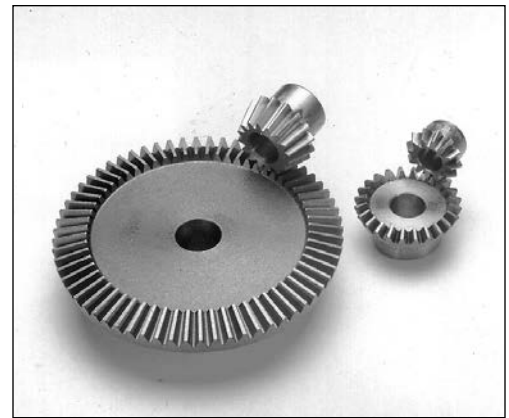
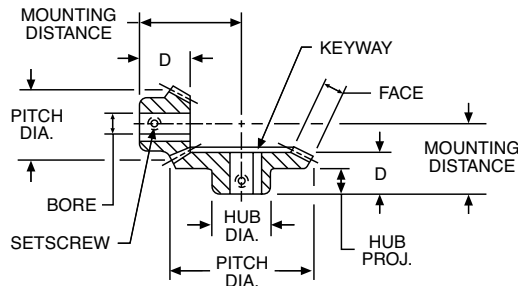
\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

## 8 through 4 Diametral Pitch (Steel – Unhardened, Hardened & Cast Iron)

20° Pressure Angle

All gears have “Coniflex”® tooth form.

All Hardened steel gears have teeth only hardened and are equipped with standard keyways and setscrews.



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

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ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

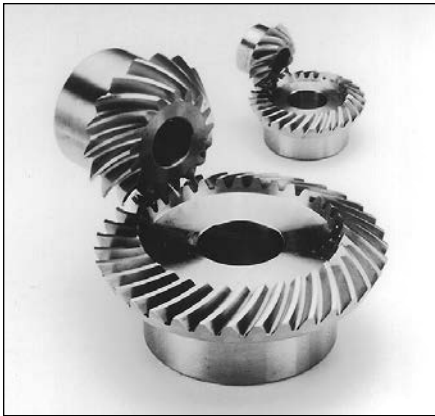
| Ratio                    | No. of Teeth | Pitch Dia. | Face | Bore           | MD *           | D              | Hub           |              | Catalog Number | Item Code  | Catalog Number       | Item Code      | Catalog Number         | Item Code      |
|--------------------------|--------------|------------|------|----------------|----------------|----------------|---------------|--------------|----------------|------------|----------------------|----------------|------------------------|----------------|
|                          |              |            |      |                |                |                | Dia.          | Proj.        |                |            |                      |                |                        |                |
| <b>8 DIAMETRAL PITCH</b> |              |            |      |                |                |                |               |              |                |            |                      |                |                        |                |
| 2:1                      | 40           | 5.000      | .83  | 1.000<br>1.500 | 2.875          | 1.850          | 3.00          | 1.25         | L156Y-G<br>—   | 12252<br>— | —<br>HL156Y-G        | —<br>11886     | —<br>—                 | —<br>—         |
|                          | 20           | 2.500      | .83  | 1.000<br>.875  | 4.000<br>4.000 | 2.290<br>2.290 | 2.12<br>2.12  | 1.41<br>1.41 | L156Y-P<br>—   | 12272<br>— | HL156Y-P<br>—        | 11888<br>—     | —<br>—                 | —<br>—         |
|                          | 40           | 5.000      | .83  | 1.000<br>.875  | 2.875<br>4.000 | 1.850<br>2.290 | 3.00<br>2.12  | 1.25<br>1.41 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA528Y-G<br>PA528Y-P   | 12424<br>12426 |
|                          | 20           | 2.500      | .83  | 1.000<br>.875  | 2.875<br>4.000 | 1.850<br>2.290 | 3.00<br>2.12  | 1.25<br>1.41 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA638Y-G<br>PA638Y-P   | 12436<br>12438 |
| 3:1                      | 48           | 6.000      | .84  | .875<br>.750   | 2.375<br>4.250 | 1.632<br>2.085 | 2.75<br>1.75  | 1.00<br>1.19 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA848Y-G<br>PA848Y-P   | 12452<br>12454 |
|                          | 16           | 2.000      | .84  | .875<br>.750   | 2.375<br>4.250 | 1.632<br>2.085 | 2.75<br>1.75  | 1.00<br>1.19 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA948Y-G<br>PA948Y-P   | 12460<br>12462 |
|                          | 64           | 8.000      | .85  | 1.000<br>.875  | 2.750<br>5.250 | 1.882<br>2.105 | 2.75<br>2.105 | 1.25<br>1.88 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
|                          | 16           | 2.000      | .85  | 1.000<br>.875  | 2.750<br>5.250 | 1.882<br>2.105 | 2.75<br>2.105 | 1.25<br>1.88 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
| 4:1                      | 72           | 9.000      | 1.23 | 1.125<br>.875  | 3.250<br>5.750 | 2.320<br>2.470 | 3.00<br>2.13  | 1.69<br>1.22 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
|                          | 18           | 2.250      | 1.23 | 1.125<br>.875  | 3.250<br>5.750 | 2.320<br>2.470 | 3.00<br>2.13  | 1.69<br>1.22 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
| <b>6 DIAMETRAL PITCH</b> |              |            |      |                |                |                |               |              |                |            |                      |                |                        |                |
| 2:1                      | 36           | 6.000      | 1.07 | 1.125          | 3.500          | 2.260          | 3.25          | 1.50         | L158Y-G        | 12278      | —                    | —              | —                      | —              |
|                          | 18           | 3.000      | 1.06 | 1.125          | 4.750          | 2.765          | 2.50          | 1.59         | L158Y-P        | 12280      | —                    | —              | —                      | —              |
|                          | 36           | 6.000      | 1.07 | 1.750<br>1.125 | 3.500<br>4.750 | 2.260<br>2.765 | 3.25<br>2.50  | 1.50<br>1.59 | —<br>—         | —<br>—     | HL158Y-G<br>HL158Y-P | 11890<br>11892 | —<br>—                 | —<br>—         |
|                          | 18           | 3.000      | 1.06 | 1.750<br>1.125 | 3.500<br>4.750 | 2.260<br>2.765 | 3.25<br>2.50  | 1.50<br>1.59 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
|                          | 36           | 6.000      | 1.07 | 1.125<br>1.000 | 3.500<br>4.750 | 2.260<br>2.765 | 3.25<br>2.50  | 1.50<br>1.59 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA626Y-G<br>PA626Y-P   | 12432<br>12434 |
|                          | 18           | 3.000      | 1.07 | 1.125<br>1.000 | 3.500<br>4.750 | 2.260<br>2.765 | 3.25<br>2.50  | 1.50<br>1.59 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA726Y-G<br>PA726Y-P   | 12440<br>12442 |
|                          | 42           | 7.000      | 1.06 | 1.125<br>1.000 | 3.750<br>5.000 | 2.305<br>2.515 | 3.50<br>2.50  | 1.50<br>1.25 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA826Y-G<br>PA826Y-P   | 12448<br>12450 |
|                          | 21           | 3.500      | 1.06 | 1.125<br>1.000 | 3.750<br>5.000 | 2.305<br>2.515 | 3.50<br>2.50  | 1.50<br>1.25 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
| 3:1                      | 48           | 8.000      | 1.18 | 1.125<br>1.000 | 3.438<br>5.438 | 1.898<br>2.560 | 3.25<br>2.62  | 1.00<br>1.25 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA7536Y-G<br>PA7536Y-P | 12520<br>12522 |
|                          | 24           | 4.000      | 1.18 | 1.125<br>1.000 | 3.438<br>5.438 | 1.898<br>2.560 | 3.25<br>2.62  | 1.00<br>1.25 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
|                          | 45           | 7.500      | 1.08 | 1.125<br>.875  | 3.000<br>5.250 | 2.132<br>2.575 | 3.25<br>2.12  | 1.25<br>1.44 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
|                          | 15           | 2.500      | 1.08 | 1.125<br>.875  | 3.000<br>5.250 | 2.132<br>2.575 | 3.25<br>2.12  | 1.25<br>1.44 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
| <b>5 DIAMETRAL PITCH</b> |              |            |      |                |                |                |               |              |                |            |                      |                |                        |                |
| 2:1                      | 30           | 6.000      | 1.05 | 1.125<br>1.000 | 3.500<br>4.375 | 2.257<br>2.390 | 3.25<br>2.62  | 1.38<br>1.28 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA625Y-G<br>PA625Y-P   | 12428<br>12430 |
|                          | 15           | 3.000      | 1.05 | 1.125<br>1.000 | 3.500<br>4.375 | 2.257<br>2.390 | 3.25<br>2.62  | 1.38<br>1.28 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
| 3:1                      | 45           | 9.000      | 1.32 | 1.250<br>1.000 | 3.750<br>5.875 | 2.507<br>2.685 | 3.75<br>2.62  | 1.69<br>1.31 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA935Y-G<br>PA935Y-P   | 12456<br>12458 |
|                          | 15           | 3.000      | 1.32 | 1.250<br>1.000 | 3.750<br>5.875 | 2.507<br>2.685 | 3.75<br>2.62  | 1.69<br>1.31 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |
| <b>4 DIAMETRAL PITCH</b> |              |            |      |                |                |                |               |              |                |            |                      |                |                        |                |
| 2:1                      | 32           | 8.000      | 1.40 | 1.125<br>1.125 | 4.250<br>6.000 | 2.695<br>3.350 | 3.75<br>3.25  | 1.56<br>1.81 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | PA824Y-G<br>PA824Y-P   | 12444<br>12446 |
|                          | 16           | 4.000      | 1.40 | 1.125<br>1.125 | 4.250<br>6.000 | 2.695<br>3.350 | 3.75<br>3.25  | 1.56<br>1.81 | —<br>—         | —<br>—     | —<br>—               | —<br>—         | —<br>—                 | —<br>—         |

\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

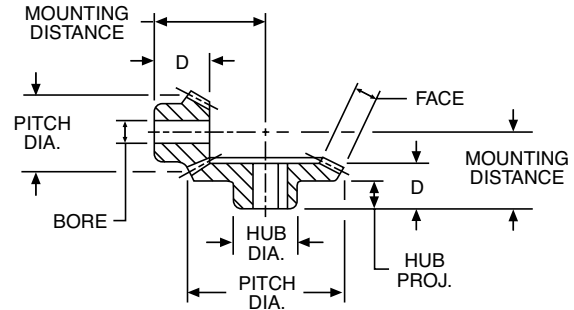
# Spiral Bevel Gears

## 30 through 8 Diametral Pitch (Steel – Unhardened & Hardened)

20° Pressure Angle – 35° Spiral Angle



All Hardened steel gears have teeth only hardened and are equipped with standard keyways and setscrews, except as noted. All pinions are left hand.



### REFERENCE PAGES

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Lubrication — 322  
Materials — 323  
Selection Procedure — 79

### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Ratio                 | No. of<br>Teeth | Pitch<br>Dia.  | Face | Bore           | MD<br>*        | D              | Hub          |             | Catalog<br>Number    | Item<br>Code   | Catalog<br>Number    | Item<br>Code   |
|-----------------------|-----------------|----------------|------|----------------|----------------|----------------|--------------|-------------|----------------------|----------------|----------------------|----------------|
|                       |                 |                |      |                |                |                | Dia.         | Proj.       |                      |                |                      |                |
| 30<br>DIAMETRAL PITCH |                 |                |      |                |                |                |              |             | STEEL<br>UNHARDENED  |                | STEEL<br>HARDENED    |                |
| 2:1                   | 26<br>13        | .87<br>.43     | .14  | .250<br>.1875  | .688<br>.750   | .480<br>.453   | .75<br>.38   | .38<br>.30  | SS302-G<br>SS302-P   | 11938<br>11940 | —<br>—               | —<br>—         |
|                       | 26<br>13        | .87<br>.43     |      | .375<br>.1875  | .688<br>.750   | .480<br>.453   | .75<br>.38   | .38<br>.30  | —<br>—               | —<br>—         | SH302-G<br>SH302-P†  | 11914<br>11916 |
| 19<br>DIAMETRAL PITCH |                 |                |      |                |                |                |              |             |                      |                |                      |                |
| 2:1                   | 26<br>13        | 1.37<br>.68    | .25  | .500<br>.3125  | 1.000<br>1.062 | .730<br>.623   | 1.12<br>.62  | .42<br>.33  | SS192-G<br>SS192-P   | 11934<br>11936 | —<br>—               | —<br>—         |
|                       | 26<br>13        | 1.37<br>.68    |      | .625<br>.3125  | 1.000<br>1.062 | .730<br>.623   | 1.12<br>.62  | .42<br>.33  | —<br>—               | —<br>—         | SH192-G<br>SH192-P†  | 11910<br>11912 |
| 14<br>DIAMETRAL PITCH |                 |                |      |                |                |                |              |             |                      |                |                      |                |
| 2:1                   | 26<br>13        | 1.86<br>.93    | .31  | .625<br>.4375  | 1.188<br>1.250 | .760<br>.625   | 1.38<br>.81  | .50<br>.30  | SS142-G<br>SS142-P   | 11926<br>11928 | —<br>—               | —<br>—         |
|                       | 26<br>13        | 1.86<br>.93    |      | .750<br>.4375  | 1.188<br>1.250 | .760<br>.625   | 1.38<br>.81  | .50<br>.30  | —<br>—               | —<br>—         | SH142-G<br>SH142-P   | 11902<br>11904 |
|                       | 32<br>16        | 2.29<br>1.14   | .38  | .750<br>.500   | 1.375<br>1.625 | .855<br>.848   | 1.62<br>1.00 | .56<br>.45  | SS142-1G<br>SS142-1P | 11930<br>11932 | —<br>—               | —<br>—         |
|                       | 32<br>16        | 2.29<br>1.14   |      | .875<br>.500   | 1.375<br>1.625 | .855<br>.848   | 1.62<br>1.00 | .56<br>.45  | —<br>—               | —<br>—         | SH142-1G<br>SH142-1P | 11906<br>11908 |
| 10<br>DIAMETRAL PITCH |                 |                |      |                |                |                |              |             |                      |                |                      |                |
| 2:1                   | 34<br>17        | 3.40<br>1.70   | .57  | 1.000<br>.625  | 1.875<br>2.375 | 1.135<br>1.219 | 2.00<br>1.50 | .75<br>.63  | SS102-G<br>SS102-P   | 11922<br>11924 | —<br>—               | —<br>—         |
|                       | 34<br>17        | 3.40<br>1.70   |      | 1.1875<br>.625 | 1.875<br>2.375 | 1.135<br>1.219 | 2.00<br>1.50 | .75<br>.63  | —<br>—               | —<br>—         | SH102-G<br>SH102-P   | 11898<br>11900 |
| 8<br>DIAMETRAL PITCH  |                 |                |      |                |                |                |              |             |                      |                |                      |                |
| 2:1                   | 34<br>17        | 4.250<br>2.125 | .71  | 1.250<br>.750  | 2.500<br>3.125 | 1.575<br>1.677 | 2.88<br>1.88 | 1.06<br>.94 | SS82-G<br>SS82-P     | 11918<br>11920 | —<br>—               | —<br>—         |
|                       | 34<br>17        | 4.250<br>2.125 |      | 1.500<br>.750  | 2.500<br>3.125 | 1.575<br>1.677 | 2.88<br>1.88 | 1.06<br>.94 | —<br>—               | —<br>—         | SH82-G<br>SH82-P     | 11894<br>11896 |

\*Mounting Distance (MD) must not be made less than dimension shown, see Page 316.

†No keyway or setscrew.

Boston stock miter and bevel gears are designed for transmission of power and/or motion between intersecting shafts at a right angle (90°). Miter gears are a special type of bevel gear designed to operate as pairs being identical in number of teeth and pitch (1 to 1 ratio only). Other Boston stock bevel gear sets are available with ratios from 1-1/2:1 to 6:1.

All Boston standard stock bevels and miters are manufactured with a 20° pressure angle. These bevel gears are made in accordance with AGMA specifications for a long and short addendum system for gears and pinions, which serves to reduce the amount of pinion tooth undercut and to nearly equalize the strength and durability of the gear and pinion. Boston straight tooth bevel and miter gears have generated teeth with “Coniflex”® tooth form, unless otherwise specified.



## INTERCHANGE

Stock miter and bevel gears having identical diametral pitch, number of teeth and mounting distance (and spiral angle for spiral bevels) are interchangeable.

## SPIRAL VS. STRAIGHT TOOTH

Boston standard stock straight bevel gears can be used for all applications requiring transmission of power and motion between intersecting shafts. Boston standard stock spiral bevel gears have an overlapping tooth action which results in a smoother gear action, lower noise, and higher load capacity than a straight bevel of equal size.

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## Selection Procedure

Approximate horsepower ratings for selected sizes (number of teeth) at various operating speeds (RPM) are given for Boston standard stock Bevel and Miter gears.

For straight tooth Miter gears, refer to Pages 80, 81.

For straight tooth Bevel gears, refer to Page 82.

For spiral tooth Miter gears, refer to Page 83.

For spiral tooth Bevel gears, refer to Page 83.

All ratings are based on normal operating conditions, that is: properly mounted and lubricated, carrying a smooth load for not more than 10 hours (Service Factor = 1.0). Refer to Table 1 for service factors in other service conditions.

1. Determine service factor.
  - a. Using Application Classification Chart I, pages 331-332 determine service factor or
  - b. With knowledge of operating conditions and load classification, select service factor from Table 1.

2. Determine Design Horsepower.

**Design HP = Application Load x Service Factor (Table 1)**

3. Select a gear set with horsepower capacity equal to (or greater than) design horsepower determined in Step 2.

**TABLE 1**

| Service Factor | Operating Conditions                                                                               |
|----------------|----------------------------------------------------------------------------------------------------|
| .8             | Uniform — not more than 15 minutes in 2 hours.                                                     |
| 1.0            | Moderate Shock — not more than 15 minutes in 2 hours.<br>Uniform — not more than 10 hours per day. |
| 1.25           | Moderate Shock — not more than 10 hours per day.<br>Uniform — more than 10 hours per day.          |
| 1.50           | Heavy Shock — not more than 15 minutes in 2 hours.<br>Moderate Shock — more than 10 hours per day. |
| 1.75           | Heavy Shock — not more than 10 hours per day.                                                      |
| 2.0            | Heavy Shock — more than 10 hours per day.                                                          |

Heavy shock loads and/or severe wear conditions may require the use of higher service factors. Consultation with factory is recommended in these applications.

# Miter Gears

## Steel & Iron – Straight Tooth (1:1 Ratio)

L-Series – Unhardened Steel

HLK Series – Hardened Steel (Teeth only)

OA Series – Cast Iron

### APPROXIMATE HP & TORQUE\* RATINGS FOR CLASS I SERVICE (Service Factor = 1.0)

| Catalog Number                   | Pitch | 50 RPM            |                    | 100 RPM           |                    | 200 RPM           |                    | 300 RPM           |                     | 600 RPM           |                      | 900 RPM           |                      | 1200 RPM          |                      | 1800 RPM          |                      |
|----------------------------------|-------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|---------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|
|                                  |       | HP                | Torque             | HP                | Torque             | HP                | Torque             | HP                | Torque              | HP                | Torque               | HP                | Torque               | HP                | Torque               | HP                | Torque               |
| L110Y<br>L111Y                   | 16    | .02<br>.03        | 24.7<br>37.1       | .03<br>.05        | 18.5<br>30.9       | .06<br>.10        | 18.5<br>30.9       | .09<br>.13        | 18.5<br>26.8        | .15<br>.24        | 15.4<br>24.7         | .21<br>.32        | 14.4<br>22.0         | .26<br>.38        | 13.4<br>19.6         | .33<br>.48        | 11.3<br>16.5         |
| L101Y<br>L125Y<br>L126Y          | 12    | .03               | 37.1               | .06               | 37.1               | .12               | 37.1               | .17               | 35.0                | .29               | 29.9                 | .40               | 27.5                 | .47               | 24.2                 | .59               | 20.2                 |
| HLK110Y<br>L112Y                 | 16    | .04<br>.07        | 49.4<br>43.2       | .06<br>.12        | 37.1<br>43.2       | .12<br>.14        | 37.1<br>43.2       | .18<br>.20        | 37.1<br>41.2        | .30<br>.30        | 30.9<br>30.9         | .42<br>.44        | 28.8<br>30.2         | .52<br>.52        | 26.8<br>26.8         | .66<br>.64        | 22.6<br>22.0         |
| L102Y<br>L127Y                   | 12    | .05               | 61.8               | .09               | 55.6               | .18               | 55.6               | .25               | 51.5                | .42               | 43.2                 | .56               | 38.4                 | .66               | 34.0                 | .81               | 27.8                 |
| L119Y<br>L120Y<br>L121Y<br>L133Y | 12    | .07               | 86.5               | .14               | 86.5               | .25               | 77.2               | .35               | 72.1                | .60               | 61.8                 | .77               | 52.8                 | .90               | 46.3                 | 1.1               | 37.7                 |
| HLK101Y<br>L113Y<br>HLK102Y      | 12    | .06<br>.09<br>.10 | 74.1<br>111<br>124 | .12<br>.17<br>.18 | 74.1<br>105<br>111 | .24<br>.33<br>.36 | 74.1<br>102<br>111 | .34<br>.45<br>.50 | 70.0<br>92.6<br>103 | .58<br>.75<br>.84 | 59.7<br>77.2<br>86.5 | .96<br>.96<br>1.1 | 65.9<br>65.9<br>75.5 | 1.1<br>1.1<br>1.3 | 56.6<br>56.6<br>66.9 | 1.3<br>1.3<br>1.6 | 44.6<br>44.6<br>54.9 |
| L103Y<br>L128Y<br>L129Y          | 10    | .11               | 136                | .20               | 124                | .37               | 114                | .52               | 107                 | .87               | 89.6                 | 1.1               | 75.5                 | 1.3               | 66.9                 | 1.5               | 51.5                 |
| L114Y<br>HLK121Y                 | 12    | .15<br>.14        | 185<br>173         | .29<br>.28        | 179<br>173         | .52<br>.50        | 161<br>154         | .71<br>.70        | 146<br>144          | 1.1<br>1.2        | 113<br>124           | 1.4<br>1.5        | 96.1<br>103          | 1.6<br>1.8        | 82.4<br>92.6         | 1.9<br>2.2        | 65.2<br>75.5         |
| L130Y<br>L104Y<br>L131Y          | 10    | .18               | 222                | .33               | 204                | .61               | 188                | .83               | 171                 | 1.3               | 134                  | 1.6               | 110                  | 1.7               | 87.5                 | 2.2               | 75.5                 |
| HLK103Y<br>HLK129Y               | 10    | .20               | 247                | .40               | 247                | .74               | 229                | 1.0               | 206                 | 1.7               | 175                  | 2.2               | 151                  | 2.6               | 134                  | 3.1               | 106                  |
| OA828Y-1                         | 8     | .28               | 346                | .53               | 327                | .93               | 287                | 1.2               | 247                 | 1.9               | 196                  | 2.3               | 158                  | —                 | —                    | —                 | —                    |
| L105Y-A<br>L115Y<br>L116Y        | 8     | .30               | 371                | .56               | 346                | 1.0               | 309                | 1.4               | 288                 | 2.1               | 216                  | 2.6               | 178                  | 3.0               | 154                  | 3.4               | 116                  |
| HLK114Y                          | 12    | .29               | 358                | .58               | 358                | 1.0               | 309                | 1.4               | 288                 | 2.3               | 237                  | 2.8               | 192                  | 3.2               | 165                  | 3.9               | 133                  |
| OA832Y-1                         | 8     | .37               | 457                | .68               | 420                | 1.2               | 371                | 1.6               | 329                 | 2.4               | 247                  | 2.8               | 192                  | —                 | —                    | —                 | —                    |
| HLK104Y<br>HLK130Y<br>HLK131Y    | 10    | .33               | 408                | .66               | 408                | 1.2               | 371                | 1.7               | 350                 | 2.6               | 268                  | 3.3               | 226                  | 3.8               | 196                  | 4.5               | 154                  |

Ratings are based on strength calculation. Basic Static Strength Rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. Use for interpolation purposes only.

\*Torque (Lb. Ins.) Output Rating

HP (Input)

## Steel & Iron – Straight Tooth (1:1 Ratio)

L-Series – Unhardened Steel

HLK Series – Hardened Steel (Teeth only)

OA Series – Cast Iron

### APPROXIMATE HP & TORQUE\* RATINGS FOR CLASS I SERVICE (Service Factor = 1.0)

| Catalog Number                 | Pitch | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        |
|--------------------------------|-------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|
|                                |       | HP     | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP       | Torque | HP       | Torque |
| L106Y<br>L117Y<br>L132Y        | 8     | .42    | 519    | .79     | 488    | 1.4     | 432    | 1.9     | 391    | 2.8     | 288    | 3.4     | 233    | 3.8      | 196    | —        | —      |
| OA624Y                         | 6     | .46    | 568    | .87     | 537    | 1.5     | 463    | 2.0     | 412    | 3.0     | 309    | 3.5     | 240    | —        | —      | —        | —      |
| L123Y                          | 8     | .55    | 679    | 1.0     | 618    | 1.8     | 556    | 2.4     | 494    | 3.5     | 360    | 4.2     | 288    | 4.6      | 237    | —        | —      |
| HLK105YA<br>HLK115Y<br>HLK116Y | 8     | .55    | 679    | 1.1     | 679    | 2.0     | 618    | 2.7     | 556    | 4.3     | 443    | 5.3     | 364    | 5.9      | 304    | 6.9      | 237    |
| L107Y<br>L118Y                 | 6     | .69    | 852    | 1.3     | 803    | 2.2     | 679    | 3.0     | 618    | 4.5     | 463    | 5.3     | 364    | 5.8      | 299    | —        | —      |
| OA630Y-1                       | 6     | .82    | 1013   | 1.5     | 926    | 2.5     | 772    | 3.2     | 659    | 4.7     | 484    | —       | —      | —        | —      | —        | —      |
| OA525Y                         | 5     | .90    | 1112   | 1.6     | 988    | 2.7     | 834    | 3.5     | 721    | 5.1     | 525    | —       | —      | —        | —      | —        | —      |
| L134Y<br>L135Y                 | 6     | .90    | 1112   | 1.6     | 988    | 2.8     | 865    | 3.7     | 762    | 5.4     | 556    | 6.4     | 439    | 7.0      | 360    | —        | —      |
| HLK106Y<br>HLK117Y<br>HLK132Y  | 8     | .80    | 988    | 1.6     | 988    | 2.8     | 865    | 3.7     | 762    | 5.7     | 587    | 6.8     | 467    | 7.6      | 391    | —        | —      |
| OA636Y-1                       | 6     | 1.1    | 1359   | 1.9     | 1174   | 3.2     | 988    | 4.1     | 844    | 5.8     | 597    | —       | —      | —        | —      | —        | —      |
| HLK123Y                        | 8     | 1.0    | 1235   | 2.0     | 1235   | 3.6     | 1112   | 4.7     | 968    | 7.0     | 721    | 8.4     | 576    | 9.2      | 474    | —        | —      |
| L108Y<br>L122Y<br>L136Y        | 5     | 1.3    | 1606   | 2.4     | 1482   | 4.1     | 1266   | 5.3     | 1091   | 7.6     | 782    | 9.0     | 618    | —        | —      | —        | —      |
| HLK107Y<br>HLK118Y             | 6     | 1.3    | 1606   | 2.6     | 1606   | 4.5     | 1390   | 6.0     | 1235   | 8.0     | 824    | 11.0    | 755    | 12.0     | 618    | —        | —      |
| OA424Y                         | 4     | 1.6    | 1976   | 2.8     | 1729   | 4.6     | 1421   | 5.9     | 1215   | 8.2     | 844    | —       | —      | —        | —      | —        | —      |
| OA540Y-1                       | 5     | 2.0    | 2471   | 3.5     | 2162   | 5.6     | 1729   | 7.0     | 1441   | —       | —      | —       | —      | —        | —      | —        | —      |
| L109Y<br>L137Y                 | 4     | 2.3    | 2841   | 4.2     | 2594   | 7.0     | 2162   | 8.7     | 1791   | 12.4    | 1276   | 14.3    | 981    | —        | —      | —        | —      |
| L138Y                          | 4     | 3.0    | 3706   | 5.3     | 3274   | 8.6     | 2656   | 10.8    | 2224   | 14.6    | 1503   | 16.6    | 1139   | —        | —      | —        | —      |
| HLK108Y<br>HLK122Y             | 5     | 2.4    | 2965   | 4.9     | 3026   | 8.2     | 2532   | 10.0    | 2059   | 15.0    | 1544   | 18.0    | 1235   | —        | —      | —        | —      |
| HLK109Y                        | 4     | 4.2    | 5188   | 8.3     | 5126   | 14.0    | 4324   | 17.0    | 3500   | 25.0    | 2574   | 28.0    | 1922   | —        | —      | —        | —      |

Ratings are based on strength calculation. Basic Static Strength Rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. Use for interpolation purposes only.

\*Torque (Lb. Ins.) Output Rating

HP (Input)

# Bevel Gears

## Steel & Iron – Straight Tooth

L-Series/PA Series Pinions – Unhardened Steel

PA Series – Cast Iron

HL Series – Hardened Steel (Teeth Only)

### APPROXIMATE HP & TORQUE\* RATINGS FOR CLASS I SERVICE (Service Factor = 1.0)

| Catalog Number | Pitch | Ratio   | 50 RPM† |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        |
|----------------|-------|---------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|
|                |       |         | HP      | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP       | Torque | HP       | Torque |
| L146Y          | 16    | 1-1/2:1 | .03     | 55.6   | .06     | 55.6   | .11     | 51.0   | .16     | 49.4   | .29     | 44.8   | .40     | 41.2   | .48      | 37.1   | .62      | 31.9   |
| HL146Y         | 16    |         | .04     | 74.1   | .08     | 74.1   | .16     | 74.1   | .23     | 71.0   | .41     | 63.3   | .55     | 56.6   | .67      | 51.7   | .86      | 44.3   |
| L151Y          | 12    |         | .10     | 185    | .20     | 185    | .37     | 171    | .53     | 164    | .91     | 141    | 1.19    | 122    | 1.41     | 109    | 1.74     | 89.6   |
| HL151Y         | 12    |         | .14     | 259    | .27     | 250    | .52     | 241    | .73     | 225    | 1.26    | 195    | 1.65    | 170    | 1.96     | 151    | 2.41     | 124    |
| L153Y          | 10    |         | .24     | 445    | .45     | 417    | .84     | 389    | 1.17    | 361    | 1.93    | 298    | 2.47    | 254    | 2.88     | 222    | 3.44     | 177    |
| HL153Y         | 10    |         | .33     | 611    | .63     | 584    | 1.16    | 537    | 1.62    | 500    | 2.68    | 414    | 3.44    | 354    | 4.00     | 309    | 4.77     | 245    |
| L148Y          | 16    | 2:1     | .02     | 49.4   | .03     | 37.1   | .06     | 37.1   | .09     | 37.1   | .17     | 35.0   | .23     | 31.6   | .28      | 28.8   | .37      | 25.4   |
| HL148Y         | 16    |         | .02     | 49.4   | .04     | 49.4   | .09     | 55.6   | .12     | 49.4   | .23     | 47.4   | .32     | 43.9   | .39      | 40.1   | .52      | 35.7   |
| L149Y          | 16    |         | .04     | 98.8   | .09     | 111    | .17     | 105    | .24     | 98.8   | .43     | 88.5   | .58     | 79.6   | .71      | 73.1   | .91      | 62.5   |
| L150Y          | 14    |         | .05     | 124    | .09     | 111    | .18     | 111    | .26     | 107    | .47     | 96.8   | .64     | 87.8   | .77      | 79.3   | .99      | 67.9   |
| HL150Y         | 14    |         | .07     | 173    | .13     | 161    | .25     | 154    | .36     | 148    | .65     | 134    | .88     | 121    | 1.07     | 110    | 1.38     | 94.7   |
| HL149Y         | 16    |         | .06     | 148    | .12     | 148    | .23     | 142    | .33     | 136    | .60     | 124    | .81     | 111    | .99      | 102    | 1.27     | 87.2   |
| PA3212Y        | 12    | 2:1     | .04     | 99     | .09     | 111    | .16     | 99     | .23     | 95     | .40     | 82     | .52     | 71     | .62      | 64     | .76      | 52.2   |
| PA4212Y        | 12    |         | .08     | 198    | .16     | 198    | .29     | 179    | .41     | 169    | .68     | 140    | .87     | 119    | 1.00     | 103    | 1.20     | 82.4   |
| L152Y          | 12    |         | .14     | 346    | .27     | 334    | .50     | 309    | .72     | 296    | 1.23    | 253    | 1.62    | 222    | 1.92     | 198    | 2.36     | 162    |
| PA5210Y        | 10    |         | .15     | 371    | .28     | 346    | .51     | 315    | .70     | 288    | 1.10    | 226    | 1.40    | 192    | 1.60     | 165    | —        | —      |
| HL152Y         | 12    |         | .19     | 469    | .37     | 457    | .70     | 432    | .99     | 408    | 1.71    | 352    | 2.24    | 307    | 2.66     | 274    | 3.27     | 224    |
| L155Y          | 10    |         | .30     | 741    | .58     | 716    | 1.08    | 667    | 1.51    | 622    | 2.50    | 515    | 3.20    | 439    | 3.73     | 384    | 4.45     | 305    |
| PA528Y         | 8     | 2:1     | .20     | 494    | .38     | 469    | .70     | 432    | .96     | 395    | 1.50    | 309    | 1.90    | 261    | 2.20     | 226    | —        | —      |
| L156Y          | 8     |         | .54     | 1334   | 1.03    | 1272   | 1.88    | 1161   | 2.59    | 1066   | 4.16    | 856    | 5.21    | 715    | 5.96     | 614    | 6.97     | 478    |
| HL155Y         | 10    |         | .42     | 1038   | .81     | 1001   | 1.50    | 926    | 2.10    | 865    | 3.48    | 716    | 4.45    | 611    | 5.18     | 533    | 6.18     | 424    |
| PA626Y         | 6     |         | .40     | 988    | .75     | 926    | 1.30    | 803    | 1.80    | 741    | 2.90    | 597    | 3.50    | 480    | 4.00     | 412    | —        | —      |
| PA625Y         | 5     |         | .43     | 1062   | .82     | 1013   | 1.50    | 926    | 2.00    | 824    | 3.10    | 638    | 3.80    | 522    | 4.30     | 443    | —        | —      |
| PA726Y         | 6     |         | .48     | 1186   | .89     | 1099   | 1.60    | 988    | 2.10    | 865    | 3.90    | 803    | —       | —      | —        | —      | —        | —      |
| L158Y          | 6     | 2:1     | 1.07    | 2644   | 2.02    | 2495   | 3.62    | 2236   | 4.92    | 2026   | 7.67    | 1579   | 9.43    | 1294   | 10.65    | 1096   | 12.24    | 840    |
| PA826Y         | 6     |         | .63     | 1556   | 1.20    | 1482   | 2.00    | 1235   | 2.70    | 1112   | 4.00    | 824    | 4.80    | 659    | —        | —      | —        | —      |
| HL156Y         | 8     |         | .76     | 1878   | 1.44    | 1779   | 2.62    | 1618   | 3.60    | 1482   | 5.78    | 1190   | 7.24    | 994    | 8.28     | 852    | 9.68     | 664    |
| PA824Y         | 4     |         | .98     | 2421   | 1.80    | 2224   | 3.20    | 1976   | 4.20    | 1729   | 7.30    | 1503   | 7.50    | 1029   | —        | —      | —        | —      |
| HL158Y         | 6     |         | 1.49    | 3681   | 2.80    | 3459   | 5.02    | 3101   | 6.83    | 2812   | 10.65   | 2193   | 13.10   | 1798   | 14.79    | 1522   | 17.00    | 1167   |
| PA3316Y        | 16    | 3:1     | .05     | 185    | .11     | 204    | .20     | 185    | .30     | 185    | .53     | 164    | .72     | 148    | .88      | 136    | 1.12     | 115    |
| PA45312Y       | 12    |         | .16     | 593    | .31     | 574    | .59     | 547    | .84     | 519    | 1.44    | 445    | 1.89    | 389    | 2.24     | 346    | 2.75     | 283    |
| PA6310Y        | 10    |         | .34     | 1260   | .66     | 1223   | 1.21    | 1121   | 1.70    | 1050   | 2.81    | 868    | 3.60    | 741    | 4.18     | 645    | 5.00     | 515    |
| PA638Y         | 8     |         | .43     | 1594   | .82     | 1519   | 1.52    | 1408   | 2.12    | 1309   | 3.51    | 1084   | 4.49    | 924    | 5.22     | 806    | 6.24     | 642    |
| L157Y          | 10    |         | .34     | 1260   | .66     | 1223   | 1.21    | 1121   | 1.70    | 1050   | 2.81    | 868    | 3.60    | 741    | 4.18     | 645    | 5.00     | 515    |
| PA7536Y        | 6     |         | .88     | 3261   | 1.66    | 3076   | 3.03    | 2807   | 4.17    | 2576   | 6.69    | 2066   | 8.38    | 1725   | 9.59     | 1481   | 11.21    | 1154   |
| PA935Y         | 5     | 4:1     | 1.53    | 5670   | 2.88    | 5336   | 5.16    | 4781   | 7.01    | 4330   | 10.93   | 3375   | 13.44   | 2767   | 15.19    | 2346   | 17.45    | 1796   |
| PA4416Y        | 16    |         | .06     | 296    | .12     | 296    | .24     | 296    | .34     | 280    | .61     | 251    | .83     | 228    | 1.02     | 210    | 1.30     | 4178   |
| PA6412Y        | 12    |         | .17     | 840    | .32     | 791    | .61     | 754    | .86     | 708    | 1.48    | 609    | 1.94    | 533    | 2.31     | 476    | 2.83     | 388    |
| PA6410Y        | 10    |         | .22     | 1087   | .42     | 1038   | .80     | 988    | 1.13    | 931    | 1.95    | 803    | 2.56    | 703    | 3.04     | 626    | 3.74     | 513    |
| PA848Y         | 8     |         | .43     | 2125   | .83     | 2051   | 1.54    | 1902   | 2.15    | 1771   | 3.56    | 1466   | 4.56    | 1252   | 5.30     | 1091   | 6.33     | 869    |
| PA948Y         | 8     |         | .75     | 3706   | 1.43    | 3533   | 2.62    | 3236   | 3.64    | 2998   | 5.92    | 2438   | 7.50    | 2059   | 8.65     | 1781   | 10.21    | 1401   |
| PA6616Y        | 16    | 6:1     | .09     | 667    | .17     | 630    | .33     | 611    | .48     | 593    | .86     | 531    | 1.17    | 482    | 1.42     | 439    | 1.82     | 375    |
| PA6612Y        | 12    |         | .12     | 889    | .23     | 852    | .44     | 815    | .63     | 778    | 1.13    | 698    | 1.54    | 634    | 1.88     | 581    | 2.40     | 494    |

Ratings are based on strength calculation. Basic Static Strength Rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

\*Torque (Lb. Ins.) Output Rating

HP (Input)

†RPM of Pinion

# Steel Spiral Miter & Bevel Gears

## Steel Spiral Miter Gears (1:1 Ratio)

LSA Series – Unhardened Steel

HLSK Series – Hardened Steel (Teeth Only)

### APPROXIMATE HP & TORQUE\* RATINGS FOR CLASS I SERVICE (Service Factor = 1.0)

| Catalog Number | Pitch | 50 RPM |        | 100 RPM |        | 200 RPM |        | 300 RPM |        | 600 RPM |        | 900 RPM |        | 1200 RPM |        | 1800 RPM |        |
|----------------|-------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|
|                |       | HP     | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP      | Torque | HP       | Torque | HP       | Torque |
| LSA110Y        | 18    | .01    | 12.4   | .02     | 12.4   | .04     | 12.4   | .07     | 14.4   | .14     | 14.4   | .20     | 13.7   | .25      | 12.9   | .35      | 12.0   |
| LSA101Y        | 12    | .02    | 24.7   | .04     | 24.7   | .08     | 24.7   | .13     | 26.8   | .25     | 25.7   | .35     | 24.0   | .45      | 23.2   | .62      | 21.3   |
| LSA102Y        | 12    | .03    | 37.1   | .07     | 43.2   | .13     | 40.1   | .20     | 41.2   | .38     | 39.1   | .54     | 37.1   | .63      | 32.4   | .95      | 32.6   |
| HLSK110Y       | 18    | .03    | 37.1   | .07     | 43.2   | .14     | 43.2   | .21     | 43.2   | .42     | 43.2   | .59     | 40.5   | .76      | 39.1   | 1.0      | 34.3   |
| HLSK101Y       | 12    | .06    | 74.1   | .13     | 80.3   | .26     | 80.3   | .39     | 80.3   | .75     | 77.2   | 1.0     | 68.6   | 1.3      | 66.9   | 1.8      | 61.8   |
| LSA103Y        | 10    | .07    | 86.5   | .15     | 92.6   | .30     | 92.6   | .44     | 90.6   | .80     | 82.4   | 1.1     | 75.5   | 1.4      | 72.1   | 2.0      | 68.6   |
| HLSK102Y       | 12    | .10    | 124    | .21     | 130    | .41     | 127    | .61     | 126    | 1.0     | 103    | 1.6     | 110    | 2.0      | 103    | 2.8      | 96.1   |
| LSA104Y        | 10    | .15    | 185    | .30     | 185    | .57     | 176    | .83     | 171    | 1.5     | 154    | 2.0     | 137    | 2.6      | 134    | 3.6      | 124    |
| LSA105YA       | 7     | .22    | 272    | .44     | 272    | .84     | 259    | 1.2     | 247    | 2.2     | 226    | 3.0     | 206    | 3.8      | 196    | 5.1      | 175    |
| HLSK103Y       | 10    | .23    | 284    | .46     | 284    | .89     | 275    | 1.3     | 268    | 2.4     | 247    | 3.4     | 233    | 4.3      | 221    | 5.9      | 202    |
| LSA106Y        | 8     | .34    | 420    | .69     | 426    | 1.3     | 401    | 1.8     | 371    | 3.3     | 340    | 4.5     | 309    | 5.7      | 293    | 7.8      | 268    |
| LSA107Y        | 6     | .46    | 568    | .90     | 556    | 1.7     | 525    | 2.4     | 494    | 4.3     | 443    | 5.9     | 405    | 7.4      | 381    | 10.0     | 343    |
| LSA118Y        | 6     | .46    | 568    | .90     | 556    | 1.7     | 525    | 2.4     | 494    | 4.3     | 443    | 5.9     | 405    | 7.4      | 381    | 10.0     | 343    |
| HLSK104Y       | 10    | .45    | 556    | .90     | 556    | 1.7     | 525    | 2.5     | 515    | 4.5     | 463    | 6.1     | 419    | 7.9      | 407    | 11.1     | 381    |
| HLSK105YA      | 7     | .67    | 828    | 1.3     | 803    | 2.5     | 772    | 3.6     | 741    | 6.5     | 669    | 9.0     | 618    | 11.0     | 566    | 15.0     | 515    |
| LSA122Y        | 5     | .83    | 1025   | 1.6     | 988    | 3.0     | 926    | 4.3     | 885    | 7.5     | 772    | 10.0    | 686    | 12.0     | 618    | 17.0     | 583    |
| HLSK106Y       | 8     | 1.0    | 1235   | 2.0     | 1235   | 3.9     | 1204   | 5.6     | 1153   | 10.0    | 1029   | 13.0    | 892    | 17.0     | 875    | 23.0     | 789    |
| HLSK107Y       | 6     | 1.3    | 1606   | 2.7     | 1668   | 5.1     | 1575   | 7.3     | 1503   | 13.0    | 1338   | 17.0    | 1167   | 22.0     | 1132   | 33.0     | 1132   |
| HLSK118Y       | 6     | 1.3    | 1606   | 2.7     | 1668   | 5.1     | 1575   | 7.3     | 1503   | 13.0    | 1338   | 17.0    | 1167   | 22.0     | 1132   | 33.0     | 1132   |
| HLSK122Y       | 5     | 2.4    | 2965   | 4.9     | 3026   | 9.1     | 2810   | 13.1    | 2697   | 23.01   | 2378   | 30.0    | 2059   | 38.0     | 1956   | 51.0     | 1750   |

## Steel Spiral Bevel Gears\*\* (2:1 Ratio)

SS-Series – Unhardened Steel

SH Series – Hardened Steel (Teeth Only)

### APPROXIMATE HP & TORQUE\* RATINGS FOR CLASS I SERVICE (Service Factor = 1.0)

| Catalog Number | Pitch | 50 RPM† |        | 100 RPM† |        | 200 RPM† |        | 300 RPM† |        | 600 RPM† |        | 900 RPM† |        | 1200 RPM† |        | 1800 RPM† |        |
|----------------|-------|---------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|-----------|--------|-----------|--------|
|                |       | HP      | Torque | HP       | Torque | HP       | Torque | HP       | Torque | HP       | Torque | HP       | Torque | HP        | Torque | HP        | Torque |
| SS302          | 30    | .002    | 4.9    | .004     | 4.9    | .008     | 4.9    | .013     | 5.4    | .025     | 5.1    | .037     | 5.1    | .05       | 5.1    | .07       | 4.8    |
| SH302          | 30    | .005    | 12.4   | .01      | 12.4   | .02      | 12.4   | .03      | 12.4   | .06      | 12.4   | .09      | 12.4   | .12       | 12.4   | .18       | 12.4   |
| SS192          | 19    | .01     | 24.7   | .02      | 24.7   | .04      | 24.7   | .06      | 24.7   | .12      | 24.7   | .18      | 24.7   | .24       | 24.7   | .35       | 24.0   |
| SS142          | 14    | .02     | 49.4   | .05      | 61.8   | .09      | 55.6   | .14      | 57.6   | .26      | 53.5   | .39      | 53.5   | .51       | 52.5   | .76       | 52.2   |
| SH192          | 19    | .03     | 74.1   | .05      | 61.8   | .10      | 61.8   | .16      | 65.9   | .31      | 63.8   | .46      | 63.1   | .60       | 61.8   | .88       | 60.4   |
| SS142-1        | 14    | .04     | 98.8   | .08      | 98.8   | .16      | 98.8   | .23      | 94.7   | .45      | 92.6   | .67      | 92.0   | .88       | 90.6   | 1.3       | 89.2   |
| SH142          | 14    | .06     | 148    | .12      | 148    | .23      | 142    | .34      | 140    | .66      | 136    | .98      | 135    | 1.3       | 134    | 1.9       | 130    |
| SH142-1        | 14    | .10     | 247    | .20      | 247    | .39      | 241    | .58      | 239    | 1.1      | 226    | 1.7      | 233    | 2.2       | 226    | 3.2       | 220    |
| SS102          | 10    | .14     | 346    | .27      | 334    | .52      | 321    | .78      | 321    | 1.5      | 309    | 2.2      | 302    | 2.9       | 299    | 4.3       | 295    |
| SS82           | 8     | .26     | 642    | .50      | 618    | .99      | 611    | 1.5      | 618    | 2.8      | 576    | 4.2      | 576    | 5.5       | 566    | 8.0       | 549    |
| SH102          | 10    | .34     | 840    | .67      | 828    | 1.3      | 803    | 2.0      | 824    | 3.8      | 782    | 5.6      | 769    | 7.3       | 751    | 10.7      | 734    |
| SH82           | 8     | .64     | 1581   | 1.3      | 1606   | 2.5      | 1544   | 3.7      | 1524   | 7.1      | 1462   | 10.5     | 1441   | 13.7      | 1410   | 20.0      | 1373   |

Ratings are based on strength calculation. Basic Static Strength Rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

\*Torque (Lb. Ins.) Output Rating

HP (Input)

Note: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. Use for interpolation purposes only.

\*\*Ratings reflect Gear and Pinion sets.

†Pinion RPM

## Notes

C



|                                                 |         |
|-------------------------------------------------|---------|
| CATALOG NUMBERS / DIMENSIONS.....               | 86-95   |
| SELECTION PROCEDURE.....                        | 96      |
| HORSEPOWER & TORQUE RATINGS.....                | 97-98   |
| CENTER DISTANCES & RATIOS AVAILABLE.....        | 98      |
| STOCK ALTERED / CUSTOM WORM AND WORM GEARS..... | 3-5     |
| WORM/WORM GEAR ENGINEERING INFORMATION .....    | 318-319 |

# Worms & Worm Gears

## 48 Diametral Pitch (Bronze Worm Gears, Steel Worms – Unhardened & Hardened, Acetal Worm Gears & Worms)

Pressure Angle – Single thread 14-1/2° – Double thread 20° – Quad thread 25°

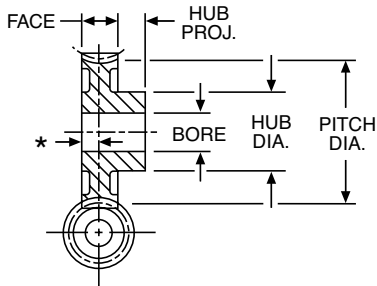


RATIO = Gear Teeth ÷ Worm Threads

All Worms and Worm Gears stocked RIGHT HAND ONLY.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 48                          |            |             |      |       |                    | WORM GEARS     |           | FACE = .156"<br>*CENTER LINE WORM TO<br>FLUSH END = .078" |           |                |           |
|-----------------------------|------------|-------------|------|-------|--------------------|----------------|-----------|-----------------------------------------------------------|-----------|----------------|-----------|
| DIAMETRAL PITCH             |            |             |      |       |                    |                |           |                                                           |           |                |           |
| No. of Teeth                | Pitch Dia. | Bore        | Hub  |       | Style See Page 315 | SINGLE Thread  |           | DOUBLE Thread                                             |           | QUAD Thread    |           |
|                             |            |             | Dia. | Proj. |                    | Catalog Number | Item Code | Catalog Number                                            | Item Code | Catalog Number | Item Code |
| ACETAL**                    |            |             |      |       |                    |                |           |                                                           |           |                |           |
| 20                          | .417       | .187        | .34  | .19   | B                  | GP1018         | 54106     | -                                                         | -         | -              | -         |
| 30                          | .625       |             | .44  | .25   |                    | GP1019         | 54107     | -                                                         | -         | -              | -         |
| 40                          | .833       |             | .50  |       |                    | GP1020         | 54108     | -                                                         | -         | -              | -         |
| 50                          | 1.042      |             |      |       |                    | GP1021         | 54109     | -                                                         | -         | -              | -         |
| ACETAL WITH BRASS INSERTS** |            |             |      |       |                    |                |           |                                                           |           |                |           |
| 20                          | .417       | .125        | .34  | .19   | B                  | GP1018-1/8     | 54118     | -                                                         | -         | -              | -         |
| 30                          | .625       | .125        | .44  | .25   |                    | GP1019-1/8     | 54119     | -                                                         | -         | -              | -         |
|                             |            | GP1019-3/16 |      |       |                    | 54120          | -         | -                                                         | -         | -              |           |
| 40                          | .833       | .188        | .50  | .25   |                    | GP1020-3/16    | 54121     | -                                                         | -         | -              | -         |
|                             |            | GP1020-1/4  |      |       |                    | 54122          | -         | -                                                         | -         | -              |           |
| 50                          | 1.042      | .188        | .50  | .25   |                    | GP1021-3/16    | 54123     | -                                                         | -         | -              | -         |
|                             |            | GP1021-1/4  |      |       | 54124              | -              | -         | -                                                         | -         |                |           |
| BRONZE                      |            |             |      |       |                    |                |           |                                                           |           |                |           |
| 20                          | .417       | .1875       | .34  | .19   | A                  | G1018          | 13564     | D1118                                                     | 13488     | Q1318          | 13440     |
| 30                          | .625       |             | .44  | .25   |                    | G1019          | 13566     | D1119                                                     | 13490     | Q1319          | 13442     |
| 40                          | .833       |             | .50  |       |                    | G1020          | 13568     | D1120                                                     | 13492     | Q1320          | 13444     |
| 50                          | 1.042      |             | .50  |       |                    | G1021          | 13570     | D1121                                                     | 13494     | Q1321          | 13446     |
| 60                          | 1.250      |             | .62  |       |                    | G1024          | 13572     | D1124                                                     | 13500     | Q1324          | 13452     |
| 80                          | 1.667      | .250        | .62  | .31   | B                  | G1022          | 13574     | D1122                                                     | 13496     | Q1322          | 13448     |
| 100                         | 2.083      |             | .69  |       |                    | G1023          | 13576     | D1123                                                     | 13498     | Q1323          | 13450     |

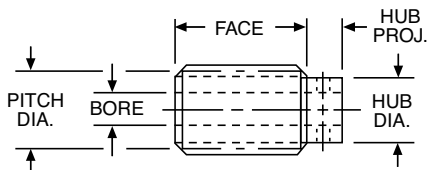


### STANDARD TOLERANCES

| DIMENSION |                          |     | TOLERANCE   |
|-----------|--------------------------|-----|-------------|
| BORE      | Bronze and Steel         | All | ±.0005      |
|           | Acetal                   | All | +.001 –.002 |
|           | Acetal with Brass Insert | All | +.001 –.000 |

### WORM LEAD and LEAD ANGLE

|            | SINGLE | DOUBLE | QUAD   |
|------------|--------|--------|--------|
| LEAD       | .0654" | .1309" | .2618" |
| LEAD ANGLE | 3°35'  | 7°7'   | 14°2'  |



### REFERENCE PAGES

Alterations — 322  
Lubrication — 322  
Materials — 323

| 48<br>DIAMETRAL PITCH |      |       |      |       |                   |                |                   |                |                   |                | WORMS FOR ABOVE GEARS |  |  |  |  |  |
|-----------------------|------|-------|------|-------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-----------------------|--|--|--|--|--|
| Pitch<br>Dia.         | Face | Bore  | Hub  |       | SINGLE Thread     |                | DOUBLE Thread     |                | QUAD Thread       |                |                       |  |  |  |  |  |
|                       |      |       | Dia. | Proj. | Catalog<br>Number | Item<br>Code   | Catalog<br>Number | Item<br>Code   | Catalog<br>Number | Item<br>Code   |                       |  |  |  |  |  |
| ACETAL                |      |       |      |       |                   |                |                   |                |                   |                |                       |  |  |  |  |  |
| .333                  | .562 | .187  | .26  | .19   | LSHP              | 54141          | —                 | —              | —                 | —              |                       |  |  |  |  |  |
| UNHARDENED – STEEL    |      |       |      |       |                   |                |                   |                |                   |                |                       |  |  |  |  |  |
| .333                  | .562 | .1875 | .26  | .19   | LSH-1             | 12920          | DSH-1             | 12928          | QSH-1             | 12934          |                       |  |  |  |  |  |
| HARDENED – STEEL      |      |       |      |       |                   |                |                   |                |                   |                |                       |  |  |  |  |  |
| .333                  | .562 | .1875 | .26  | .19   | HLSH-1<br>GLSH-1  | 13026<br>12952 | HDSH-1<br>GDSh-1  | 13052<br>13036 | HQSH-1<br>GQSH-1  | 13062<br>13042 |                       |  |  |  |  |  |

All Steel worms have .0625 drilled hole in hub.  
Hxxx worms have polished threads.  
Gxxx worms have ground and polished threads.

# Worms & Worm Gears

## 32 Diametral Pitch (Bronze Worm Gears, Steel Worms – Unhardened & Hardened, Acetal Worm Gears & Worms)

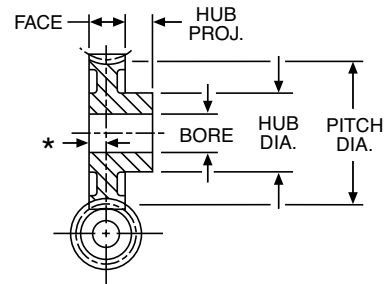
Pressure Angle – Single thread 14-1/2° – Double thread 20° – Quad thread 25°

RATIO = Gear Teeth ÷ Worm Threads

All Worms and Worm Gears stocked RIGHT HAND ONLY.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 32 DIAMETRAL PITCH          |            |       |      |        |                    | WORM GEARS     |           | FACE = .219"<br>*CENTER LINE WORM TO FLUSH END = .109" |           |                |           |
|-----------------------------|------------|-------|------|--------|--------------------|----------------|-----------|--------------------------------------------------------|-----------|----------------|-----------|
| No. of Teeth                | Pitch Dia. | Bore  | Hub  |        | Style See Page 315 | SINGLE Thread  |           | DOUBLE Thread                                          |           | QUAD Thread    |           |
|                             |            |       | Dia. | Proj.  |                    | Catalog Number | Item Code | Catalog Number                                         | Item Code | Catalog Number | Item Code |
| ACETAL**                    |            |       |      |        |                    |                |           |                                                        |           |                |           |
| 20                          | .625       | .187  | .50  | .25    | B                  | GP1026         | 54110     | -                                                      | -         | -              | -         |
| 30                          | .938       |       | .63  |        |                    | GP1027         | 54111     | -                                                      | -         | -              | -         |
| 40                          | 1.250      | .63   | .31  | GP1028 |                    | 54112          | -         | -                                                      | -         | -              |           |
| 50                          | 1.562      | .63   |      | GP1029 |                    | 54113          | -         | -                                                      | -         | -              |           |
| ACETAL WITH BRASS INSERTS** |            |       |      |        |                    |                |           |                                                        |           |                |           |
| 20                          | .625       | .188  | .50  | .25    | B                  | GP1026-3/16    | 54125     | -                                                      | -         | -              | -         |
|                             |            | .250  |      |        |                    | GP1026-1/4     | 54126     | -                                                      | -         | -              | -         |
| 30                          | .938       | .188  | .63  | .25    |                    | GP1027-3/16    | 54127     | -                                                      | -         | -              | -         |
|                             |            | .250  |      |        |                    | GP1027-1/4     | 54128     | -                                                      | -         | -              | -         |
| 40                          | 1.250      | .250  | .63  | .31    |                    | GP1028-1/4     | 54129     | -                                                      | -         | -              | -         |
|                             |            | .313  |      |        |                    | GP1028-5/16    | 54130     | -                                                      | -         | -              | -         |
| 50                          | 1.562      | .250  | .63  | .31    |                    | GP1029-1/4     | 54131     | -                                                      | -         | -              | -         |
|                             |            | .3125 |      |        |                    | GP1029-5/16    | 54132     | -                                                      | -         | -              | -         |
| BRONZE                      |            |       |      |        |                    |                |           |                                                        |           |                |           |
| 20                          | .625       | .1875 | .50  | .25    | A                  | G1026          | 13578     | D1126                                                  | 13502     | Q1326          | 13454     |
| 30                          | .938       |       | .62  |        |                    | G1027          | 13580     | D1127                                                  | 13504     | Q1327          | 13456     |
| 40                          | 1.250      | .62   | .31  | G1028  |                    | 13582          | D1128     | 13506                                                  | Q1328     | 13458          |           |
| 50                          | 1.562      | .62   |      | G1029  |                    | 13584          | D1129     | 13508                                                  | Q1329     | 13460          |           |
| 60                          | 1.875      | .69   |      | G1032  | 13586              | D1132          | 13514     | Q1332                                                  | 13466     |                |           |
| 80                          | 2.500      | .3125 | .69  | .31    | D                  | G1030          | 13588     | D1130                                                  | 13510     | Q1330          | 13462     |
| 96                          | 3.000      |       |      |        |                    | G1031          | 13590     | -                                                      | -         | Q1331          | 13464     |
| 100                         | 3.125      |       |      |        |                    | G1033          | 13592     | D1133                                                  | 13516     | -              | -         |

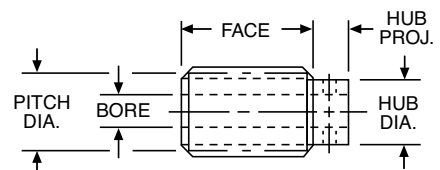


### STANDARD TOLERANCES

| DIMENSION |                          |     | TOLERANCE   |
|-----------|--------------------------|-----|-------------|
| BORE      | Bronze and Steel         | All | ±.0005      |
|           | Acetal                   | All | +.001 –.002 |
|           | Acetal with Brass Insert | All | +.001 –.000 |

### WORM LEAD and LEAD ANGLE

|            | SINGLE | DOUBLE | QUAD   |
|------------|--------|--------|--------|
| LEAD       | .0982" | .1963" | .3927" |
| LEAD ANGLE | 4°5'   | 8°8'   | 15°57' |



| 32                    |      |       |      |       |                   |                |                   |                |                   |                |
|-----------------------|------|-------|------|-------|-------------------|----------------|-------------------|----------------|-------------------|----------------|
| DIAMETRAL PITCH       |      |       |      |       |                   |                |                   |                |                   |                |
| WORMS FOR ABOVE GEARS |      |       |      |       |                   |                |                   |                |                   |                |
| Pitch<br>Dia.         | Face | Bore  | Hub  |       | SINGLE Thread     |                | DOUBLE Thread     |                | QUAD Thread       |                |
|                       |      |       | Dia. | Proj. | Catalog<br>Number | Item<br>Code   | Catalog<br>Number | Item<br>Code   | Catalog<br>Number | Item<br>Code   |
| ACETAL                |      |       |      |       |                   |                |                   |                |                   |                |
| .438                  | .641 | .187  | .32  | .19   | LTHBP             | 54142          | —                 | —              | —                 | —              |
| UNHARDENED – STEEL    |      |       |      |       |                   |                |                   |                |                   |                |
| .438                  | .688 | .1875 | .32  | .19   | LTHB-1            | 12922          | DTH-1             | 12930          | QTH-1             | 12936          |
| HARDENED – STEEL      |      |       |      |       |                   |                |                   |                |                   |                |
| .438                  | .688 | .2187 | .32  | .19   | HLTH-1<br>GLTH-1  | 13028<br>12954 | HDTH-1<br>GDTH-1  | 13054<br>13038 | HQTH-1<br>GQTH-1  | 13064<br>13044 |

All Steel worms have .0625 drilled hole in hub.

Hxxx worms have polished threads.

Gxxx worms have ground and polished threads.

\*\*These are in effect Helical Gears with a Helix Angle compatible with the worms. When in mesh they operate as a worm pair at right angles. Face Width is 3/16".

### REFERENCE PAGES

Alterations — 322

Lubrication — 322

Materials — 323

# Worms & Worm Gears

## 24 Diametral Pitch (Bronze Worm Gears, Steel Worms – Unhardened & Hardened, Minlon® Worm Gears – Nylon Worms)

Pressure Angle – Single thread 14-1/2° – Double thread 20° – Quad thread 25°

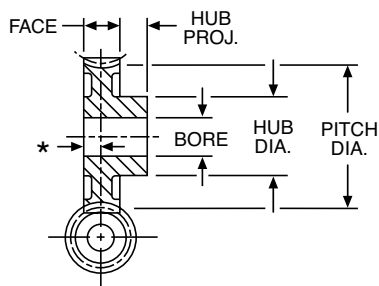


RATIO = Gear Teeth ÷ Worm Threads

All Worms and Worm Gears stocked RIGHT HAND ONLY.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 24<br>DIAMETRAL PITCH       |               |               |      |       |                             | WORM<br>GEARS     |              | FACE = .250"<br>*CENTER LINE WORM TO<br>FLUSH END = .125" |              |                   |              |
|-----------------------------|---------------|---------------|------|-------|-----------------------------|-------------------|--------------|-----------------------------------------------------------|--------------|-------------------|--------------|
| No.<br>of<br>Teeth          | Pitch<br>Dia. | Bore          | Hub  |       | Style<br>See<br>Page<br>315 | SINGLE Thread     |              | DOUBLE Thread                                             |              | QUAD Thread       |              |
|                             |               |               | Dia. | Proj. |                             | Catalog<br>Number | Item<br>Code | Catalog<br>Number                                         | Item<br>Code | Catalog<br>Number | Item<br>Code |
| MINLON**                    |               |               |      |       |                             |                   |              |                                                           |              |                   |              |
| 20                          | .833          | .187          | .63  | .31   | B                           | GP1034            | 54114        | -                                                         | -            | -                 | -            |
| 30                          | 1.250         |               |      |       |                             | GP1035            | 54115        | -                                                         | -            | -                 | -            |
| 40                          | 1.667         | .3125         | .75  |       |                             | GP1036            | 54116        | -                                                         | -            | -                 | -            |
| 50                          | 2.083         |               |      |       |                             | GP1037            | 54117        | -                                                         | -            | -                 | -            |
| MINLON WITH BRASS INSERTS** |               |               |      |       |                             |                   |              |                                                           |              |                   |              |
| 20                          | .833          | .1875<br>.250 | .63  | .31   | B                           | GP1034-3/16       | 54133        | -                                                         | -            | -                 | -            |
|                             |               |               |      |       |                             | GP1034-1/4        | 54134        | -                                                         | -            | -                 | -            |
| 30                          | 1.250         | .1875<br>.250 |      |       |                             | GP1035-3/16       | 54135        | -                                                         | -            | -                 | -            |
|                             |               |               |      |       |                             | GP1035-1/4        | 54136        | -                                                         | -            | -                 | -            |
| 40                          | 1.667         | .250<br>.3125 | .75  |       |                             | GP1036-1/4        | 54137        | -                                                         | -            | -                 | -            |
|                             |               |               |      |       |                             | GP1036-5/16       | 54138        | -                                                         | -            | -                 | -            |
| 50                          | 2.083         | .250<br>.3125 |      |       |                             | GP1037-1/4        | 54139        | -                                                         | -            | -                 | -            |
|                             |               |               |      |       |                             | GP1037-5/16       | 54140        | -                                                         | -            | -                 | -            |
| BRONZE                      |               |               |      |       |                             |                   |              |                                                           |              |                   |              |
| 20                          | .833          | .1875         | .62  | .31   | A                           | G1034             | 13594        | D1134                                                     | 13518        | Q1334             | 13470        |
| 30                          | 1.250         | .250          | .62  | .31   |                             | G1035             | 13596        | D1135                                                     | 13520        | Q1335             | 13472        |
| 40                          | 1.667         | .3125         | .75  | .31   | B                           | G1036             | 13598        | D1136                                                     | 13522        | Q1336             | 13474        |
| 50                          | 2.083         |               |      |       |                             | G1037             | 13600        | D1137                                                     | 13524        | Q1337             | 13476        |
| 60                          | 2.500         |               |      |       | C                           | G1040             | 13602        | D1140                                                     | 13530        | Q1340             | 13482        |
| 72                          | 3.000         |               |      |       |                             | G1038             | 13604        | D1138                                                     | 13526        | Q1338             | 13478        |
| 80                          | 3.333         | .375          | .88  | .38   | D                           | G1041             | 13606        | D1141                                                     | 13532        | Q1341             | 13484        |
| 96                          | 4.000         |               |      |       |                             | G1039             | 13608        | D1139                                                     | 13528        | -                 | -            |
| 100                         | 4.167         |               |      |       |                             | G1049             | 13610        | D1149                                                     | 13534        | -                 | -            |

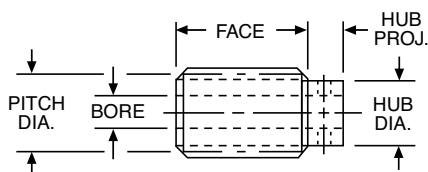


### STANDARD TOLERANCES

| DIMENSION |                             |     | TOLERANCE   |
|-----------|-----------------------------|-----|-------------|
| BORE      | Bronze and Steel            | All | ±.0005      |
|           | Minlon/Nylon                | All | +.001 -.002 |
|           | Minlon/Nylon w/Brass Insert | All | +.001 -.000 |
|           |                             |     |             |

### WORM LEAD and LEAD ANGLE

|            | SINGLE | DOUBLE | QUAD   |
|------------|--------|--------|--------|
| LEAD       | .1309" | .2618" | .5236" |
| LEAD ANGLE | 4°46'  | 9°28'  | 18°26' |



### REFERENCE PAGES

Alterations — 322  
Lubrication — 322  
Materials — 323

| 24<br>DIAMETRAL PITCH |      |       |      |       |                   |                |                   |                |                   |                | WORMS FOR ABOVE GEARS |  |  |  |  |
|-----------------------|------|-------|------|-------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-----------------------|--|--|--|--|
| Pitch<br>Dia.         | Face | Bore  | Hub  |       | SINGLE Thread     |                | DOUBLE Thread     |                | QUAD Thread       |                |                       |  |  |  |  |
|                       |      |       | Dia. | Proj. | Catalog<br>Number | Item<br>Code   | Catalog<br>Number | Item<br>Code   | Catalog<br>Number | Item<br>Code   |                       |  |  |  |  |
| NYLON                 |      |       |      |       |                   |                |                   |                |                   |                |                       |  |  |  |  |
| .500                  | .643 | .187  | .38  | .25   | LUHBP             | 54143          | —                 | —              | —                 | —              |                       |  |  |  |  |
| UNHARDENED – STEEL    |      |       |      |       |                   |                |                   |                |                   |                |                       |  |  |  |  |
| .500                  | .812 | .1875 | .38  | .25   | LUHB              | 12924          | DUH               | 12932          | QUH               | 12938          |                       |  |  |  |  |
| HARDENED – STEEL      |      |       |      |       |                   |                |                   |                |                   |                |                       |  |  |  |  |
| .500                  | .812 | .25   | .38  | .25   | HLUH<br>GLUH      | 13030<br>12956 | HDUH<br>GDUH      | 13056<br>13040 | HQUH<br>GQUH      | 13066<br>13060 |                       |  |  |  |  |

All Steel worms have .0938 drilled hole in hub.

Hxxx worms have polished threads.

Gxxx worms have ground and polished threads.

MINLON® is a registered trademark of E.I. DuPont.

\*\* These are in effect Helical Gears with a Helix Angle compatible with the worms. When in mesh they operate as a worm pair at right angles.

# Worms & Worm Gears

## 16 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

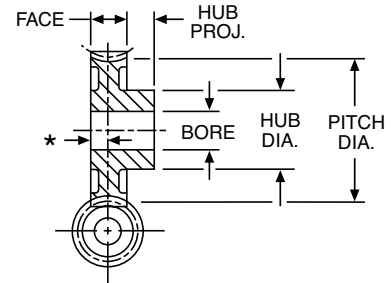
Pressure Angle – Single thread 14-1/2° – Double thread 14-1/2° – Quad thread 25°

RATIO = Gear Teeth ÷ Worm Threads

All Worms and Worm Gears stocked RIGHT HAND ONLY.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 16<br>DIAMETRAL PITCH |               |       |      |       |                             | WORM<br>GEARS     |              | FACE = .313"<br>*CENTER LINE WORM TO<br>FLUSH END = .156" |              |                   |              |
|-----------------------|---------------|-------|------|-------|-----------------------------|-------------------|--------------|-----------------------------------------------------------|--------------|-------------------|--------------|
| No.<br>of<br>Teeth    | Pitch<br>Dia. | Bore  | Hub  |       | Style<br>See<br>Page<br>315 | SINGLE Thread     |              | DOUBLE Thread                                             |              | QUAD Thread       |              |
|                       |               |       | Dia. | Proj. |                             | Catalog<br>Number | Item<br>Code | Catalog<br>Number                                         | Item<br>Code | Catalog<br>Number | Item<br>Code |
| BRONZE                |               |       |      |       |                             |                   |              |                                                           |              |                   |              |
| 20                    | 1.250         | .250  | .62  | .31   | A                           | G1042             | 13612        | D1142                                                     | 13700        | Q1342             | 13536        |
| 30                    | 1.875         | .3125 | .75  | .38   | B                           | G1043             | 13614        | D1143                                                     | 13702        | Q1343             | 13538        |
| 40                    | 2.500         |       |      |       | C                           | G1044             | 13616        | D1144                                                     | 13704        | Q1344             | 13540        |
| 50                    | 3.125         | .375  | .88  | .44   | D                           | G1045             | 13618        | D1145                                                     | 13706        | Q1345             | 13542        |
| 60                    | 3.750         |       |      |       |                             | G1048             | 13620        | D1148                                                     | 13708        | Q1348             | 13544        |
| 80                    | 5.000         |       |      |       |                             | G1046             | 13622        | —                                                         | —            | Q1346             | 13546        |
| 100                   | 6.250         |       |      |       |                             | 1.00              | .50          | G1047                                                     | 13624        | —                 | —            |
| CAST IRON             |               |       |      |       |                             |                   |              |                                                           |              |                   |              |
| 20                    | 1.250         | .250  | .62  | .31   | A                           | CG1042            | 63506        | CD1142                                                    | 63513        | CQ1342            | 63518        |
| 30                    | 1.875         | .3125 | .75  | .38   | B                           | CG1043            | 63507        | CD1143                                                    | 63514        | CQ1343            | 63519        |
| 40                    | 2.500         |       |      |       | C                           | CG1044            | 63508        | CD1144                                                    | 63515        | CQ1344            | 63520        |
| 50                    | 3.125         | .375  | .88  | .44   | C                           | CG1045            | 63509        | CD1145                                                    | 63516        | CQ1345            | 63521        |
| 60                    | 3.750         |       |      |       |                             | CG1048            | 63510        | CD1148                                                    | 63517        | CQ1348            | 63522        |
| 80                    | 5.000         |       |      |       |                             | CG1046            | 63511        | —                                                         | —            | CQ1346            | 63523        |
| 100                   | 6.250         |       |      |       |                             | 1.00              | .50          | CG1047                                                    | 63512        | —                 | —            |



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

### WORM LEAD and LEAD ANGLE

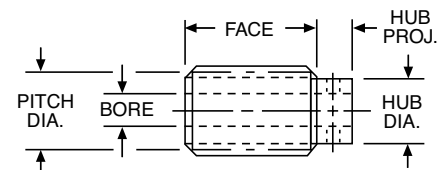
|            | SINGLE | DOUBLE | QUAD   |
|------------|--------|--------|--------|
| LEAD       | .1963" | .3927" | .7854" |
| LEAD ANGLE | 5°43'  | 11°19' | 21°48' |

| 16                 |      |       |      |       | WORMS FOR ABOVE GEARS |                |                  |                |                  |                |  |
|--------------------|------|-------|------|-------|-----------------------|----------------|------------------|----------------|------------------|----------------|--|
| DIAMETRAL PITCH    |      |       |      |       |                       |                |                  |                |                  |                |  |
| Pitch Dia.         | Face | Bore  | Hub  |       | SINGLE Thread         |                | DOUBLE Thread    |                | QUAD Thread      |                |  |
|                    |      |       | Dia. | Proj. | Catalog Number        | Item Code      | Catalog Number   | Item Code      | Catalog Number   | Item Code      |  |
|                    |      |       |      |       |                       |                |                  |                |                  |                |  |
| UNHARDENED – STEEL |      |       |      |       |                       |                |                  |                |                  |                |  |
| .625               | 1.00 | .250  | .44  | .25   | LVHB-1                | 12926          | DVH-1            | 12862          | QVH-1            | 12940          |  |
| HARDENED – STEEL   |      |       |      |       |                       |                |                  |                |                  |                |  |
| .625               | 1.00 | .3125 | .44  | .25   | HLVH-1<br>GLVH-1      | 13032<br>12958 | HDVH-1<br>GDVH-1 | 13004<br>12950 | HQVH-1<br>GQVH-1 | 13058<br>13046 |  |

All worms have .0938 drilled hole in hub.

Hxxx worms have polished threads.

Gxxx worms have ground and polished threads.



### REFERENCE PAGES

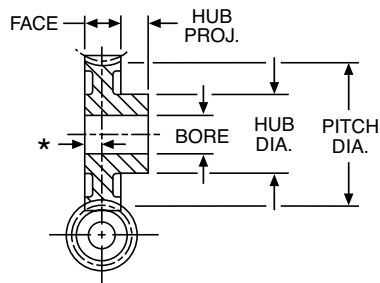
Alterations – 322  
Lubrication – 322  
Materials – 323

# Worms & Worm Gears

## 12 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads  
RH = RIGHT HAND — LH = LEFT HAND  
All others stocked RIGHT HAND ONLY.

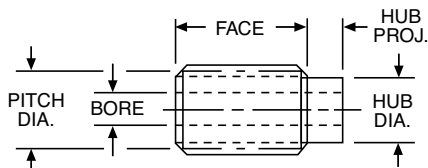


### STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|-----------|
| BORE      | All       |
|           | ±.0005    |

### WORM LEAD and LEAD ANGLE

|            | SINGLE | DOUBLE | QUAD    |
|------------|--------|--------|---------|
| LEAD       | .2618" | .5236" | 1.0472" |
| LEAD ANGLE | 4°46'  | 9°28'  | 18°26'  |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 97, 98  
Lubrication — 322  
Materials — 323  
Selection Procedure — 96

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 12              |            |       |      |       |                    | WORM GEARS     |           | FACE = .500"<br>*CENTER LINE WORM TO FLUSH END = .250" |           |                |           |
|-----------------|------------|-------|------|-------|--------------------|----------------|-----------|--------------------------------------------------------|-----------|----------------|-----------|
| DIAMETRAL PITCH |            |       |      |       |                    |                |           |                                                        |           |                |           |
| No. of Teeth    | Pitch Dia. | Bore  | Hub  |       | Style See Page 315 | SINGLE Thread  |           | DOUBLE Thread                                          |           | QUAD Thread    |           |
|                 |            |       | Dia. | Proj. |                    | Catalog Number | Item Code | Catalog Number                                         | Item Code | Catalog Number | Item Code |
| BRONZE          |            |       |      |       |                    |                |           |                                                        |           |                |           |
| 12              | 1.000      | .5625 | 1.00 | .62   | A                  | —              | —         | —                                                      | —         | QB1212†        | 13762     |
| 16              | 1.333      | .6875 | 1.25 | .62   |                    | —              | —         | —                                                      | —         | QB1216†        | 13764     |
| 20              | 1.667      | .500  | 1.25 | .50   |                    | GB1050A        | 13626     | DB1400                                                 | 13714     | DB1600         | 13766     |
| 30              | 2.500      | .500  | 1.19 | .62   | B                  | GB1051         | 13628     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .62   |                    | —              | —         | DB1401A                                                | 13716     | DB1601A        | 13768     |
| 40              | 3.333      | .625  | 1.44 | .62   |                    | GB1052A        | 13630     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .62   |                    | —              | —         | DB1402A                                                | 13718     | DB1602A        | 13770     |
| 50              | 4.167      | .625  | 1.44 | .62   |                    | GB1053A        | 13632     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .62   |                    | —              | —         | DB1403A                                                | 13720     | DB1603A        | 13772     |
| 60              | 5.000      | .625  | 1.69 | .62   | C                  | GB1260A        | 13634     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .62   |                    | —              | —         | DB1260A                                                | 13722     | QB1260A        | 13774     |
| 80              | 6.667      | .625  | 1.94 | .75   |                    | GB1054         | 13636     | —                                                      | —         | —              | —         |
| 100             | 8.333      | .750  | 1.94 | .75   |                    | GB1055         | 13638     | —                                                      | —         | —              | —         |
| CAST IRON       |            |       |      |       |                    |                |           |                                                        |           |                |           |
| 20              | 1.667      | .500  | 1.25 | .50   | A                  | G1050ARH       | 13110     | D1400RH                                                | 13260     | D1600          | 13352     |
|                 |            |       |      |       |                    | G1050ALH       | 13112     | D1400LH                                                | 13262     | —              | —         |
| 30              | 2.500      | .500  | 1.19 | .62   |                    | G1051RH        | 13114     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .62   | B                  | G1051LH        | 13116     | —                                                      | —         | —              | —         |
|                 |            |       |      |       |                    | —              | —         | D1401ARH                                               | 13264     | D1601A         | 13354     |
|                 |            |       |      |       |                    | —              | —         | D1401ALH                                               | 13266     | —              | —         |
| 40              | 3.333      | .625  | 1.44 | .62   |                    | G1052ARH       | 13118     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .62   |                    | G1052ALH       | 13120     | —                                                      | —         | —              | —         |
|                 |            |       |      |       | C                  | —              | —         | D1402ARH                                               | 13268     | D1602A         | 13356     |
|                 |            |       |      |       |                    | —              | —         | D1402ALH                                               | 13270     | —              | —         |
| 50              | 4.167      | .625  | 1.44 | .62   |                    | G1053ARH       | 13122     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .62   |                    | G1053ALH       | 13124     | —                                                      | —         | —              | —         |
|                 |            |       |      |       |                    | —              | —         | D1403ARH                                               | 13272     | D1603A         | 13358     |
|                 |            |       |      |       | C                  | —              | —         | D1403ALH                                               | 13274     | —              | —         |
| 60              | 5.000      | .625  | 1.69 | .75   |                    | G1260RH        | 13126     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .75   |                    | G1260LH        | 13128     | —                                                      | —         | —              | —         |
|                 |            |       |      |       |                    | —              | —         | D1260A                                                 | 13276     | Q1260A         | 13360     |
| 80              | 6.667      | .625  | 1.94 | .75   |                    | G1054          | 13130     | —                                                      | —         | —              | —         |
|                 |            | .750  |      | .75   |                    | —              | —         | D1404                                                  | 13278     | —              | —         |
| 100             | 8.333      | .750  | 1.94 | .75   |                    | G1055          | 13134     | —                                                      | —         | —              | —         |

| 12<br>DIAMETRAL PITCH |       |      |      |       | WORMS FOR ABOVE GEARS |                |                        |                |                        |                |  |  |
|-----------------------|-------|------|------|-------|-----------------------|----------------|------------------------|----------------|------------------------|----------------|--|--|
| Pitch<br>Dia.         | Face  | Bore | Hub  |       | SINGLE Thread         |                | DOUBLE Thread          |                | QUAD Thread            |                |  |  |
|                       |       |      | Dia. | Proj. | Catalog<br>Number     | Item<br>Code   | Catalog<br>Number      | Item<br>Code   | Catalog<br>Number      | Item<br>Code   |  |  |
| UNHARDENED – STEEL    |       |      |      |       |                       |                |                        |                |                        |                |  |  |
| 1.000                 | 1.125 | .625 | –    | –     | –                     | –              | D1407KRH‡<br>D1407KLH‡ | 12806<br>12808 | D1607KRH‡<br>D1607KLH‡ | 12822<br>12824 |  |  |
|                       | 1.625 | .625 | –    | –     | –                     | –              | L1407‡                 | 12912          | –                      | –              |  |  |
|                       |       | .500 | –    | –     | L1056‡                | 12900          | –                      | –              | –                      | –              |  |  |
|                       | 1.125 | .500 | .75  | .38   | GH1056RH<br>GH1056LH  | 12884<br>12886 | DH1407RH<br>DH1407LH   | 12838<br>12840 | DH1607<br>–            | 12854<br>–     |  |  |
| HARDENED – STEEL      |       |      |      |       |                       |                |                        |                |                        |                |  |  |
| 1.000                 | 1.125 | .625 | –    | –     | –                     | –              | H1407RH‡<br>H1407LH‡   | 12980<br>12982 | H1607‡                 | 12996          |  |  |
|                       | 1.625 | .625 | –    | –     | –                     | –              | HL1407‡                | 13018          | –                      | –              |  |  |
|                       |       | .500 | –    | –     | HL1056‡               | 13006          | –                      | –              | –                      | –              |  |  |
|                       | 1.125 | .500 | –    | –     | H1056RH‡<br>H1056LH‡  | 12962<br>12960 | –<br>–                 | –<br>–         | –<br>–                 | –<br>–         |  |  |

†.750" Face, Center Line Worm to Flush End = .375"  
‡Furnished with .125" Keyway.  
Hardened Worms have ground and polished threads.

# Worms & Worm Gears

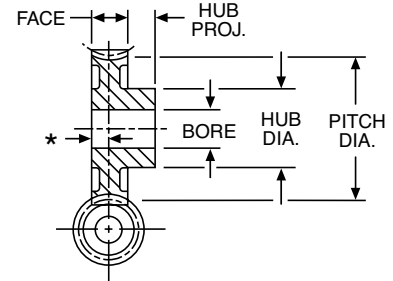
## 10 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads  
RH = RIGHT HAND — LH = LEFT HAND  
All others stocked RIGHT HAND ONLY.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 10<br>DIAMETRAL PITCH |               |          |       |       |                             | WORM<br>GEARS     |              | FACE = .625"<br>*CENTER LINE WORM TO<br>FLUSH END = .312" |              |                   |              |
|-----------------------|---------------|----------|-------|-------|-----------------------------|-------------------|--------------|-----------------------------------------------------------|--------------|-------------------|--------------|
| No.<br>of<br>Teeth    | Pitch<br>Dia. | Bore     | Hub   |       | Style<br>See<br>Page<br>315 | SINGLE Thread     |              | DOUBLE Thread                                             |              | QUAD Thread       |              |
|                       |               |          | Dia.  | Proj. |                             | Catalog<br>Number | Item<br>Code | Catalog<br>Number                                         | Item<br>Code | Catalog<br>Number | Item<br>Code |
| BRONZE                |               |          |       |       |                             |                   |              |                                                           |              |                   |              |
| 16                    | 1.600         | .750     | 1.50  | .75   | A                           | —                 | —            | —                                                         | —            | QB1016†           | 13780        |
| 20                    | 2.000         | .500     | 1.25  | .62   |                             | GB1060A           | 13640        | —                                                         | —            | —                 | —            |
|                       |               | .875     | 1.62  |       |                             | —                 | —            | DB1410                                                    | 13728        | DB1610            | 13782        |
| 30                    | 3.000         | .625     | 1.69  | .62   | B                           | GB1061A           | 13648        | —                                                         | —            | —                 | —            |
|                       |               | .875     |       |       |                             | —                 | —            | DB1411                                                    | 13736        | DB1611            | 13788        |
| 40                    | 4.000         | .625     | 1.69  | .62   |                             | GB1062A           | 13642        | —                                                         | —            | —                 | —            |
|                       |               | .875     |       |       |                             | —                 | —            | DB1412                                                    | 13730        | DB1612            | 13784        |
| 50                    | 5.000         | .750     | 1.94  | .75   |                             | GB1063            | 13644        | —                                                         | —            | —                 | —            |
|                       |               | .875     |       |       |                             | —                 | —            | DB1413A                                                   | 13732        | DB1613A           | 13786        |
| 60                    | 6.000         | .750     | 1.94  | .75   | C                           | GB1064            | 13646        | —                                                         | —            | —                 | —            |
|                       |               | .875     |       |       |                             | —                 | —            | DB1414A                                                   | 13734        | —                 | —            |
| 80                    | 8.000         | .750     | 1.94  | .75   |                             | GB1067            | 13650        | —                                                         | —            | —                 | —            |
| 100                   | 10.000        | .750     | 2.00  | .75   |                             | GB1065            | 13652        | —                                                         | —            | —                 | —            |
| CAST IRON             |               |          |       |       |                             |                   |              |                                                           |              |                   |              |
| 20                    | 2.000         | .500     | 1.25  | .62   | A                           | G1060ARH          | 13136        | —                                                         | —            | —                 | —            |
|                       |               | G1060ALH | 13138 |       |                             |                   |              |                                                           |              |                   |              |
|                       |               | .875     | 1.62  |       |                             | —                 | —            | D1410RH                                                   | 13282        | D1610             | 13366        |
|                       |               |          |       |       |                             | —                 | —            | D1410LH                                                   | 13284        |                   |              |
| 30                    | 3.000         | .625     | 1.69  | .62   | B                           | G1061ARH          | 13142        | —                                                         | —            | —                 | —            |
|                       |               | G1061ALH | 13140 |       |                             |                   |              |                                                           |              |                   |              |
|                       |               | .875     | 1.69  | —     |                             | —                 | D1411RH      | 13286                                                     | D1611        | 13368             |              |
|                       |               |          |       | —     |                             | —                 | D1411LH      | 13288                                                     |              |                   |              |
| 40                    | 4.000         | .625     | 1.69  | .62   |                             | G1062ARH          | 13144        | —                                                         | —            | —                 | —            |
|                       |               | G1062ALH | 13146 |       |                             |                   |              |                                                           |              |                   |              |
|                       |               | .875     | 1.69  | —     |                             | —                 | D1412RH      | 13290                                                     | D1612        | 13370             |              |
|                       |               |          |       | —     |                             | —                 | D1412LH      | 13292                                                     |              |                   |              |
| 50                    | 5.000         | .750     | 1.94  | .75   | G1063RH                     | 13148             | —            | —                                                         | —            | —                 |              |
|                       |               | G1063LH  | 13150 |       |                             |                   |              |                                                           |              |                   |              |
|                       |               | .875     | 1.94  | —     | —                           | D1413ARH          | 13294        | D1613A                                                    | 13372        |                   |              |
|                       |               |          |       | —     | —                           | D1413ALH          | 13296        |                                                           |              |                   |              |
| 60                    | 6.000         | .750     | 1.94  | .75   | G1064RH                     | 13152             | —            | —                                                         | —            | —                 |              |
|                       |               | G1064LH  | 13154 |       |                             |                   |              |                                                           |              |                   |              |
|                       |               | .875     | 1.94  | —     | —                           | D1414A            | 13298        | D1614A                                                    | 13374        |                   |              |
| 80                    | 8.000         | .750     | 1.94  | .75   | C                           | G1067RH           | 13156        | —                                                         | —            | —                 | —            |
|                       |               | .875     | 1.94  |       |                             | —                 | —            | D1080A                                                    | 13300        | Q1080A            | 13376        |
|                       |               |          |       | G1065 |                             | 13158             | —            | —                                                         | —            | —                 |              |
| 100                   | 10.000        | .750     | 1.94  | .75   |                             | —                 | —            | D1415A                                                    | 13302        | —                 | —            |
|                       |               | .875     | 1.94  |       |                             | —                 | —            |                                                           |              |                   |              |

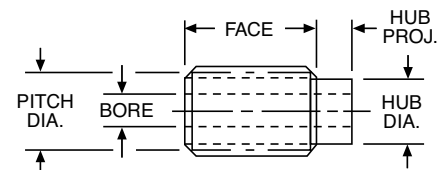


### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

### WORM LEAD and LEAD ANGLE

|            | SINGLE | DOUBLE | QUAD    |
|------------|--------|--------|---------|
| LEAD       | .3142" | .6283" | 1.2566" |
| LEAD ANGLE | 4°34'  | 9°5'   | 17°45'  |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 97, 98  
Lubrication — 322  
Materials — 323  
Selection Procedure — 96

| 10<br>DIAMETRAL PITCH |                |      |      |       |                        |                |                        |                |                        |                | WORMS FOR ABOVE GEARS |  |  |  |
|-----------------------|----------------|------|------|-------|------------------------|----------------|------------------------|----------------|------------------------|----------------|-----------------------|--|--|--|
| Pitch<br>Dia.         | Face           | Bore | Hub  |       | SINGLE Thread          |                | DOUBLE Thread          |                | QUAD Thread            |                |                       |  |  |  |
|                       |                |      | Dia. | Proj. | Catalog<br>Number      | Item<br>Code   | Catalog<br>Number      | Item<br>Code   | Catalog<br>Number      | Item<br>Code   |                       |  |  |  |
| UNHARDENED – STEEL    |                |      |      |       |                        |                |                        |                |                        |                |                       |  |  |  |
| 1.250                 | 1.375          | .750 | –    | –     | –                      | –              | D1418KRH‡<br>D1418KLH‡ | 12810<br>12812 | D1618KRH‡<br>D1618KLH‡ | 12826<br>12828 |                       |  |  |  |
|                       | 2.000          | .750 | –    | –     | –                      | –              | L1418‡                 | 12914          | –                      | –              |                       |  |  |  |
|                       |                | .625 | –    | –     | L1066‡                 | 12902          | –                      | –              | –                      | –              |                       |  |  |  |
|                       | 1.375          | .625 | –    | –     | G1066KRH‡<br>G1066KLH‡ | 12864<br>12866 | –                      | –              | –                      | –              |                       |  |  |  |
|                       |                |      | .97  | .50   | GH1066RH<br>GH1066LH   | 12888<br>12890 | DH1418RH<br>DH1418LH   | 12842<br>12844 | DH1618<br>–            | 12856<br>–     |                       |  |  |  |
|                       | HARDENED STEEL |      |      |       |                        |                |                        |                |                        |                |                       |  |  |  |
| 1.250                 | 1.375          | .750 | –    | –     | –                      | –              | H1418RH‡<br>H1418LH‡   | 12986<br>12984 | H1618‡                 | 12998          |                       |  |  |  |
|                       | 2.000          | .750 | –    | –     | –                      | –              | HL1418‡                | 13020          | –                      | –              |                       |  |  |  |
|                       |                | .625 | –    | –     | HL1066‡                | 13008          | –                      | –              | –                      | –              |                       |  |  |  |
|                       | 1.375          | .625 | –    | –     | H1066RH‡<br>H1066LH‡   | 12966<br>12964 | –                      | –              | –                      | –              |                       |  |  |  |

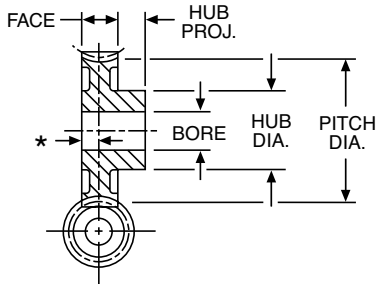
‡.875" Face, Center Line Worm to Flush End = .438"  
‡Furnished with 3/16" Keyway.  
Hardened Worms have ground and polished threads.

# Worms & Worm Gears

## 8 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads  
RH = RIGHT HAND — LH = LEFT HAND  
All others stocked RIGHT HAND ONLY.

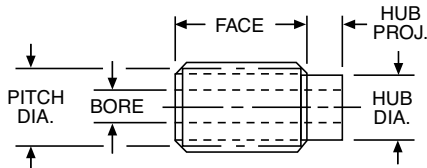


### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

### WORM LEAD and LEAD ANGLE

|            | SINGLE | DOUBLE | QUAD    |
|------------|--------|--------|---------|
| LEAD       | .3927" | .7854" | 1.5708" |
| LEAD ANGLE | 4°46'  | 9°28'  | 18°26'  |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 97, 98  
Lubrication — 322  
Materials — 323  
Selection Procedure — 96

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 8               |            |       |      |       |                    | WORM GEARS           |                | FACE = .750"<br>*CENTER LINE WORM TO FLUSH END = .375" |                |                |           |
|-----------------|------------|-------|------|-------|--------------------|----------------------|----------------|--------------------------------------------------------|----------------|----------------|-----------|
| DIAMETRAL PITCH |            |       |      |       |                    |                      |                |                                                        |                |                |           |
| No. of Teeth    | Pitch Dia. | Bore  | Hub  |       | Style See Page 315 | SINGLE Thread        |                | DOUBLE Thread                                          |                | QUAD Thread    |           |
|                 |            |       | Dia. | Proj. |                    | Catalog Number       | Item Code      | Catalog Number                                         | Item Code      | Catalog Number | Item Code |
| BRONZE          |            |       |      |       |                    |                      |                |                                                        |                |                |           |
| 8               | 1.000      | .500  | 1.12 | .88   | A                  | —                    | —              | —                                                      | —              | QB808†         | 13790     |
| 12              | 1.500      | .750  | 1.50 | .88   |                    | —                    | —              | —                                                      | —              | QB812†         | 13792     |
| 16              | 2.000      | 1.000 | 2.00 | .88   |                    | —                    | —              | —                                                      | —              | QB816†         | 13794     |
| 20              | 2.500      | .750  | 1.75 | .75   |                    | GB1070               | 13654          | —                                                      | —              | —              | —         |
|                 |            | 1.000 | 1.75 | .75   |                    | —                    | —              | DB1420A                                                | 13740          | DB1620A        | 13796     |
| 30              | 3.750      | .750  | 1.69 | .75   | B                  | GB1071               | 13656          | —                                                      | —              | —              | —         |
|                 |            | 1.000 | 1.69 | .75   |                    | —                    | —              | —                                                      | —              | —              | —         |
| 40              | 5.000      | 1.000 | 2.19 | .75   |                    | GB1072A              | 13658          | DB1422                                                 | 13744          | DB1621A        | 13798     |
| 48              | 6.000      | 1.000 | 2.38 | .88   |                    | GB1073               | 13660          | —                                                      | —              | DB1622         | 13800     |
| 50              | 6.250      | 1.000 | 2.31 | .88   |                    | GB850                | 13662          | DB1423A                                                | 13746          | DB1623A        | 13802     |
| 60              | 7.500      | 1.000 | 2.44 | .88   | C                  | GB860                | 13664          | DB860A                                                 | 13748          | —              | —         |
| 80              | 10.000     | 1.250 | 2.75 | .88   | D                  | GB1074A              | 13666          | —                                                      | —              | —              | —         |
| 100             | 12.500     | 1.250 | 3.00 | 1.00  | C                  | GB8100               | 13668          | —                                                      | —              | —              | —         |
| CAST IRON       |            |       |      |       |                    |                      |                |                                                        |                |                |           |
| 20              | 2.500      | .750  | 1.75 | .75   | A                  | G1070RH<br>G1070LH   | 13160<br>13162 | —                                                      | —              | —              | —         |
|                 |            | 1.000 | 1.75 | .75   |                    | —                    | —              | D1420ARH<br>D1420ALH                                   | 13304<br>13306 | D1620A         | 13380     |
| 30              | 3.750      | .750  | 1.69 | .75   | B                  | G1071RH<br>G1071LH   | 13164<br>13166 | —                                                      | —              | —              | —         |
|                 |            | 1.000 | 1.69 | .75   |                    | —                    | —              | D1421ARH<br>D1421ALH                                   | 13308<br>13310 | D1621A         | 13382     |
| 40              | 5.000      | 1.000 | 1.69 | .75   |                    | G1072ARH<br>G1072ALH | 13168<br>13170 | D1422ARH<br>D1422ALH                                   | 13312<br>13314 | D1622A         | 13384     |
| 48              | 6.000      | 1.000 | 2.38 | .88   |                    | G1073RH<br>G1073LH   | 13174<br>13172 | —                                                      | —              | —              | —         |
| 50              | 6.250      | 1.000 | 2.31 | .88   |                    | G850RH<br>G850LH     | 13176<br>13178 | D1423A                                                 | 13316          | D1623A         | 13386     |
| 60              | 7.500      | 1.000 | 2.44 | .88   | C                  | G860                 | 13180          | D860A                                                  | 13320          | Q860A          | 13388     |
| 80              | 10.000     | 1.000 | 2.69 | .88   | D                  | —                    | —              | D1424A                                                 | 13322          | D1624A         | 13390     |
|                 |            | 1.250 | 2.69 | .88   | D                  | G1074ARH             | 13182          | —                                                      | —              | —              | —         |
| 96              | 12.000     | 1.250 | 3.00 | 1.00  | C                  | G1075                | 13186          | —                                                      | —              | —              | —         |
| 100             | 12.500     | 1.250 | 2.69 | 1.00  | C                  | G8100A               | 13188          | —                                                      | —              | —              | —         |

| 8 DIAMETRAL PITCH  |                |      |      |       |                        |                |                        |                |                        | WORMS FOR ABOVE GEARS |  |  |  |
|--------------------|----------------|------|------|-------|------------------------|----------------|------------------------|----------------|------------------------|-----------------------|--|--|--|
| Pitch Dia.         | Face           | Bore | Hub  |       | SINGLE Thread          |                | DOUBLE Thread          |                | QUAD Thread            |                       |  |  |  |
|                    |                |      | Dia. | Proj. | Catalog Number         | Item Code      | Catalog Number         | Item Code      | Catalog Number         | Item Code             |  |  |  |
| UNHARDENED – STEEL |                |      |      |       |                        |                |                        |                |                        |                       |  |  |  |
| 1.500              | 1.750          | .875 | –    | –     | –                      | –              | D1427KRH‡<br>D1427KLH‡ | 12814<br>12816 | D1627KRH‡<br>D1627KLH‡ | 12830<br>12832        |  |  |  |
|                    | 2.500          | .875 | –    | –     | –                      | –              | L1427‡                 | 12916          | –                      | –                     |  |  |  |
|                    |                | .750 | –    | –     | L1076‡                 | 12904          | –                      | –              | –                      | –                     |  |  |  |
|                    | 1.750          | .750 | –    | –     | G1076KRH‡<br>G1076KLH‡ | 12868<br>12870 | –                      | –              | –                      | –                     |  |  |  |
|                    |                | .750 | 1.18 | .62   | GH1076RH<br>GH1076LH   | 12892<br>12894 | DH1427RH<br>DH1427LH   | 12846<br>12848 | DH1627                 | 12858                 |  |  |  |
|                    | HARDENED STEEL |      |      |       |                        |                |                        |                |                        |                       |  |  |  |
| 1.500              | 1.750          | .875 | –    | –     | –                      | –              | H1427RH‡<br>H1427LH‡   | 12990<br>12988 | H1627‡                 | 13000                 |  |  |  |
|                    | 2.500          | .875 | –    | –     | –                      | –              | HL1427‡                | 13022          | –                      | –                     |  |  |  |
|                    |                | .750 | –    | –     | HL1076‡                | 13010          | –                      | –              | –                      | –                     |  |  |  |
|                    | 1.750          | .750 | –    | –     | H1076RH‡<br>H1076LH‡   | 12970<br>12968 | –                      | –              | –                      | –                     |  |  |  |

†1.000" Face, Center Line Worm to Flush End = .500"  
‡Furnished with .188" Keyway.  
Hardened Worms have ground and polished threads.

# Worms & Worm Gears

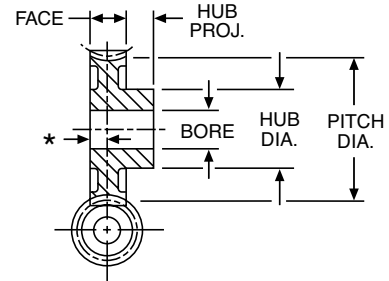
## 6 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

Pressure Angle – 14-1/2°

ALL DIMENSIONS IN INCHES

ORDER BY CATALOG NUMBER OR ITEM CODE

| 6            |            |         |      |       |                    | WORM GEARS     |           | FACE = 1.000"<br>*CENTER LINE WORM TO FLUSH END = .500" |           |                |           |   |   |
|--------------|------------|---------|------|-------|--------------------|----------------|-----------|---------------------------------------------------------|-----------|----------------|-----------|---|---|
| No. of Teeth | Pitch Dia. | Bore    | Hub  |       | Style See Page 315 | SINGLE Thread  |           | DOUBLE Thread                                           |           | QUAD Thread    |           |   |   |
|              |            |         | Dia. | Proj. |                    | Catalog Number | Item Code | Catalog Number                                          | Item Code | Catalog Number | Item Code |   |   |
| BRONZE       |            |         |      |       |                    |                |           |                                                         |           |                |           |   |   |
| 16           | 2.667      | 1.250   | 2.38 | 1.00  | A                  | —              | —         | —                                                       | —         | QB616**        | 13804     |   |   |
| 20           | 3.333      | .750    | 2.00 | .88   |                    | GB1077A        | 13670     | —                                                       | —         | —              | —         |   |   |
|              |            | 1.000   | 2.00 |       |                    | —              | —         | DB620A                                                  | 13752     | —              | —         |   |   |
|              |            | 1.250   | 2.00 |       | —                  | —              | —         | —                                                       | QB620A    | 13806          |           |   |   |
| 24           | 4.000      | .750    | 1.94 | .88   | B                  | GB1080A        | 13672     | —                                                       | —         | —              | —         |   |   |
| 30           | 5.000      | 1.250   | 2.19 | .88   |                    | —              | —         | DB1430A                                                 | 13754     | DB1630A        | 13808     |   |   |
|              |            | .875    | 2.19 |       |                    | GB1081         | 13674     | —                                                       | —         | —              | —         |   |   |
|              |            | 1.250   | 2.50 |       | —                  | —              | DB1431A   | 13756                                                   | DB1631A   | 13810          |           |   |   |
| 36           | 6.000      | 1.000   | 2.50 | .88   | B                  | GB1082         | 13676     | —                                                       | —         | —              | —         |   |   |
| 40           | 6.667      | 1.000   | 2.44 | .88   |                    | GB1078         | 13678     | —                                                       | —         | —              | —         |   |   |
|              |            | 1.250   | 2.44 |       |                    | —              | —         | DB1432A                                                 | 13758     | DB1632A        | 13812     |   |   |
|              |            | 1.250   | 2.75 |       | 1.00               | GB1083         | 13680     | —                                                       | —         | —              | —         |   |   |
| 48           | 8.000      | 1.250   | 2.75 | 1.00  | C                  | GB1079         | 13682     | —                                                       | —         | —              | —         |   |   |
| 50           | 8.333      | 1.250   | 2.69 | 1.00  |                    | GB1087         | 13684     | —                                                       | —         | —              | —         |   |   |
| 60           | 10.000     | 1.250   | 3.00 | 1.00  |                    | GB1084         | 13686     | —                                                       | —         | —              | —         |   |   |
| 72           | 12.000     | 1.250   | 3.00 | 1.25  |                    | —              | —         | —                                                       | —         | —              | —         |   |   |
| CAST IRON    |            |         |      |       |                    |                |           |                                                         |           |                |           |   |   |
| 20           | 3.333      | .750    | 1.81 | .88   |                    | G1077RH        | 13190     | —                                                       | —         | —              | —         |   |   |
|              |            | G1077LH |      |       |                    | 13192          | —         | —                                                       | —         | —              |           |   |   |
| 24           | 4.000      | 1.000   | 1.94 | .88   | B                  | —              | —         | D620ARH                                                 | 13326     | Q620A          | 13394     |   |   |
|              |            |         |      |       |                    |                | D620ALH   | 13328                                                   |           |                |           |   |   |
|              |            | .750    |      |       |                    | 2.19           | .88       | G1080ARH                                                | 13194     | —              | —         | — | — |
|              |            | 1.250   |      |       |                    |                |           | G1080ALH                                                | 13196     | —              | —         | — | — |
| 30           | 5.000      | .875    | 2.19 | .88   |                    | G1081RH        | 13198     | —                                                       | —         | —              | —         |   |   |
|              |            | 1.250   |      |       |                    | G1081LH        | 13200     | —                                                       | —         | —              | —         |   |   |
| 36           | 6.000      | 1.000   | 2.50 | .88   |                    | —              | —         | D1431ARH                                                | 13334     | D1631A         | 13398     |   |   |
|              |            |         |      |       |                    |                | D1431ALH  | 13336                                                   |           |                |           |   |   |
| 40           | 6.667      | 1.000   | 2.44 | .88   |                    | G1082RH        | 13202     | —                                                       | —         | —              | —         |   |   |
|              |            | 1.000   |      |       |                    | G1082LH        | 13204     | —                                                       | —         | —              | —         |   |   |
|              |            | 1.250   |      |       |                    | G1078RH        | 13206     | —                                                       | —         | —              | —         |   |   |
|              |            | 1.250   |      |       |                    | G1078LH        | 13208     | —                                                       | —         | —              | —         |   |   |
| 48           | 8.000      | 1.250   | 2.75 | 1.00  | B                  | —              | —         | D1432ARH                                                | 13338     | D1632A         | 13400     |   |   |
|              |            |         |      |       |                    |                | D1432ALH  | 13340                                                   |           |                |           |   |   |
| 50           | 8.333      | 1.250   | 2.69 | 1.00  | C                  | G1083RH        | 13212     | —                                                       | —         | —              | —         |   |   |
| 60           | 10.000     | 1.250   | 2.69 | 1.00  |                    | G1083LH        | 13210     | —                                                       | —         | —              | —         |   |   |
| 72           | 12.000     | 1.250   | 2.94 | 1.00  | C                  | G1079RH        | 13214     | D1433                                                   | 13342     | D1633          | 13402     |   |   |
| 80           | 13.333     | 1.250   | 3.00 | 1.00  |                    | G1087ARH       | 13218     | D660                                                    | 13344     | Q660           | 13404     |   |   |
| 96           | 16.000     | 1.375   | 3.00 | 1.00  | D                  | G1084ARH       | 13220     | D1434                                                   | 13346     | D1634          | 13406     |   |   |
| 100          | 16.667     | 1.375   | 3.00 | 1.00  |                    | G1088ARH       | 13224     | —                                                       | —         | —              | —         |   |   |
|              |            |         |      |       |                    | G1085ARH       | 13226     | —                                                       | —         | —              | —         |   |   |
|              |            |         |      |       |                    | G1089ARH       | 13228     | —                                                       | —         | —              | —         |   |   |

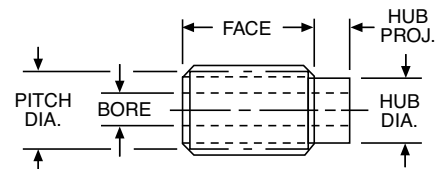


### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

### WORM LEAD and LEAD ANGLE

|            | SINGLE | DOUBLE  | QUAD    |
|------------|--------|---------|---------|
| LEAD       | .5236" | 1.0472" | 2.0944" |
| LEAD ANGLE | 4°46'  | 9°28'   | 18°26'  |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 97, 98  
Lubrication — 322  
Materials — 323  
Selection Procedure — 96

RATIO = Gear Teeth ÷ Worm Threads  
RH = RIGHT HAND — LH = LEFT HAND  
All others stocked RIGHT HAND ONLY.

\*\*1.250" Face, Center Line Worm to Flush End = .625"  
‡Furnished with .188" Keyway.  
†Furnished with .250" Keyway.  
Hardened Worms have ground and polished threads.

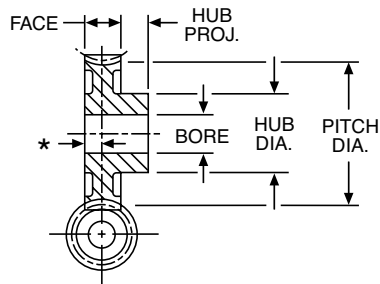
| 6<br>DIAMETRAL PITCH |                |       |               |        |                        |                |                        |                |                        |                |        | WORMS FOR ABOVE GEARS |  |  |  |
|----------------------|----------------|-------|---------------|--------|------------------------|----------------|------------------------|----------------|------------------------|----------------|--------|-----------------------|--|--|--|
| Pitch<br>Dia.        | Face           | Bore  | Hub           |        | SINGLE Thread          |                | DOUBLE Thread          |                | QUAD Thread            |                |        |                       |  |  |  |
|                      |                |       | Dia.          | Proj.  | Catalog<br>Number      | Item<br>Code   | Catalog<br>Number      | Item<br>Code   | Catalog<br>Number      | Item<br>Code   |        |                       |  |  |  |
| UNHARDENED – STEEL   |                |       |               |        |                        |                |                        |                |                        |                |        |                       |  |  |  |
| 2.000                | 2.500          | 1.000 | –             | –      | –                      | –              | D1438KRH†<br>D1438KLH† | 12818<br>12820 | D1638KRH†<br>D1638KLH† | 12834<br>12836 |        |                       |  |  |  |
|                      |                | 3.500 | 1.000<br>.875 | –<br>– | –<br>–                 | –<br>L1086‡    | –<br>12906             | L1438<br>–     | 12918<br>–             | –<br>–         | –<br>– |                       |  |  |  |
|                      | 2.500          | .875  | –             | –      | G1086KRH‡<br>G1086KLH‡ | 12872<br>12874 | –<br>–                 | –<br>–         | –<br>–                 | –<br>–         |        |                       |  |  |  |
|                      |                | .875  | 1.56          | .75    | GH1086RH<br>GH1086LH   | 12896<br>12898 | DH1438RH<br>DH1438LH   | 12850<br>12852 | DH1638                 | 12860          |        |                       |  |  |  |
|                      |                |       |               |        |                        |                |                        |                |                        |                |        |                       |  |  |  |
|                      | HARDENED STEEL |       |               |        |                        |                |                        |                |                        |                |        |                       |  |  |  |
| 2.000                | 2.500          | 1.000 | –             | –      | –                      | –              | H1438RH†<br>H1438LH‡   | 12994<br>12992 | H1638†<br>–            | 13002<br>–     |        |                       |  |  |  |
|                      |                | 3.500 | 1.000<br>.875 | –<br>– | –<br>–                 | –<br>HL1086‡   | –<br>13012             | HL1438†<br>–   | 13024<br>–             | –<br>–         | –<br>– |                       |  |  |  |
|                      | 2.500          | .875  | –             | –      | H1086RH‡<br>H1086LH‡   | 12974<br>12972 | –<br>–                 | –<br>–         | –<br>–                 | –<br>–         |        |                       |  |  |  |
|                      |                |       |               |        |                        |                |                        |                |                        |                |        |                       |  |  |  |

# Worms & Worm Gears

## 4 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads  
RH = RIGHT HAND — LH = LEFT HAND  
All others stocked RIGHT HAND ONLY.

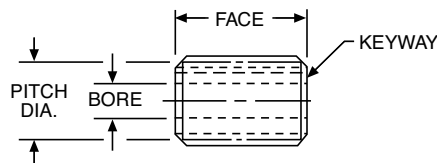


### STANDARD TOLERANCES

| DIMENSION |     | TOLERANCE |
|-----------|-----|-----------|
| BORE      | All | ±.0005    |

### WORM LEAD and LEAD ANGLE

|            |       |
|------------|-------|
| LEAD       | .7854 |
| LEAD ANGLE | 4°46' |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 97, 98  
Lubrication — 322  
Materials — 323  
Selection Procedure — 96

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 4 DIAMETRAL PITCH WORM GEARS |        |            |       |          |       |                    |                                        |
|------------------------------|--------|------------|-------|----------|-------|--------------------|----------------------------------------|
| No. of Teeth                 |        | Pitch Dia. | Bores | Hub Dia. | Proj. | Style See Page 315 | SINGLE Thread Catalog Number Item Code |
| BRONZE                       |        |            |       |          |       |                    |                                        |
| 20                           | 5.000  | 1.000      | 2.50  | 1.25     | B     | GB1100             | 13688                                  |
| 24                           | 6.000  |            |       |          |       | GB1101             | 13690                                  |
| CAST IRON                    |        |            |       |          |       |                    |                                        |
| 20                           | 5.000  | 1.000      | 2.50  | 1.25     | B     | G1100RH            | 13230                                  |
|                              |        |            |       |          |       | G1100LH            | 13232                                  |
| 24                           | 6.000  |            |       |          |       | G1101RH            | 13234                                  |
|                              |        |            |       |          |       | G1101LH            | 13236                                  |
| 32                           | 8.000  | 1.250      | 3.00  |          |       | G1102RH            | 13238                                  |
| 40                           | 10.000 |            |       |          |       | G1102LH            | 13240                                  |
| 48                           | 12.000 |            |       |          |       | G1103RH            | 13242                                  |
| 64                           | 16.000 | 1.500      | 3.50  |          | D     | G1104RH            | 13244                                  |
|                              |        |            |       |          |       | G1105RH            | 13246                                  |

| 4 DIAMETRAL PITCH WORMS FOR ABOVE GEARS |       |       |          |       |                               |           |
|-----------------------------------------|-------|-------|----------|-------|-------------------------------|-----------|
| Pitch Dia.                              | Face  | Bores | Hub Dia. | Proj. | SINGLE Thread Catalog Number* | Item Code |
| UNHARDENED – STEEL                      |       |       |          |       |                               |           |
| 3.000                                   | 3.500 | 1.250 | –        | –     | G1106KRH                      | 12876     |
|                                         | 4.500 | 1.250 | –        | –     | G1106KLH                      | 12878     |
|                                         |       |       |          |       | L1106                         | 12908     |
| HARDENED STEEL                          |       |       |          |       |                               |           |
| 3.000                                   | 3.500 | 1.250 | –        | –     | H1106                         | 12976     |
|                                         | 4.500 | 1.250 | –        | –     | HL1106                        | 13014     |
|                                         | 5.750 |       |          |       | HP1106                        | 13034     |

\*All worms furnished with .313 keyway.  
Hardened Worms have ground and polished threads.

# Worms & Worm Gears

## 3 Diametral Pitch (Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

Pressure Angle – 14-1/2°

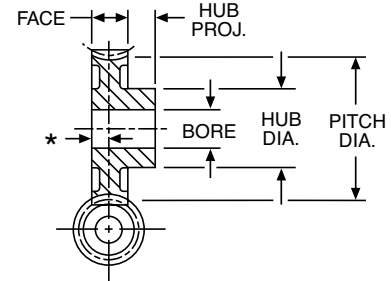
RATIO = Gear Teeth ÷ Worm Threads

All Worm and Worm Gears stocked RIGHT HAND ONLY.



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| 3 DIAMETRAL PITCH WORM GEARS                          |            |       |          |       |                    |                                        |
|-------------------------------------------------------|------------|-------|----------|-------|--------------------|----------------------------------------|
| FACE = 2.000" *CENTER LINE WORM TO FLUSH END = 1.000" |            |       |          |       |                    |                                        |
| No. of Teeth                                          | Pitch Dia. | Bore  | Hub Dia. | Proj. | Style See Page 315 | SINGLE Thread Catalog Number Item Code |
| 18                                                    | 6.000      | 1.000 | 3.00     | 1.50  | B                  | G1110 13248                            |
| 24                                                    | 8.000      |       |          |       |                    | G1111 13250                            |
| 30                                                    | 10.000     |       | 3.50     |       |                    | G1112 13252                            |
| 36                                                    | 12.000     | 1.500 |          | 1.50  |                    | G1113 13254                            |
| 48                                                    | 16.000     |       | 4.00     |       | C                  | G1114 13256                            |
| 54                                                    | 18.000     |       |          |       | D                  | G1115 13258                            |



### STANDARD TOLERANCES

| DIMENSION | TOLERANCE  |
|-----------|------------|
| BORE      | All ±.0005 |

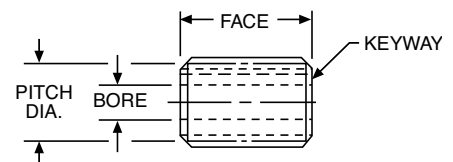
| 3 WORMS FOR ABOVE GEARS† DIAMETRAL PITCH |       |       |          |       |                              |           |
|------------------------------------------|-------|-------|----------|-------|------------------------------|-----------|
| Pitch Dia.                               | Face  | Bore  | Hub Dia. | Proj. | SINGLE Thread Catalog Number | Item Code |
| UNHARDENED – STEEL                       |       |       |          |       |                              |           |
| 4.000                                    | 4.000 | 1.500 | –        | –     | G1116KRH                     | 12880     |
|                                          | 5.500 |       |          |       | L1116                        | 12910     |
| HARDENED STEEL                           |       |       |          |       |                              |           |
| 4.000                                    | 4.000 | 1.500 | –        | –     | H1116                        | 12978     |
|                                          | 5.500 |       |          |       | HL1116                       | 13016     |

†All worms furnished with .375" keyway.

Hardened Worms have ground and polished threads.

### WORM LEAD and LEAD ANGLE

|            |         |
|------------|---------|
| LEAD       | 1.0472" |
| LEAD ANGLE | 4°46'   |



### REFERENCE PAGES

Alterations — 322  
Horsepower Ratings — 97, 98  
Lubrication — 322  
Materials — 323  
Selection Procedure — 96

# Worms & Worm Gears



Boston worms and worm gears provide an effective answer for such power transmission applications as high-ratio speed reduction, limited space, right-angle shafts and non-intersecting shafts. When properly applied, they are the smoothest and quietest form of gearing. Steel worms and cast iron or bronze worm gears are available in single, double or quadruple threads, 48 to 3 diametral pitch.

Acetal worms and worm gears are available in single thread, 48 to 24 diametral pitch.

## Selection Procedure

Approximate input horsepower and output torque ratings for Boston stock worm and worm gear combinations from 12 to 3 DP are listed on Pages 97, 98. These ratings are for hardened, ground and polished worms operating with bronze worm gears. For other combinations multiply the listed ratings by the following percentages:

Hardened, ground and polished steel worms with cast iron gears 50%. Unhardened steel worms with cast iron gears 25%.

These ratings are listed at selected worm speeds. Ratings for intermediate speeds can be interpolated from the values indicated.

These ratings are based on gears operating with a Service Factor of 1.0, properly mounted in accordance with good design practice and continuously lubricated with a sufficient supply of oil.

1. Determine service factor.
  - a. Using Application Classification Chart I, pages 331, 332, determine service factor or
  - b. With knowledge of operating conditions and load classification, select service factor from Table 1.

2. Determine Design Horsepower.

**Design HP = Application Load x Service Factor (Table 1)**

3. Select worm gear set with horsepower capacity equal to [or greater than] design horsepower determined in Step 2.

TABLE 1

| Service Factor | Operating Conditions                                                                           |
|----------------|------------------------------------------------------------------------------------------------|
| 0.8            | Uniform—not more than 15 minutes in 2 hours.                                                   |
| 1.0            | Moderate Shock—not more than 15 minutes in 2 hours.<br>Uniform—not more than 10 hours per day. |
| 1.25           | Moderate Shock—not more than 10 hours per day.<br>Uniform—more than 10 hours per day.          |
| 1.50           | Heavy Shock—not more than 15 minutes in 2 hours.<br>Moderate Shock—more than 10 hours per day. |
| 1.75           | Heavy Shock—not more than 10 hours per day.                                                    |
| 2.0            | Heavy Shock—more than 10 hours per day.                                                        |

Heavy shock loads and/or severe wear conditions may require the use of higher service factors. Consultation with factory is recommended in these applications.

# Worms & Worm Gears

## Steel-Hardened, Ground & Polished Worms Bronze Worm Gears

Approximate Horsepower and Torque\* Ratings  
For Class I Service (Service Factor = 1.0)

| Worm RPM |                 | 1800     |               | 600      |               | 100      |               | Worm Cat. No. | Gear Cat. No. | DP |
|----------|-----------------|----------|---------------|----------|---------------|----------|---------------|---------------|---------------|----|
| Ratio    | Center Distance | Input HP | Output Torque | Input HP | Output Torque | Input HP | Output Torque |               |               |    |
| 3        | 1.000           | .52      | 50            | .27      | 72            | .06      | 83            | H1607         | QB1212        | 12 |
|          | 1.500           | 1.19     | 109           | .66      | 183           | .15      | 227           | H1627         | QB812         | 8  |
| 4        | 1.167           | .78      | 99            | .40      | 143           | .08      | 166           | H1607         | QB1216        | 12 |
|          | 1.425           | 1.11     | 142           | .61      | 223           | .13      | 267           | H1618         | QB1016        | 10 |
|          | 1.750           | 1.77     | 216           | .98      | 361           | .22      | 454           | H1627         | QB816         | 8  |
|          | 2.333           | 3.01     | 392           | 1.84     | 689           | .45      | 933           | H1638         | QB616         | 6  |
| 5        | 1.333           | .68      | 109           | .34      | 158           | .07      | 180           | H1607         | DB1600        | 12 |
|          | 1.625           | 1.03     | 165           | .57      | 257           | .12      | 309           | H1618         | DB1610        | 10 |
|          | 2.000           | 1.73     | 264           | .96      | 441           | .22      | 551           | H1627         | DB1620A       | 8  |
|          | 2.667           | 3.92     | 639           | 2.40     | 1124          | .59      | 1512          | H1638         | QB620A        | 6  |
| 6        | 3.000           | 3.82     | 746           | 2.34     | 1317          | .57      | 1777          | H1638         | DB1630A       | 6  |
| 7.5      | 1.750           | 1.04     | 247           | .53      | 355           | .11      | 411           | H1607         | DB1601A       | 12 |
|          | 2.125           | 1.59     | 381           | .87      | 599           | .19      | 714           | H1618         | DB1611        | 10 |
|          | 2.625           | 2.65     | 607           | 1.47     | 1016          | .33      | 1276          | H1627         | DB1621A       | 8  |
|          | 3.500           | 4.80     | 1174          | 2.94     | 2064          | .72      | 2789          | H1638         | DB1631A       | 6  |
| 10       | 1.333           | .44      | 130           | .23      | 189           | .05      | 208           | H1407         | DB1400        | 12 |
|          | 1.625           | .67      | 196           | .38      | 305           | .09      | 366           | H1418         | DB1410        | 10 |
|          | 2.000           | 1.05     | 318           | .63      | 525           | .15      | 649           | H1427         | DB1420A       | 8  |
|          | 2.167           | 1.39     | 441           | .71      | 641           | .15      | 756           | H1607         | DB1602A       | 12 |
|          | 2.667           | 2.01     | 616           | 1.26     | 1071          | .32      | 1450          | H1438         | DB620A        | 6  |
|          | 2.625           | 2.11     | 672           | 1.16     | 1061          | .25      | 1267          | H1618         | DB1612        | 10 |
|          | 3.250           | 3.54     | 1082          | 1.96     | 1806          | .44      | 2270          | H1627         | DB1622        | 8  |
|          | 4.333           | 6.43     | 2094          | 3.94     | 3685          | .96      | 4980          | H1638         | DB1632A       | 6  |
| 12       | 3.000           | 2.39     | 882           | 1.50     | 1537          | .38      | 2042          | H1438         | DB1430A       | 6  |
| 12.5     | 2.583           | 1.72     | 683           | .87      | 985           | .18      | 1134          | H1607         | DB1603A       | 12 |
|          | 3.125           | 2.61     | 1042          | 1.44     | 1641          | .31      | 1961          | H1618         | DB1613A       | 10 |
|          | 3.875           | 4.40     | 1681          | 2.44     | 2810          | .55      | 3466          | H1627         | DB1623A       | 8  |
| 15       | 1.750           | .64      | 284           | .33      | 410           | .07      | 463           | H1407         | DB1401A       | 12 |
|          | 2.125           | .98      | 436           | .55      | 678           | .13      | 804           | H1418         | DB1411        | 10 |
|          | 2.625           | 1.54     | 699           | .92      | 1150          | .22      | 1428          | H1427         | DB1421A       | 8  |
|          | 3.000           | 2.04     | 966           | 1.03     | 1402          | .22      | 1617          | H1607         | QB1260A       | 12 |
|          | 3.500           | 2.94     | 1355          | 1.84     | 2364          | .47      | 3120          | H1438         | DB1431A       | 6  |
| 18       | 5.000†          | 2.27     | 1308          | 1.38     | 2373          | .41      | 4198          | H1116         | G1110†        | 3  |
| 20       | 1.333           | .28      | 140           | .15      | 210           | .04      | 227           | H1056         | GB1050A       | 12 |
|          | 1.625           | .42      | 217           | .25      | 336           | .06      | 391           | H1066         | GB1060A       | 10 |
|          | 2.000           | .65      | 343           | .41      | 567           | .10      | 706           | H1076         | GB1070        | 8  |
|          | 2.167           | .83      | 483           | .43      | 693           | .09      | 794           | H1407         | DB1402A       | 12 |
|          | 2.667           | 1.22     | 665           | .80      | 1156          | .22      | 1550          | H1086         | GB1077A       | 6  |
|          | 2.625           | 1.25     | 742           | .71      | 1156          | .16      | 1374          | H1418         | DB1412        | 10 |
|          | 3.250           | 1.98     | 1191          | 1.18     | 1974          | .28      | 2433          | H1427         | DB1422        | 8  |
|          | 4.000           | 2.92     | 1667          | 1.99     | 3025          | .64      | 4663          | H1106         | GB1100        | 4  |
|          | 4.333           | 3.77     | 2318          | 2.36     | 4034          | .60      | 5420          | H1438         | DB1432A       | 6  |
| 24       | 3.000           | 1.42     | 933           | .93      | 1613          | .26      | 2163          | H1086         | GB1080A       | 6  |
|          | 6.000†          | 3.23     | 2218          | 1.81     | 4020          | .53      | 7109          | H1116         | G1111†        | 3  |
|          | 4.500           | 3.41     | 2336          | 2.32     | 4235          | .75      | 6504          | H1106         | GB1101        | 4  |
| 25       | 2.583           | .99      | 726           | .52      | 1048          | .11      | 1197          | H1407         | DB1403A       | 12 |
|          | 3.125           | 1.50     | 1112          | .85      | 1730          | .19      | 2048          | H1418         | DB1413A       | 10 |
|          | 3.875           | 2.39     | 1794          | 1.43     | 2962          | .34      | 3671          | H1427         | DB1423A       | 8  |
|          | 5.167           | 2.27     | 1738          | 1.42     | 3028          | .36      | 4018          | H1438         | D1433†        | 6  |
| 30       | 1.750           | .40      | 294           | .21      | 410           | .05      | 473           | H1056         | GB1051        | 12 |
|          | 2.125           | .59      | 452           | .35      | 693           | .09      | 831           | H1066         | GB1061A       | 10 |
|          | 2.625           | .90      | 725           | .57      | 1197          | .13      | 1286          | H1076         | GB1071        | 8  |
|          | 3.000           | 1.15     | 1008          | .60      | 1450          | .13      | 1663          | H1407         | DB1260A       | 12 |
|          | 3.500           | 1.69     | 1386          | 1.12     | 2426          | .31      | 3233          | H1086         | GB1081A       | 6  |
|          | 3.625           | 1.74     | 1544          | .98      | 2395          | .22      | 2836          | H1418         | DB1414A       | 10 |
|          | 4.500           | 2.75     | 2489          | 1.65     | 4128          | .39      | 5105          | H1427         | DB860A        | 8  |
|          | 7.000†          | 4.23     | 3326          | 2.53     | 6002          | .76      | 10683         | H1116         | G1112†        | 3  |
| 32       | 5.500           | 2.13     | 1955          | 1.46     | 3546          | .47      | 5445          | H1106         | G1102†        | 4  |
| 36       | 4.000           | 1.95     | 1915          | 1.29     | 3366          | .36      | 4470          | H1086         | GB1082A       | 6  |
|          | 8.000†          | 3.87     | 3990          | 1.33     | 4130          | .68      | 12816         | H1116         | G1113†        | 3  |

\*Torque in Lb. Ins.

†Cast Iron Gear Rating with Hardened Worm shown.

All Worm and Worm Gear Ratings are based on a Hardened Steel Worm used with a Bronze Worm Gear.

1. For a Hardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .50.
2. For an Unhardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .25.

# Worms & Worm Gears

## Steel-Hardened, Ground & Polished Worms Bronze Worm Gears

Approximate Horsepower and Torque\* Ratings  
For Class I Service (Service Factor = 1.0)

| Worm RPM |                 | 1800     |               | 600      |               | 100      |               | Worm Cat. No. | Gear Cat. No. | DP |
|----------|-----------------|----------|---------------|----------|---------------|----------|---------------|---------------|---------------|----|
| Ratio    | Center Distance | Input HP | Output Torque | Input HP | Output Torque | Input HP | Output Torque |               |               |    |
| 40       | 2.167           | .48      | 490           | .26      | 672           | .06      | 782           | H1056         | GB1052A       | 12 |
|          | 2.625           | .72      | 742           | .43      | 1134          | .11      | 1361          | H1066         | GB1062A       | 10 |
|          | 3.250           | 1.12     | 1190          | .71      | 1974          | .18      | 2420          | H1076         | GB1072A       | 8  |
|          | 4.333           | 2.11     | 2310          | 1.39     | 4034          | .38      | 5345          | H1086         | GB1078        | 6  |
| 48       | 3.750           | 1.26     | 1614          | .79      | 2622          | .20      | 3267          | H1076         | GB1073        | 8  |
|          | 5.000           | 2.37     | 3110          | 1.56     | 5445          | .43      | 7260          | H1086         | GB1083        | 6  |
|          | 10.000†         | 4.06     | 5320          | 1.68     | 6608          | .72      | 17088         | H1116         | G1114†        | 3  |
| 50       | 2.583           | .55      | 700           | .30      | 998           | .07      | 1134          | H1056         | GB1053A       | 12 |
|          | 3.125           | .83      | 1068          | .51      | 1733          | .12      | 1954          | H1066         | GB1063        | 10 |
|          | 3.875           | 1.30     | 1716          | .82      | 2836          | .21      | 3498          | H1076         | GB850         | 8  |
|          | 5.167           | 2.43     | 3327          | 1.60     | 5777          | .44      | 7563          | H1086         | GB1079        | 6  |
| 54       | 11.000†         | 4.34     | 5985          | 1.79     | 7434          | .77      | 19224         | H1116         | G1115†        | 3  |
| 60       | 3.000           | .60      | 924           | .33      | 1323          | .08      | 1664          | H1056         | GB1260A       | 12 |
|          | 3.625           | .91      | 1408          | .54      | 2142          | .13      | 2571          | H1066         | GB1064        | 10 |
|          | 4.500           | 1.42     | 2269          | .89      | 3718          | .23      | 4538          | H1076         | GB860         | 8  |
|          | 6.000           | 2.66     | 4370          | 1.75     | 7625          | .49      | 10210         | H1086         | GB1087        | 6  |
| 72       | 7.000           | 2.79     | 5521          | 1.84     | 9605          | .51      | 12705         | H1086         | GB1084        | 6  |
| 80       | 3.833           | .64      | 1288          | .35      | 1849          | .08      | 2118          | H1056         | GB1054        | 12 |
|          | 4.625           | .96      | 1961          | .57      | 3042          | .14      | 3630          | H1066         | GB1067        | 10 |
|          | 5.750           | 1.49     | 3165          | .94      | 5210          | .24      | 6555          | H1076         | GB1074A       | 8  |
| 100      | 4.667           | .60      | 1505          | .33      | 2206          | .08      | 2458          | H1056         | GB1055        | 12 |
|          | 5.625           | .90      | 2310          | .54      | 3571          | .13      | 4223          | H1066         | GB1065        | 10 |
|          | 7.000           | 1.40     | 3711          | .88      | 6092          | .22      | 7563          | H1076         | GB8100        | 8  |

\*Torque in Lb. Ins.

†Cast Iron Gear Rating with Hardened Worm shown.

All Worm and Worm Gear Ratings are based on a Hardened Steel Worm used with a Bronze Worm Gear.

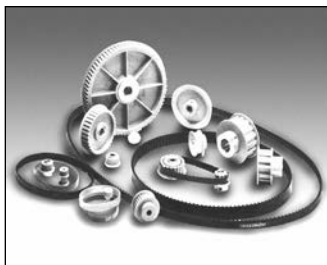
1. For a Hardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .50.
2. For an Unhardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .25.
3. For an Unhardened Steel Worm used with a Bronze Gear, multiply the listed Rating by .35.

## CENTER DISTANCES AND RATIOS AVAILABLE WITH STOCK WORM GEARING

| Center Distance (inches) | Pitch | No. of Teeth in Gear | Worm Thread |        |      | Center Distance (inches) | Pitch | No. of Teeth in Gear | Worm Thread |        |      | Center Distance (inches) | Pitch | No. of Teeth in Gear | Worm Thread |        |      |
|--------------------------|-------|----------------------|-------------|--------|------|--------------------------|-------|----------------------|-------------|--------|------|--------------------------|-------|----------------------|-------------|--------|------|
|                          |       |                      | Single      | Double | Quad |                          |       |                      | Single      | Double | Quad |                          |       |                      | Single      | Double | Quad |
|                          |       |                      | Ratio       |        |      |                          |       |                      | Ratio       |        |      |                          |       |                      | Ratio       |        |      |
| .375                     | 48    | 20                   | 20          | 10     | 5    | 1.781                    | 32    | 100                  | 100         | 50     | 25   | 4.333                    | 6     | 40                   | 40          | 20     | 10   |
| .479                     | 48    | 30                   | 30          | 15     | 7.5  | 1.875                    | 16    | 50                   | 50          | 25     | 12.5 | 4.500                    | 8     | 60                   | 60          | 30     | 15   |
| .531                     | 32    | 20                   | 20          | 10     | 5    | 1.917                    | 24    | 80                   | 80          | 40     | 20   | 4.500                    | 4     | 24                   | 24          | —      | —    |
| .583                     | 48    | 40                   | 40          | 20     | 10   | 2.000                    | 8     | 20                   | 20          | 10     | 5    | 4.625                    | 10    | 80                   | 80          | 40     | 20   |
| .666                     | 24    | 20                   | 20          | 10     | 5    | 2.125                    | 10    | 30                   | 30          | 15     | 7.5  | 4.667                    | 12    | 100                  | 100         | —      | —    |
| .688                     | 48    | 50                   | 50          | 25     | 12.5 | 2.167                    | 12    | 40                   | 40          | 20     | 10   | 5.000                    | 6     | 48                   | 48          | —      | —    |
| .688                     | 32    | 30                   | 30          | 15     | 7.5  | 2.188                    | 16    | 60                   | 60          | 30     | 15   | 5.000                    | 3     | 18                   | 18          | —      | —    |
| .792                     | 48    | 60                   | 60          | 30     | 15   | 2.250                    | 24    | 96                   | 96          | 48     | 24   | 5.167                    | 6     | 50                   | 50          | 25     | 12.5 |
| .844                     | 32    | 40                   | 40          | 20     | 10   | 2.333                    | 24    | 100                  | 100         | 50     | 25   | 5.500                    | 4     | 32                   | 32          | —      | —    |
| .875                     | 24    | 30                   | 30          | 15     | 7.5  | 2.583                    | 12    | 50                   | 50          | 25     | 12.5 | 5.625                    | 10    | 100                  | 100         | 50     | —    |
| .938                     | 16    | 20                   | 20          | 10     | 5    | 2.625                    | 10    | 40                   | 40          | 20     | 10   | 5.750                    | 8     | 80                   | 80          | —      | —    |
| 1.000                    | 48    | 80                   | 80          | 40     | 20   | 2.625                    | 8     | 30                   | 30          | 15     | 7.5  | 6.000                    | 6     | 60                   | 60          | 30     | 15   |
| 1.000                    | 32    | 50                   | 50          | 25     | 12.5 | 2.667                    | 6     | 20                   | 20          | 10     | 5    | 6.000                    | 3     | 24                   | 24          | —      | —    |
| 1.083                    | 24    | 40                   | 40          | 20     | 10   | 2.812                    | 16    | 80                   | 80          | —      | 20   | 6.500                    | 4     | 40                   | 40          | —      | —    |
| 1.156                    | 32    | 60                   | 60          | 30     | 15   | 3.000                    | 12    | 60                   | 60          | 30     | 15   | 6.750                    | 8     | 96                   | 96          | —      | —    |
| 1.208                    | 48    | 100                  | 100         | 50     | 25   | 3.000                    | 6     | 24                   | 24          | 12     | 6    | 7.000                    | 8     | 100                  | 100         | —      | —    |
| 1.250                    | 16    | 30                   | 30          | 15     | 7.5  | 3.125                    | 10    | 50                   | 50          | 25     | 12.5 | 7.000                    | 6     | 72                   | 72          | 36     | 18   |
| 1.292                    | 24    | 50                   | 50          | 25     | 12.5 | 3.250                    | 8     | 40                   | 40          | 20     | 10   | 7.000                    | 3     | 30                   | 30          | —      | —    |
| 1.333                    | 12    | 20                   | 20          | 10     | 5    | 3.438                    | 16    | 100                  | 100         | —      | —    | 7.500                    | 4     | 48                   | 48          | —      | —    |
| 1.469                    | 32    | 80                   | 80          | 40     | 20   | 3.500                    | 6     | 30                   | 30          | 15     | 7.5  | 7.667                    | 6     | 80                   | 80          | —      | —    |
| 1.500                    | 24    | 60                   | 60          | 30     | 15   | 3.625                    | 10    | 60                   | 60          | 30     | 15   | 8.000                    | 3     | 36                   | 36          | —      | —    |
| 1.562                    | 16    | 40                   | 40          | 20     | 10   | 3.750                    | 8     | 48                   | 48          | —      | —    | 9.000                    | 6     | 96                   | 96          | —      | —    |
| 1.625                    | 10    | 20                   | 20          | 10     | 5    | 3.833                    | 12    | 80                   | 80          | 40     | —    | 9.333                    | 6     | 100                  | 100         | —      | —    |
| 1.719                    | 32    | 96                   | 96          | 48     | 24   | 3.875                    | 8     | 50                   | 50          | 25     | 12.5 | 9.500                    | 4     | 64                   | 64          | —      | —    |
| 1.750                    | 24    | 72                   | 72          | 36     | 18   | 4.000                    | 6     | 36                   | 36          | —      | —    | 10.000                   | 3     | 48                   | 48          | —      | —    |
| 1.750                    | 12    | 30                   | 30          | 15     | 7.5  | 4.000                    | 4     | 20                   | 20          | —      | —    | 11.000                   | 3     | 54                   | 54          | —      | —    |

Example: Given a center distance of 2.625", Table lists Worm and Worm Gear Ratios available:

- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| 10 Pitch, 40 tooth, single = 40 to 1 | 8 Pitch, 30 tooth, single = 30 to 1 |
| 10 Pitch, 40 tooth, double = 20 to 1 | 8 Pitch, 30 tooth, double = 15 to 1 |
| 10 Pitch, 40 tooth, quad = 10 to 1   | 8 Pitch, 30 tooth, quad = 7.5 to 1  |



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# Shaft Couplings

## FC and SSFC Series

### Insert (3-Jaw) Type



**AVAILABLE IN STEEL AND IN 316 STAINLESS STEEL**

**PRECISION MACHINED BORED OR SOLID HUBS**

**THREE TYPES OF INSERTS** for different service requirements

**NO LUBRICATION NEEDED**

**COMPLETE WITH KEYWAY AND SETSCREW**

**CUSTOM BORE SIZES AVAILABLE ON REQUEST**

### Reference Pages

Alignment—320

Keyways and Setscrews—321

## Coupling Inserts

OIL-IMPREGNATED BOST-BRONZ— Recommended for high torque loads, particularly at slower speeds.

OIL-RESISTANT SYNTHETIC RUBBER— Recommended where quietness is desired, particularly at motor speeds.

POLYURETHANE— Recommended where moderate to heavy shock loads are encountered.

## Load Data

**HORSEPOWER AND TORQUE RATING AT  
RECOMMENDED SPEEDS FOR INSERTS INDICATED**

| Coupling Size             | Shaft Diameter Range | Maximum Horsepower Rating At RPM Of * |      |      |      |      |      |       |      | Max Torque (Lb. Ins.) |
|---------------------------|----------------------|---------------------------------------|------|------|------|------|------|-------|------|-----------------------|
|                           |                      | 50                                    | 100  | 300  | 690  | 870  | 1150 | 1750  | 3450 |                       |
| XFCBB BOST-BRONZ INSERTS  |                      |                                       |      |      |      |      |      |       |      |                       |
| FC12 & SSFC12             | 3/8-5/8              | .16                                   | .32  | .95  | 2.2  | 2.8  | 3.6  | 5.6   | —    | 200                   |
| FC15 & SSFC15             | 1/2-7/8              | .40                                   | .79  | 2.4  | 5.5  | 6.9  | 9.1  | 13.9  | —    | 500                   |
| FC20 & SSFC20             | 1/2-1-1/8            | .79                                   | 1.6  | 4.8  | 10.9 | 13.8 | 18.2 | —     | —    | 1000                  |
| FC25 & SSFC25             | 3/4-1-3/8            | 1.4                                   | 2.9  | 8.6  | 19.7 | 24.8 | —    | —     | —    | 1800                  |
| FC30 & SSFC30             | 1-1-5/8              | 2.5                                   | 5.1  | 15.2 | 35.0 | —    | —    | —     | —    | 3200                  |
| FC38 & SSFC38             | 1-1/4-1-7/8          | 5.6                                   | 11.1 | 33.3 | —    | —    | —    | —     | —    | 7000                  |
| FC45 & SSFC45             | 1-3/4-2-1/8          | 8.7                                   | 17.5 | —    | —    | —    | —    | —     | —    | 11000                 |
| XFCR RUBBER INSERTS       |                      |                                       |      |      |      |      |      |       |      |                       |
| FC12 & SSFC12             | 3/8-5/8              | —                                     | .10  | .31  | .71  | .90  | 1.2  | 1.8   | 3.6  | 65                    |
| FC15 & SSFC15             | 1/2-7/8              | —                                     | .20  | .60  | 1.4  | 1.7  | 2.3  | 3.5   | 56.8 | 125                   |
| FC20 & SSFC20             | 1/2-1-1/8            | —                                     | .40  | 1.2  | 2.7  | 3.5  | 4.6  | 6.9   | 13.7 | 250                   |
| FC25 & SSFC25             | 3/4-1-3/8            | —                                     | .71  | 2.1  | 4.9  | 6.2  | 8.2  | 12.5  | 24.6 | 450                   |
| FC30 & SSFC30             | 1-1-5/8              | —                                     | 1.3  | 3.8  | 8.8  | 11.0 | 14.6 | 22.2  | 43.8 | 800                   |
| FC38 & SSFC38             | 1-1/4-1-7/8          | —                                     | 2.5  | 7.6  | 17.5 | 22.1 | 29.2 | 44.4  | —    | 1600                  |
| FC45 & SSFC45             | 1-3/4-2-1/8          | —                                     | 4.4  | 13.3 | 30.7 | 38.7 | 51.1 | 77.7  | —    | 2800                  |
| XFCA POLYURETHANE INSERTS |                      |                                       |      |      |      |      |      |       |      |                       |
| FC12 & SSFC12             | 3/8-5/8              | .09                                   | .19  | .56  | 1.2  | 1.6  | 2.0  | 3.0   | 5.7  | 125                   |
| FC15 & SSFC15             | 1/2-7/8              | .18                                   | .37  | 1.1  | 2.5  | 3.1  | 4.0  | 6.0   | 11.3 | 250                   |
| FC20 & SSFC20             | 1/2-1-1/8            | .35                                   | .70  | 2.1  | 4.6  | 5.7  | 7.5  | 11.1  | 20.7 | 470                   |
| FC25 & SSFC25             | 3/4-1-3/8            | .62                                   | 1.2  | 3.7  | 8.1  | 10.1 | 13.1 | 19.3  | 35.8 | 845                   |
| FC30 & SSFC30             | 1-1-5/8              | 1.1                                   | 2.2  | 6.5  | 14.4 | 17.9 | 23.3 | 34.3  | 63.6 | 1500                  |
| FC38 & SSFC38             | 1-1/4-1-7/8          | 2.2                                   | 4.3  | 12.9 | 28.4 | 35.3 | 45.8 | 67.3  | —    | 3000                  |
| FC45 & SSFC45             | 1-3/4-2-1/8          | 3.7                                   | 7.5  | 22.4 | 49.2 | 61.0 | 79.0 | 115.9 | —    | 5250                  |

\*For uniform load.

## Selection Procedure

1. From Table select Service Factor.
2. Determine Design Load  
Design HP = Application HP x S.F.  
or  
Design Torque = Application Torque x S.F.
3. Select coupling size from Load Rating Table which has a rating equal to or greater than the design load.

### COUPLING SERVICE FACTORS

| Load Classification | Service Factor |
|---------------------|----------------|
| Uniform             | 1.0            |
| Moderate Shock      | 1.75           |
| Heavy Shock         | 2.50           |

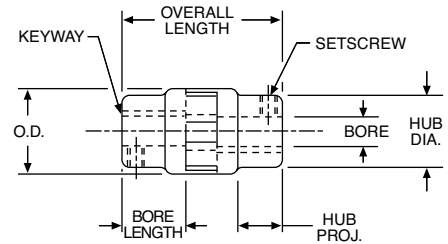


Contact the factory for bore sizes not listed above. Inch and metric options available.

## FC and SSFC Series Stocked Bores or Solid Hubs Insert (3-Jaw) Type

### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE    |
|------------|-----|--------------|
| Bore       | All | +.001 - .000 |



### ALL DIMENSIONS IN INCHES

### ORDER BY CATALOG NUMBER OR ITEM CODE

To order complete coupling order two coupling halves and one coupling insert

| Coupling Size   | Bore       | Coupling Halves |           |                 |           | Dimensions |              |       |                  |       |         |                 | Insert         |           |                |           |                |           |
|-----------------|------------|-----------------|-----------|-----------------|-----------|------------|--------------|-------|------------------|-------|---------|-----------------|----------------|-----------|----------------|-----------|----------------|-----------|
|                 |            | Steel           |           | Stainless Steel |           | Max. Bore  | Bore Length* | OD    | Overall Length** | Hub   |         | Assy. Clearance | Bost-Bronz     |           | Rubber         |           | Polyurethane   |           |
|                 |            | Catalog Number  | Item Code | Catalog Number  | Item Code |            |              |       |                  | Dia.  | Proj.   |                 | Catalog Number | Item Code | Catalog Number | Item Code | Catalog Number | Item Code |
| FC12 and SSFC12 | SOLID      | FC12 SOLID      | 47448     | SSFC12 SOLID    | G89785    | 5/8        | N/A          | 1-1/4 | 2-5/16           | 1     | 5/8     | 3-3/16          | XFCBB12        | 08064     | XFCR12         | 08078     | XFCA12         | 08050     |
|                 | 3/8        | FC12-3/8        | 08246     | SSFC12-3/8      | G89783    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 7/16       | FC12-7/16       | 08248     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1/2        | FC12-1/2        | 08250     | SSFC12-1/2      | G89784    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 5/8        | FC12-5/8        | 52405     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
| FC15 and SSFC15 | SOLID      | FC15 SOLID      | 47449     | SSFC15 SOLID    | G89789    | 7/8        | N/A          | 1-1/2 | 2-3/4            | 1-1/4 | 3/4     | 3-3/4           | XFCBB15        | 08066     | XFCR15         | 08080     | XFCA15         | 08052     |
|                 | 1/2        | FC15-1/2        | 08252     | SSFC15-1/2      | G89786    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 9/16       | FC15-9/16       | 61421     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 5/8        | FC15-5/8        | 08254     | SSFC15-5/8      | G89787    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 3/4        | FC15-3/4        | 08256     | SSFC15-3/4      | G89788    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 7/8        | FC15-7/8        | 61422     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
| FC20 and SSFC20 | SOLID      | FC20 SOLID      | 47450     | SSFC20 SOLID    | G89794    | 1-1/8      | N/A          | 2     | 3-11/16          | 1-3/4 | 1-1/8   | 4-13/16         | XFCBB20        | 08068     | XFCR20         | 08082     | XFCA20         | 08054     |
|                 | 1/2        | FC20-1/2        | 08258     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 9/16       | FC20-9/16       | 66063     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 5/8        | FC20-5/8        | 08260     | SSFC20-5/8      | G89790    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 3/4        | FC20-3/4        | 08262     | SSFC20-3/4      | G89791    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 7/8        | FC20-7/8        | 08264     | SSFC20-7/8      | G89792    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 15/16      | FC20-15/16      | 08266     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1          | FC20-1          | 08268     | SSFC20-1        | G89793    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-1/8      | FC20-1-1/8      | 52406     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
| FC25 and SSFC25 | SOLID      | FC25 SOLID      | 47451     | SSFC25 SOLID    | G89798    | 1-3/8      | N/A          | 2-1/2 | 4-1/8            | 2-1/4 | 1-1/4   | 5-3/8           | XFCBB25        | 08070     | XFCR25         | 08084     | XFCA25         | 08056     |
|                 | 3/4        | FC25-3/4        | 08270     | SSFC25-3/4      | G89795    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 7/8        | FC25-7/8        | 08272     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1          | FC25-1          | 08274     | SSFC25-1        | G89796    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-1/8      | FC25-1-1/8      | 08276     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-3/16     | FC25-1-3/16     | 08278     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-1/4      | FC25-1-1/4      | 08280     | SSFC25-1-1/4    | G89797    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-3/8      | FC25-1-3/8      | 52408     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
| FC30 and SSFC30 | SOLID      | FC30 SOLID      | 47452     | SSFC30 SOLID    | G89802    | 1-5/8      | N/A          | 3     | 5-15/32          | 2-3/4 | 1-11/16 | 7               | XFCBB30        | 08072     | XFCR30         | 08086     | XFCA30         | 08058     |
|                 | 1          | FC30-1          | 08282     | SSFC30-1        | G89799    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-1/8      | FC30-1-1/8      | 08284     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-1/4      | FC30-1-1/4      | 08286     | SSFC30-1-1/4    | G89800    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-3/8      | FC30-1-3/8      | 08288     | SSFC30-1-3/8    | G89801    |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-7/16     | FC30-1-7/16     | 08290     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-1/2      | FC30-1-1/2      | 08292     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
| 1-5/8           | FC30-1-5/8 | 52409           | N/A       | N/A             |           |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
| FC38 and SSFC38 | SOLID      | FC38 SOLID      | 24650     | SSFC38 SOLID    | G89809    | 1-7/8      | N/A          | 3-3/4 | 6-5/16           | 3-1/2 | 1-7/8   | 8-3/16          | XFCBB38        | 08074     | XFCR38         | 08088     | XFCA38         | 08060     |
|                 | 1-1/4      | FC38-1-1/4      | 08294     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-1/2      | FC38-1-1/2      | 08296     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-9/16     | FC38-1-9/16     | 08298     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-5/8      | FC38-1-5/8      | 08300     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-3/4      | FC38-1-3/4      | 08302     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-7/8      | FC38-1-7/8      | 08304     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
| FC45 and SSFC45 | SOLID      | FC45 SOLID      | 24816     | SSFC45 SOLID    | G89810    | 2-1/8      | N/A          | 4-1/2 | 7-3/16           | 4     | 2-1/8   | 9-5/16          | XFCBB45        | 08076     | XFCR45         | 08090     | XFCA45         | 08062     |
|                 | 1-3/4      | FC45-1-3/4      | 08306     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 1-7/8      | FC45-1-7/8      | 08308     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 2          | FC45-2          | 08310     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |
|                 | 2-1/8      | FC45-2-1/8      | 08312     | N/A             | N/A       |            |              |       |                  |       |         |                 |                |           |                |           |                |           |

\*Length of hole in each half. \*\*Total Length of assembled coupling with jaws engaged to full depth.

Notes: Bore tolerance +.001"/-.000"

Recommended shaft tolerance: Nominal +.000"/-.001"

# Shaft Couplings

## BF Series Bost-Flex® Spider Ring (3-Jaw) Type



### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE    |
|------------|-----|--------------|
| Bore       | All | +.001 – .000 |

### Reference Pages

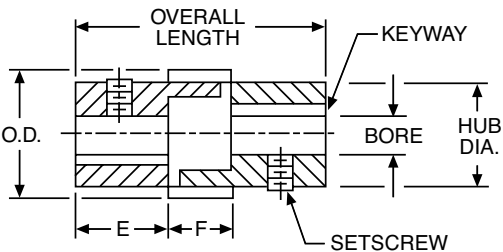
Alignment—320  
Keyways and Setscrews—321

### ECONOMICAL 3-JAW COUPLING

**SPIDER RING URETHANE INSERT** absorbs shock and vibration. Provides through opening for close coupling of shafts.

**BORE SIZES FROM 3/8" TO 1-1/4"**

**COMPLETE WITH KEYWAY AND SETSCREW.**



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE  
Includes two coupling halves and one coupling insert

| Coupling Size | Bore  |       | Hub Diameter | O.D.    | Overall Length | E     | F     | Assembly Clearance | Approx. Weight (Oz.) | Coupling         |           | Replacement Insert |
|---------------|-------|-------|--------------|---------|----------------|-------|-------|--------------------|----------------------|------------------|-----------|--------------------|
|               | A     | B     |              |         |                |       |       |                    |                      | Catalog Number   | Item Code | Item Code          |
| BF7           | 3/8   | 3/8   | 7/8          | 1-7/32  | 1-5/16         | 1/2   | 5/16  | 1-5/8              | 2                    | BF7 3/8-3/8      | 11730     | 11722              |
|               |       | 1/2   |              |         |                |       |       |                    |                      | BF7 3/8-1/2      | 11734     |                    |
|               |       | 1/2   |              |         |                |       |       |                    |                      | BF7 1/2-1/2      | 11732     |                    |
| BF10          | 1/2   | 1/2   | 1-1/4        | 1-19/32 | 1-15/16        | 3/4   | 7/16  | 2-3/8              | 6.5                  | BF10 1/2-1/2     | 11736     | 11724              |
|               |       | 5/8   |              |         |                |       |       |                    |                      | BF10 1/2-5/8     | 11742     |                    |
|               |       | 3/4   |              |         |                |       |       |                    |                      | BF10 1/2-3/4     | 11744     |                    |
|               | 5/8   | 5/8   |              |         |                |       |       |                    |                      | BF10 5/8-5/8     | 11738     |                    |
|               |       | 3/4   |              |         |                |       |       |                    |                      | BF10 5/8-3/4     | 11746     |                    |
| BF13          | 3/4   | 3/4   | 1-5/8        | 1-31/32 | 2-7/16         | 15/16 | 9/16  | 3                  | 14                   | BF10 3/4-3/4     | 11740     | 11726              |
|               |       | 3/4   |              |         |                |       |       |                    |                      | BF13 3/4-3/4     | 11748     |                    |
|               |       | 7/8   |              |         |                |       |       |                    |                      | BF13 3/4-7/8     | 11754     |                    |
|               |       | 1     |              |         |                |       |       |                    |                      | BF13 3/4-1       | 11756     |                    |
|               | 7/8   | 7/8   |              |         |                |       |       |                    |                      | BF13 7/8-7/8     | 11750     |                    |
|               |       | 1     |              |         |                |       |       |                    |                      | BF13 7/8-1       | 11758     |                    |
| BF18          | 1     | 1     | 2-1/4        | 2-23/32 | 2-15/16        | 1-1/8 | 11/16 | 3-5/8              | 37                   | BF13 1-1         | 11752     | 11728              |
|               |       | 1-1/8 |              |         |                |       |       |                    |                      | BF18 1-1         | 11760     |                    |
|               |       | 1-1/4 |              |         |                |       |       |                    |                      | BF18 1-1-1/8     | 11766     |                    |
|               |       | 1-1/4 |              |         |                |       |       |                    |                      | BF18 1-1-1/4     | 11768     |                    |
|               | 1-1/8 | 1-1/8 |              |         |                |       |       |                    |                      | BF18 1-1/8-1-1/8 | 11762     |                    |
|               |       | 1-1/4 |              |         |                |       |       |                    |                      | BF18 1-1/8-1-1/4 | 11770     |                    |
|               | 1-1/4 | 1-1/4 |              |         |                |       |       |                    |                      | BF18 1-1/4-1-1/4 | 11774     |                    |

### HORSEPOWER AND TORQUE RATINGS

| Size  | Revolutions per Minute |      |      |      |      |      |      | Max Torque (Lb. Ins.) |
|-------|------------------------|------|------|------|------|------|------|-----------------------|
|       | 100                    | 300  | 690  | 870  | 1150 | 1750 | 3450 |                       |
| BF 7  | .044                   | .13  | .31  | .39  | .51  | .78  | 1.5  | 28                    |
| BF 10 | .11                    | .34  | .78  | 1.00 | 1.30 | 2.00 | 3.9  | 72                    |
| BF13  | .25                    | .76  | 1.70 | 2.20 | 2.90 | 4.40 | 8.8  | 160                   |
| BF 18 | .48                    | 1.40 | 3.30 | 4.10 | 5.50 | 8.30 | 16.4 | 300                   |

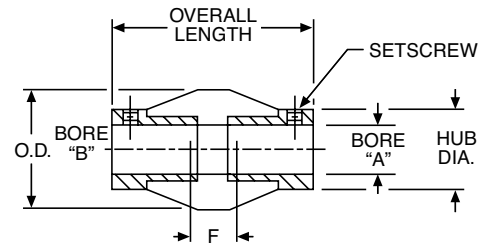
### Selection Procedure

For Service Factors and Procedures, refer to FC Couplings (Page 100).

## BG Series Shear Type

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Coupling Size | Bore |      | Hub Diameter | O.D.    | Overall Length | F     | Catalog Number | Item Code |
|---------------|------|------|--------------|---------|----------------|-------|----------------|-----------|
|               | A    | B    |              |         |                |       |                |           |
| BG47          | 1/8  | 1/8  | 7/16         | 9/16    | 13/16          | 3/16  | BG47-2-2       | 49887     |
|               | 1/8  | 3/16 |              |         |                |       | BG47-2-3       | 49888     |
|               | 1/8  | 1/4  |              |         |                |       | BG47-2-4       | 49889     |
|               | 3/16 | 3/16 |              |         |                |       | BG47-3-3       | 49890     |
|               | 1/4  | 1/4  |              |         |                |       | BG47-3-4       | 49891     |
| BG11-1        | 1/4  | 1/4  | 5/8          | 13/16   | 1-3/8          | 11/32 | BG11-1-4-4     | 49895     |
| BG11-2        | 1/4  | 1/4  | 3/4          | 1       | 1-3/4          | 13/32 | BG11-2-4-4     | 49898     |
|               | 1/4  | 5/16 |              |         |                |       | BG11-2-4-5     | 49899     |
|               | 1/4  | 3/8  |              |         |                |       | BG11-2-4-6     | 49900     |
|               | 5/16 | 5/16 |              |         |                |       | BG11-2-5-5     | 49901     |
|               | 3/8  | 3/8  |              |         |                |       | BG11-2-5-6     | 49902     |
| BG11-3        | 5/16 | 5/16 | 7/8          | 1-1/4   | 2-1/8          | 15/32 | BG11-2-6-6     | 49903     |
|               | 3/8  | 3/8  |              |         |                |       | BG11-3-5-5     | 49904     |
|               | 1/2  | 1/2  |              |         |                |       | BG11-3-5-6     | 49905     |
|               | 3/8  | 3/8  |              |         |                |       | BG11-3-5-8     | 49906     |
|               | 1/2  | 1/2  |              |         |                |       | BG11-3-6-6     | 49907     |
| BG11-4        | 3/8  | 3/8  | 1            | 1-3/8   | 2-1/4          | 17/32 | BG11-3-6-8     | 49908     |
|               | 1/2  | 1/2  |              |         |                |       | BG11-3-8-8     | 49909     |
|               | 3/8  | 1/2  |              |         |                |       | BG11-4-6-6     | 49910     |
|               | 1/2  | 5/8  |              |         |                |       | BG11-4-6-8     | 49911     |
|               | 5/8  | 5/8  |              |         |                |       | BG11-4-6-10    | 49912     |
| BG11-5        | 1/2  | 1/2  | 1-1/8        | 1-5/8   | 2-1/2          | 19/32 | BG11-4-8-8     | 49913     |
|               | 5/8  | 5/8  |              |         |                |       | BG11-4-8-10    | 49914     |
|               | 3/4  | 3/4  |              |         |                |       | BG11-4-10-10   | 49915     |
|               | 1/2  | 1/2  |              |         |                |       | BG11-5-8-8     | 49916     |
|               | 5/8  | 5/8  |              |         |                |       | BG11-5-8-10    | 49917     |
| BG11-6        | 3/4  | 3/4  | 1-3/8        | 1-13/16 | 2-11/16        | 11/16 | BG11-5-8-12    | 49918     |
|               | 1/2  | 1/2  |              |         |                |       | BG11-5-10-10   | 49919     |
|               | 5/8  | 5/8  |              |         |                |       | BG11-5-12-12   | 49920     |
|               | 3/4  | 3/4  |              |         |                |       | BG11-6-8-8     | 49921     |
|               | 5/8  | 5/8  |              |         |                |       | BG11-6-10-10   | 49923     |
| BG11-7        | 3/4  | 3/4  | 1-1/2        | 2       | 2-7/8          | 3/4   | BG11-6-10-12   | 49924     |
|               | 1    | 1    |              |         |                |       | BG11-6-12-12   | 49925     |
|               |      |      |              |         |                |       | BG11-7-16-16   | 49931     |



**METAL HUBS JOINED PERMANENTLY BONDED ELASTOMER** require no lubrication. Flexible in any direction—accommodates misalignment up to 1/32" parallel, 2" angular.

**HIGH TORSIONAL DEFLECTION** isolates low frequency vibration.

**BORE SIZES FROM 1/8" TO 1"**

**COMPLETE WITH STANDARD SETSCREWS** (Not installed).

## Load Data

### HORSEPOWER AND TORQUE RATINGS

| Size   | Revolutions per Minute |      |      |      |      |       |       | Max Torque<br>(Lb. Ins.) |
|--------|------------------------|------|------|------|------|-------|-------|--------------------------|
|        | 100                    | 300  | 690  | 870  | 1150 | 1750  | 3450  |                          |
| BG-47  | .001                   | .003 | .008 | .010 | .013 | .020  | .039  | .72                      |
| BG11-1 | .004                   | .011 | .025 | .031 | .041 | .062  | .123  | 2.25                     |
| BG11-2 | .007                   | .021 | .049 | .062 | .082 | .125  | .246  | 4.50                     |
| BG11-3 | .014                   | .043 | .099 | .124 | .164 | .250  | .493  | 9.00                     |
| BG11-4 | .019                   | .057 | .131 | .166 | .219 | .333  | .657  | 12.00                    |
| BG11-5 | .029                   | .086 | .197 | .248 | .328 | .500  | .985  | 18.00                    |
| BG11-6 | .043                   | .129 | .296 | .313 | .493 | .750  | 1.478 | 27.00                    |
| BG11-7 | .057                   | .171 | .394 | .497 | .657 | 1.000 | 1.971 | 36.00                    |

### STANDARD TOLERANCES

| DIMENSIONS |           | TOLERANCE     |
|------------|-----------|---------------|
| Bore       | 1/8 – 3/8 | +.001 – .000  |
|            | 1/2 – 5/8 | +.0015 – .000 |
|            | 3/4 – 1   | +.002 – .000  |

## Reference Pages

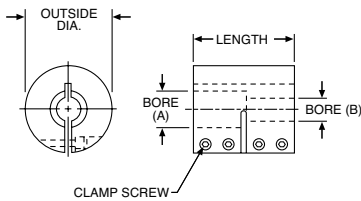
Alignment—320

Keyways and Setscrews—321

# Shaft Couplings

## SCC Series

### Clamping Type



#### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE    |
|------------|--------------|
| Bore       | All          |
|            | +.001 – .000 |

**LOW CARBON STEEL COUPLINGS** with a black oxide finish.

**BORE SIZES FROM 1/4" to 2"**

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore  |                   | O.D.   | Length | Clamp Screws (4) | Catalog Number                               | Item Code               |
|-------|-------------------|--------|--------|------------------|----------------------------------------------|-------------------------|
| A     | B                 |        |        |                  |                                              |                         |
| 1/4   | 1/4               | 13/16  | 1-1/4  | 4-40             | SCC1/4 x 1/4                                 | 49289                   |
| 3/8   | 1/4<br>3/8        | 1-1/16 | 1-5/8  | 6-32             | SCC3/8 x 1/4<br>SCC3/8 x 3/8                 | 49290<br>49291          |
| 1/2   | 3/8<br>1/2        | 1-1/4  | 1-7/8  | 8-32             | SCC1/2 x 3/8<br>SCC1/2 x 1/2                 | 49292<br>49293          |
| 5/8   | 1/2<br>5/8        | 1-1/2  | 2-1/4  | 10-32            | SCC5/8 x 1/2<br>SCC5/8 x 5/8                 | 49294<br>49295          |
| 3/4   | 1/2<br>5/8<br>3/4 | 1-3/4  | 2-5/8  | 1/4-28           | SCC3/4 x 1/2<br>SCC3/4 x 5/8<br>SCC3/4 x 3/4 | 49296<br>49297<br>49298 |
| 7/8   | 5/8<br>7/8        | 1-7/8  | 2-7/8  | 1/4-28           | SCC7/8 x 5/8<br>SCC7/8 x 7/8                 | 49299<br>49300          |
| 1     | 1                 | 2      | 3      | 1/4-28           | SCC1 x 1                                     | 49302                   |
| 1-1/8 | 1<br>1-1/8        | 2-1/8  | 3-1/4  | 1/4-28           | SCC1-1/8 x 1<br>SCC1-1/8 x 1-1/8             | 49303<br>49304          |
| 1-1/4 | 1<br>1-1/4        | 2-1/4  | 3-3/8  | 1/4-28           | SCC1-1/4 x 1<br>SCC1-1/4 x 1-1/4             | 49305<br>49306          |
| 1-3/8 | 1<br>1-3/8        | 2-3/8  | 3-5/8  | 1/4-28           | SCC1-3/8 x 1<br>SCC1-3/8 x 1-3/8             | 49307<br>49308          |
| 1-1/2 | 1<br>1-1/2        | 2-1/2  | 3-3/4  | 1/4-28           | SCC1-1/2 x 1<br>SCC1-1/2 x 1-1/2             | 49309<br>49310          |
| 1-3/4 | 1-3/4             | 3      | 4-1/2  | 5/16-24          | SCC1-3/4 x 1-3/4                             | 49312                   |
| 2     | 2                 | 3-1/4  | 4-7/8  | 5/16-24          | SCC2 x 2                                     | 49314                   |

## Load Data

Capacity is based on a standard steel, one piece coupling mounted with recommended screw torque on a dry shaft. Capacities shown are for general guidance only. In applications involving control of torque loads, capacity should be determined experimentally on actual parts involved.

#### TORQUE CAPACITY

| Bore                                                | Torque Capacity (Lb. Ins.)                           | Screw Size | Recommended Screw Torque (Lb. Ins.) |
|-----------------------------------------------------|------------------------------------------------------|------------|-------------------------------------|
| 1/4                                                 | 72                                                   | 4-40       | 20                                  |
| 3/8                                                 | 192                                                  | 6-32       | 30                                  |
| 1/2                                                 | 480                                                  | 8-32       | 55                                  |
| 5/8                                                 | 1200                                                 | 10-32      | 90                                  |
| 3/4<br>7/8<br>1<br>1-1/8<br>1-1/4<br>1-3/8<br>1-1/2 | 1500<br>1680<br>1920<br>2200<br>3000<br>3500<br>4000 | 1/4-28     | 220                                 |
| 1-3/4<br>2                                          | 5400<br>6000                                         | 5/16-24    | 435                                 |

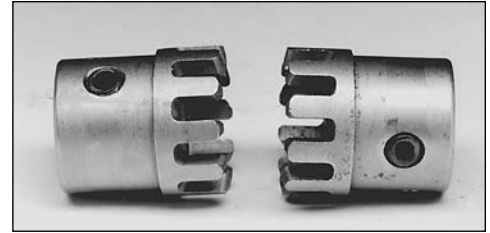
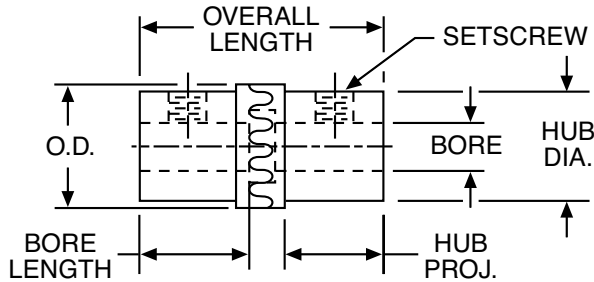
# Shaft Couplings

## FA Series Multi-Jaw Type

**UNTREATED STEEL COUPLINGS** for use in light duty applications, require no lubrication.

**BORE SIZES FROM 3/16" to 1/2"**

**COMPLETE WITH STANDARD SETSCREWS**



### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |
|------------|-----------|
| Bore       | All       |
|            | ± .0005   |

### Reference Pages

Alignment—320  
Keys and Setscrews—321

### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Coupling Size | Bore | O.D. | Length† | Bore Length++ | Assembly Clearance‡ | Hub   |       | Teeth | Steel          |           |
|---------------|------|------|---------|---------------|---------------------|-------|-------|-------|----------------|-----------|
|               |      |      |         |               |                     | Dia.  | Proj. |       | Catalog Number | Item Code |
| FA5           | 3/16 | 1/2  | 1-1/8   | 1/2           | 1-9/32              | 7/16  | 7/16  | 10    | FA5w 3/16-3/16 | 07900     |
|               | 7/32 |      |         |               |                     |       |       |       | FA5 7/32-7/32  | 07902     |
|               | 1/4  |      |         |               |                     |       |       |       | FA5 1/4-1/4    | 07904     |
| FA75          | 5/16 | 3/4  | 1-1/2   | 5/8           | 1-3/4               | 11/16 | 33/64 | 10    | FA75 5/16-5/16 | 07910     |
|               | 3/8  |      |         |               |                     |       |       |       | FA75 3/8-3/8   | 07912     |
| FA10          | 7/16 | 1    | 2       | 7/8           | 2-9/32              | 15/16 | 3/4   | 12    | FA10 7/16-7/16 | 07908     |
|               | 1/2  |      |         |               |                     |       |       |       | FA10 1/2-1/2   | 07906     |

†Total length of coupling with jaws engaged full depth. ++Length of hole in each half.

‡Approximate total length of coupling with jaws completely disengaged.

## CR Series Rigid (One Piece) Type

**BORE SIZES FROM 1/4" TO 1-1/4"**

**COMPLETE WITH STANDARD SETSCREWS**

### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

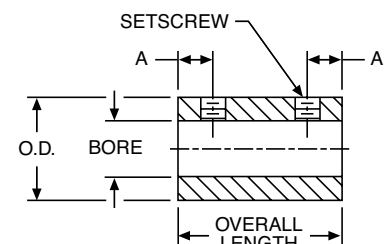
| Bore  | O.D.  | Overall Length | A    | Catalog Number | Item Code |
|-------|-------|----------------|------|----------------|-----------|
| 1/4   | 1/2   | 3/4            | 3/16 | CR4            | 34200     |
| 5/16  | 5/8   | 1              | 1/4  | CR5            | 34202     |
| 3/8   | 3/4   | 1              | 1/4  | CR6            | 34204     |
| 1/2   | 1     | 1-1/2          | 3/8  | CR8            | 34206     |
| 5/8   | 1-1/4 | 2              | 1/2  | CR10           | 34208     |
| 3/4   | 1-1/2 | 2              | 1/2  | CR12           | 34210     |
| 7/8   | 1-3/4 | 2              | 1/2  | CR14           | 34212     |
| 1     | 2     | 3              | 3/4  | CR16           | 34214     |
| 1-1/4 | 2-1/4 | 4              | 1    | CR20           | 34216     |

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE    |
|------------|--------------|
| Bore       | All          |
|            | +.001 - .000 |

### Reference Pages

Keys and Setscrews—320



E

# Shaft Couplings

## FCP Series Sleeve Type



### Materials

Urethane Sleeves  
Delrin Hubs  
Aluminum Alloy Inserts

#### STANDARD TOLERANCES

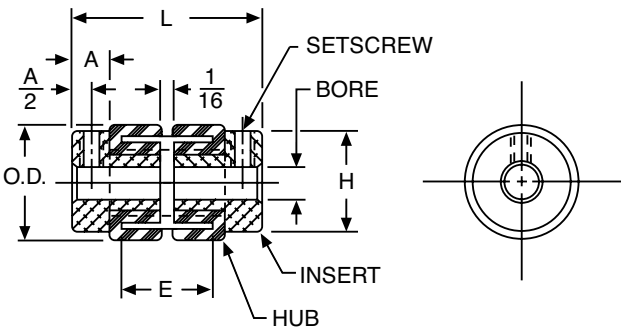
| DIMENSIONS | TOLERANCE    |
|------------|--------------|
| Bore       | All          |
|            | +.001 – .000 |

**SPLINED HUBS AND URETHANE SLEEVE** accommodate misalignment to 5°.

**SLEEVE STOCK** available for producing special lengths.

**NO LUBRICATION NEEDED**

**COMPLETE WITH SETSCREWS**



#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore  | O.D.   | A    | E     | H    | L      | Setscrew | Complete Coupling |           | Insert and Hub Assembly |           | Sleeve Only    |           |
|-------|--------|------|-------|------|--------|----------|-------------------|-----------|-------------------------|-----------|----------------|-----------|
|       |        |      |       |      |        |          | Catalog Number    | Item Code | Catalog Number          | Item Code | Catalog Number | Item Code |
| .125  | 37/64  | 7/32 | 7/16  | 9/16 | 15/16  | 4 – 40   | FCP21 – 1/8       | 54893     | XFCP21 – 1/8            | 54903     | X5R21 – 16     | 54913     |
| .1875 |        |      |       |      |        | 6 – 32   | FCP21 – 3/16      | 54894     | XFCP21 – 3/16           | 54904     |                |           |
| .250  |        |      |       |      |        |          | FCP21 – 1/4       | 54895     | XFCP21 – 1/4            | 54905     |                |           |
| .3125 | 1-5/64 | 3/8  | 11/16 | 1    | 1-9/16 | 8 – 32   | FCP23 – 5/16      | 54899     | XFCP23 – 5/16           | 54909     | X5R23 – 32     | 54915     |
| .375  |        |      |       |      |        | 10 – 32  | FCP23 – 3/8       | 54900     | XFCP23 – 3/8            | 54910     |                |           |
| .4375 |        |      |       |      |        |          | FCP23 – 7/16      | 54901     | XFCP23 – 7/16           | 54911     |                |           |
| .500  |        |      |       |      |        | 1/4 – 20 | FCP23 – 1/2       | 54902     | XFCP23 – 1/2            | 54912     |                |           |

### Load Data

#### HORSEPOWER RATINGS (MAXIMUM) AT 1750 RPM

| Size  | Horsepower |
|-------|------------|
| FCP21 | 1/20       |
| FCP23 | 1/2        |

### Sleeve Stock

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| O.D. | Length (Inches) | Catalog Number | Item Code |
|------|-----------------|----------------|-----------|
| 1/2  | 12              | 5R21 – 16S     | 54916     |
| 1    |                 | 5R23 – 32S     | 54918     |

## J/JS Series

### Pin and Block Type; Steel and Stainless Steel

Boston Gear precision machined J and JS Series Universal Joints are designed for connecting shafts at angles up to 30 degrees and speeds up to 2000 RPM. All sizes are stocked with both solid and bored hubs.

Joints J100 and J100B and larger are equipped with self-closing, ball valve oilers, creating an oil reservoir to provide enclosed lubrication.

The self-locking assembly ring on joints with 7/8" and larger hub diameter, fits into recess provided in center bearing block and snaps around groove in small bearing pin — assuring locking of entire assembly allowing for quick and easy disassembly and reassembly.

Joints with 3/4" and smaller hub diameters are locked by riveting the small bearing pin. Joint covers (boots) keep dirt and moisture out and lubricants in.



### Selection

Torque ratings may be calculated from data in tables. The tables indicate the Rated Static Torque (Lb. Ins.) of alloy and stainless steel joints and Speed-Angle factors suggested for various operating conditions.

The approximate service torque rating of a particular joint is obtained by dividing the Rated Static Torque by the appropriate Speed-Angle factor.

Selecting a universal to satisfy a specified torque requirement is also made convenient with the data provided.

The designated torque load should be multiplied by the appropriate Speed-Angle factor to obtain an equivalent static torque load.

A universal with a rated static torque equal to or greater than the calculated torque load would then be selected.

### Example:

A pair of universal joints are desired to transmit 1/2 HP from one shaft running at 500 RPM to another located at an angle of 10 degrees (from a straight line).

The joints will be connected by an intermediate shaft and arranged to operate at equal angles of 5 degrees.

A Speed-Angle factor of 9 is indicated in the table for an operating angle of 5 degrees and a speed of 500 RPM.

$$\text{Torque Load} = \frac{63025 \times \text{HP}}{\text{RPM}} = \frac{63025 \times 1/2}{500} = 63 \text{ Lb. Ins.}$$

J100 size alloy steel or JS175 size stainless steel universals would be suggested for this application.

### SPEED-ANGLE FACTORS

| Speed In<br>RPM | Operating Angle – Degrees (Deviation From Straight Line) |      |      |      |      |      |      |      |      |     |      |      |     |      |     |
|-----------------|----------------------------------------------------------|------|------|------|------|------|------|------|------|-----|------|------|-----|------|-----|
|                 | 0                                                        | 1/2  | 1    | 2    | 3    | 4    | 5    | 6    | 8    | 10  | 12   | 15   | 20  | 25   | 30  |
| 2000            | 21                                                       | 22   | 23.2 | 25.2 | 27.4 | 29.4 | 31.6 | —    | —    | —   | —    | —    | —   | —    | —   |
| 1800            | 19                                                       | 20   | 21.0 | 22.8 | 24.8 | 26.6 | 28.6 | 30.4 | —    | —   | —    | —    | —   | —    | —   |
| 1600            | 17                                                       | 17.8 | 18.8 | 20.4 | 22.2 | 23.8 | 25.6 | 27.2 | —    | —   | —    | —    | —   | —    | —   |
| 1400            | 15                                                       | 15.8 | 16.6 | 18.0 | 19.6 | 21.0 | 22.6 | 24.0 | 27   | —   | —    | —    | —   | —    | —   |
| 1200            | 13                                                       | 13.6 | 14.4 | 15.6 | 17.0 | 18.2 | 19.6 | 20.8 | 23.4 | —   | —    | —    | —   | —    | —   |
| 1000            | 11                                                       | 11.6 | 12.2 | 13.2 | 14.4 | 15.4 | 16.6 | 17.6 | 19.8 | 22  | —    | —    | —   | —    | —   |
| 900             | 10                                                       | 10.6 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 18.0 | 20  | 22   | —    | —   | —    | —   |
| 800             | 9.0                                                      | 9.4  | 10.0 | 10.8 | 11.8 | 12.6 | 13.6 | 14.4 | 16.2 | 18  | 19.8 | —    | —   | —    | —   |
| 700             | 8.0                                                      | 8.4  | 8.8  | 9.6  | 10.4 | 11.2 | 12.0 | 12.8 | 14.4 | 16  | 17.6 | 20   | —   | —    | —   |
| 600             | 7.0                                                      | 7.4  | 7.8  | 8.4  | 9.2  | 9.8  | 10.6 | 11.2 | 12.6 | 14  | 15.4 | 17.6 | —   | —    | —   |
| 500             | 6.0                                                      | 6.4  | 6.6  | 7.2  | 7.8  | 8.4  | 9.0  | 9.6  | 10.8 | 12  | 13.2 | 15.0 | 18  | —    | —   |
| 400             | 5.0                                                      | 5.2  | 5.6  | 6.0  | 6.6  | 7.0  | 7.6  | 8.0  | 9.0  | 10  | 11.0 | 12.6 | 15  | 17.6 | —   |
| 300             | 4.0                                                      | 4.2  | 4.4  | 4.8  | 5.2  | 5.6  | 6.0  | 6.4  | 7.2  | 8.0 | 8.8  | 10.0 | 12  | 14.0 | 16  |
| 200             | 3.0                                                      | 3.2  | 3.4  | 3.6  | 4.0  | 4.2  | 4.6  | 4.8  | 5.4  | 6.0 | 6.6  | 7.6  | 9.0 | 10.6 | 12  |
| 100             | 2.0                                                      | 2.2  | 2.2  | 2.4  | 2.6  | 2.8  | 3.0  | 3.2  | 3.6  | 4.0 | 4.4  | 5.0  | 6.0 | 7.0  | 8.0 |
| 50              | 1.5                                                      | 1.6  | 1.7  | 1.8  | 2.0  | 2.2  | 2.2  | 2.4  | 2.8  | 3.0 | 3.4  | 3.8  | 4.6 | 5.2  | 6.0 |
| 25              | 1.3                                                      | 1.3  | 1.4  | 1.5  | 1.6  | 1.8  | 1.9  | 2.0  | 2.2  | 2.6 | 2.8  | 3.2  | 3.8 | 4.4  | 5.0 |
| 10              | 1.1                                                      | 1.2  | 1.2  | 1.3  | 1.4  | 1.5  | 1.7  | 1.8  | 2.0  | 2.2 | 2.4  | 2.8  | 3.4 | 3.8  | 4.4 |
| 0               | 1.0                                                      | 1.1  | 1.1  | 1.2  | 1.3  | 1.4  | 1.5  | 1.6  | 1.8  | 2.0 | 2.2  | 2.6  | 3.0 | 3.6  | 4.0 |

### RATED STATIC TORQUE (LB. INS.)

### STRAIGHT LINE

#### ALLOY STEEL UNIVERSAL JOINTS

| Catalog Number    | J37 | J50 | J62 | J75 | J87 | J100 | J112 | J125 | J150 | J175 | J200 | J250 | J300   | J400   |
|-------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|--------|--------|
| Torque – Lb. Ins. | 20  | 80  | 166 | 320 | 370 | 600  | 670  | 1040 | 1680 | 2500 | 4400 | 7000 | 11,000 | 26,400 |

#### STAINLESS STEEL UNIVERSAL JOINTS

| Catalog Number    | JS37 | JS50 | JS62 | JS75 | JS87 | JS100 | JS112 | JS125 | JS150 | JS175 | JS200 | JS250 | JS300 | JS400 |
|-------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Torque – Lb. Ins. | 6    | 24   | 50   | 96   | 110  | 180   | 200   | 310   | 500   | 750   | 1320  | 1900  | 3100  | 7360  |

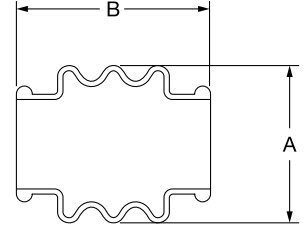
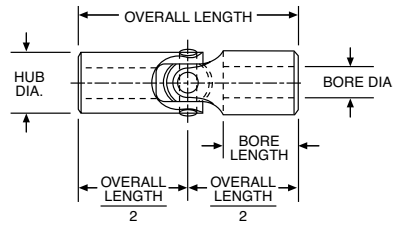
# Universal Joints

## J/JS Series Bored and Solid Hubs

### Pin and Block Type; Steel and Stainless Steel

#### STANDARD TOLERANCES

| DIMENSIONS     |               | TOLERANCE     |           |
|----------------|---------------|---------------|-----------|
|                |               | Steel         | Stainless |
| Bore           | All           | ± .001        | ±.001     |
| Hub Dia.       | All           | + .000 - .003 | ±.020     |
| Bore Length    | All           | ±1/16         | ±1/64     |
| Overall Length | 1-3/4 - 4-1/4 | ±1/64         | ±1/64     |
|                | 5 - 10-5/8    | ±1/32         | ±1/32     |



### Reference Pages

Lubrication—320

Mounting—320

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Steel          |           | Stainless Steel |           | Universal Joints |              |          |                |           |           |                     | Boot Kits† †† |      |                |           |
|----------------|-----------|-----------------|-----------|------------------|--------------|----------|----------------|-----------|-----------|---------------------|---------------|------|----------------|-----------|
| Catalog Number | Item Code | Catalog Number  | Item Code | Bore**           | Bore Length* | Hub Dia. | Overall Length | Keyway    | Setscrew  | Approx. Weight Lbs. | A             | B    | Catalog Number | Item Code |
| J37B           | 08426     | JS37B           | 08472     | 3/16             | 11/16        | 3/8      | 1-3/4          | -         | -         | .04                 | 0.72          | 0.88 | UB37           | 47602     |
| J37            | 08400     | JS37            | 08452     | -                | -            | 3/8      | 1-3/4          | -         | -         | .05                 |               |      |                |           |
| J50B           | 08428     | JS50B           | 08474     | 1/4              | 3/4          | 1/2      | 2              | -         | -         | .08                 | 0.95          | 0.88 | UB50           | 47603     |
| J50            | 08402     | JS50            | 08454     | -                | -            | 1/2      | 2              | -         | -         | .10                 |               |      |                |           |
| J62B           | 08430     | JS62B           | 08476     | 5/16             | 13/16        | 5/8      | 2-1/4          | -         | -         | .14                 | 1.13          | 1.03 | UB62           | 47604     |
| J62            | 08404     | JS62            | 08456     | -                | -            | 5/8      | 2-1/4          | -         | -         | .18                 |               |      |                |           |
| J75B           | 08432     | JS75B           | 08478     | 3/8              | 31/32        | 3/4      | 2-11/16        | -         | -         | .24                 | 1.38          | 1.25 | UB75           | 47605     |
| J75            | 08406     | JS75            | 08458     | -                | -            | 3/4      | 2-11/16        | -         | -         | .30                 |               |      |                |           |
| J87B           | 08434     | JS87B           | 08480     | 7/16             | 1-1/32       | 7/8      | 3              | -         | -         | .31                 | 1.50          | 1.38 | UB87           | 47606     |
| J87            | 08408     | JS87            | 08460     | -                | -            | 7/8      | 3              | -         | -         | .45                 |               |      |                |           |
| J100A-1/2      | 72472     | -               | -         | 1/2              | 1-3/16       | 1        | 3-3/8          | 1/8x1/16  | 1/4-20NC  | .50                 |               |      |                |           |
| J100B          | 08436     | JS100B          | 08482     | 1/2              | 1-3/16       | 1        | 3-3/8          | -         | -         | .50                 | 1.50          | 1.50 | UB100          | 47607     |
| J100           | 08410     | JS100           | 08462     | -                | -            | 1        | 3-3/8          | -         | -         | .66                 |               |      |                |           |
| J112B          | 72474     | JS112B          | 72483     | 9/16             | 1-7/32       | 1-1/8    | 3-1/2          | -         | -         | .69                 | 1.75          | 1.63 | UB112          | 72491     |
| J112           | 72475     | JS112           | 72484     | -                | -            | 1-1/8    | 3-1/2          | -         | -         | .88                 |               |      |                |           |
| J125A-5/8      | 72476     | -               | -         | 5/8              | 1-1/4        | 1-1/4    | 3-3/4          | 3/16x3/32 | 5/16-18NC | .88                 |               |      |                |           |
| J125B          | 08438     | JS125B          | 08484     | 5/8              | 1-1/4        | 1-1/4    | 3-3/4          | -         | -         | .88                 | 1.88          | 2.09 | UB125          | 47608     |
| J125           | 08412     | JS125           | 08464     | -                | -            | 1-1/4    | 3-3/4          | -         | -         | 1.15                |               |      |                |           |
| J150A-3/4      | 72477     | -               | -         | 3/4              | 1-11/32      | 1-1/2    | 4-1/4          | 3/16x3/32 | 5/16-18NC | 1.44                |               |      |                |           |
| J150B          | 08440     | JS150B          | 08486     | 3/4              | 1-11/32      | 1-1/2    | 4-1/4          | -         | -         | 1.44                | 2.25          | 2.06 | UB150          | 47609     |
| J150           | 08414     | JS150           | 08466     | -                | -            | 1-1/2    | 4-1/4          | -         | -         | 1.81                |               |      |                |           |
| J175A-7/8      | 72478     | -               | -         | 7/8              | 1-9/16       | 1-3/4    | 5              | 3/16x3/32 | 5/16-18NC | 2.31                |               |      |                |           |
| J175B          | 08442     | JS175B          | 08488     | 7/8              | 1-9/16       | 1-3/4    | 5              | -         | -         | 2.31                | 2.69          | 2.63 | UB175          | 47610     |
| J175           | 08416     | JS175           | 08468     | -                | -            | 1-3/4    | 5              | -         | -         | 2.86                |               |      |                |           |
| J200A-1        | 72479     | -               | -         | 1                | 1-5/8        | 2        | 5-1/2          | 1/4x1/8   | 3/8-16NC  | 3.31                |               |      |                |           |
| J200B          | 08444     | JS200B          | 08490     | 1                | 1-5/8        | 2        | 5-1/2          | -         | -         | 3.31                | 2.69          | 3.00 | UB200          | 47611     |
| J200           | 08418     | JS200           | 08470     | -                | -            | 2        | 5-1/2          | -         | -         | 4.06                |               |      |                |           |
| J250A-1-1/4    | 72480     | -               | -         | 1-1/4            | 2-3/32       | 2-1/2    | 7              | 1/4x1/8   | 3/8-16NC  | 6.81                |               |      |                |           |
| J250B          | 08446     | JS250B          | 72485     | 1-1/4            | 2-3/32       | 2-1/2    | 7              | -         | -         | 6.81                | 3.50          | 4.00 | UB250          | 47612     |
| J250           | 08420     | JS250           | 72486     | -                | -            | 2-1/2    | 7              | -         | -         | 8.25                |               |      |                |           |
| J300B          | 08448     | JS300B          | 72487     | 1-1/2            | 2-27/32      | 3        | 9              | -         | -         | 12.5                | 4.25          | 4.63 | UB300          | 47613     |
| J300           | 08422     | JS300           | 72488     | -                | -            | 3        | 9              | -         | -         | 15.25               |               |      |                |           |
| J400B          | 08450     | JS400B          | 72489     | 2                | 3-1/8        | 4        | 10-5/8         | -         | -         | 25.8                | 6.00          | 5.50 | UB400          | 47614     |
| J400           | 08424     | JS400           | 72490     | -                | -            | 4        | 10-5/8         | -         | -         | 31.3                |               |      |                |           |

\*Approximate Hub Projection

†Each Kit contains (2) Boots and (4) Ties together with complete instructions for installation and lubrication.

\*\*Style A includes bore, keyway and setscrew. Style B includes bore only. Units without an A & B letter have a solid bore.

†† Assemble the boot to be positioned central to the joint.

The shape of the boot may vary from the image shown above.

## UJAS/UJNL Series BOS-Trong®

Cast Steel

A BOS-trong joint is composed of two yokes and a center kit. BOS-trong joints may be purchased assembled, or as separate yokes and center kits. Individually boxed.

**AVAILABLE IN TWO SIZES**

**EQUIPPED WITH NEEDLE BEARINGS**

**PRECISION MACHINED FOR LONG, SMOOTH OPERATION**

**CONTINUOUS OR INTERMITTENT SERVICE**

**HIGH CAPACITY WITH MINIMUM SWING DIAMETERS**

**AVAILABLE WITH ROUND, SQUARE OR HEXAGON HOLES**

**COMPLETE WITH KEYWAY AND SETSCREW**

**REPLACEABLE CENTER KITS**

**FITTING FOR LUBRICATION**



## Selection

Universal Joints are used in many different types of applications and under a wide variety of operating conditions. No convenient method can be presented for determining ratings for all possible circumstances. Performance will be affected by vibration, shock loading, high temperature, dusty environment, etc.

The simplest solution to this problem is to provide approximate ratings of universal joints operating at various angles and speeds under normal service conditions.

The suggested ratings are for general use in applications where two joints are arranged at equal angles with the bearing pins of the intermediate yokes in line with each other.

Service torque ratings of the two sizes of BOS-trong Needle Bearing universals are listed in tables. Ratings for intermediate speeds and/or angles not shown may be found by interpolation.

## Load Data

**APPROXIMATE TORQUE RATINGS (LB. INS.)**

| Speed<br>RPM | UJAS Series                                               |      |      |      |      |      | UJNL Series                                               |      |      |      |      |      |
|--------------|-----------------------------------------------------------|------|------|------|------|------|-----------------------------------------------------------|------|------|------|------|------|
|              | Operating Angle* — Degrees (Deviation from Straight Line) |      |      |      |      |      | Operating Angle† — Degrees (Deviation from Straight Line) |      |      |      |      |      |
|              | Up to<br>3°                                               | 5°   | 8°   | 12°  | 20°  | 30°  | Up to<br>3°                                               | 5°   | 8°   | 12°  | 20°  | 30°  |
| 1800         | 610                                                       | 515  | 440  | —    | —    | —    | 845                                                       | 710  | 610  | —    | —    | —    |
| 1200         | 700                                                       | 590  | 505  | 435  | —    | —    | 965                                                       | 815  | 695  | 600  | —    | —    |
| 900          | 770                                                       | 650  | 555  | 480  | 365  | —    | 1060                                                      | 895  | 765  | 660  | 500  | —    |
| 600          | 880                                                       | 740  | 635  | 545  | 415  | 260  | 1210                                                      | 1020 | 875  | 755  | 575  | 355  |
| 300          | 1110                                                      | 935  | 800  | 690  | 525  | 325  | 1530                                                      | 1290 | 1100 | 950  | 725  | 450  |
| 200          | 1270                                                      | 1070 | 915  | 790  | 600  | 370  | 1750                                                      | 1480 | 1260 | 1090 | 825  | 515  |
| 100          | 1600                                                      | 1350 | 1150 | 995  | 755  | 470  | 2210                                                      | 1860 | 1590 | 1370 | 1040 | 645  |
| 50           | 2020                                                      | 1700 | 1450 | 1250 | 950  | 590  | 2780                                                      | 2350 | 2000 | 1730 | 1310 | 815  |
| 25           | 2540                                                      | 2140 | 1830 | 1580 | 1200 | 745  | 3500                                                      | 2960 | 2530 | 2180 | 1650 | 1020 |
| 10           | 3450                                                      | 2900 | 2480 | 2140 | 1630 | 1010 | 4760                                                      | 4010 | 3430 | 2960 | 2250 | 1390 |

NON-OPERATING FLEX-ANGLE — 90°

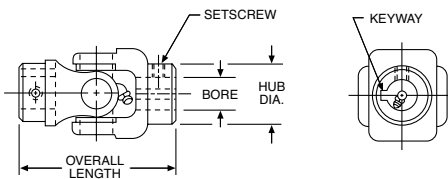
\*Maximum Angles (Momentary) — 45°

†Maximum Angle (Momentary) — 35°

# Universal Joints

## UJAS/UJNL Series BOS-Trong®

### Cast Steel



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE     |
|------------|-----|---------------|
| Bore       | All | + .002 - .000 |

### Reference Pages

Lubrication—320

Mounting—320

### ORDERING INFORMATION

Joints can also be ordered in various combinations of round, square or hex holes. To order the combination desired, specify "UJAS" or "UJNL" and hole size and type as listed in table of Yokes, Page 111. Use "S" for square and "H" for hexagon.

All joints are furnished with keyways and setscrews.

#### DIMENSION IN INCHES

| Overall Length | Bore   |        | Hub Dia. |       | App. Wt. (Lbs.)       | Catalog Number | Item Code  |        |  |  |
|----------------|--------|--------|----------|-------|-----------------------|----------------|------------|--------|--|--|
|                | Hub-A  | Hub-B  | Hub-A    | Hub-B |                       |                |            |        |  |  |
| UJAS SERIES    |        |        |          |       | SWING DIAMETER 2-1/2" |                |            |        |  |  |
| 5              | 5/8    | 5/8    | 1-5/8    | 1-5/8 | 2                     | UJAS 10-10     | G01409     |        |  |  |
|                |        | 3/4    |          |       |                       | UJAS 10-12     | G01410     |        |  |  |
|                |        | 13/16  |          |       |                       | UJAS 10-13     | G01411     |        |  |  |
|                |        | 7/8    |          |       |                       | UJAS 10-14     | G01412     |        |  |  |
|                |        | 15/16  |          |       |                       | UJAS 10-15     | G01413     |        |  |  |
|                |        | 1      |          |       |                       | UJAS 10-16     | G01414     |        |  |  |
|                |        | 1-1/8  |          | 2-1/4 |                       | UJAS 10-18     | G01415     |        |  |  |
| 5              | 3/4    | 3/4    | 1-5/8    | 1-5/8 | 2                     | UJAS 12-12     | G01416     |        |  |  |
|                |        | 13/16  |          |       |                       | UJAS 12-13     | G01417     |        |  |  |
|                |        | 7/8    |          |       |                       | UJAS 12-14     | G01418     |        |  |  |
|                |        | 15/16  |          |       |                       | UJAS 12-15     | G01419     |        |  |  |
|                |        | 1      |          |       |                       | UJAS 12-16     | G01420     |        |  |  |
|                |        | 1-1/8  |          |       |                       | 2-1/4          | UJAS 12-18 | G01421 |  |  |
| 5              | 13/16  | 13/16  | 1-5/8    | 1-5/8 | 2                     | UJAS 13-13     | G01422     |        |  |  |
|                |        | 7/8    |          |       |                       | UJAS 13-14     | G01423     |        |  |  |
|                |        | 15/16  |          |       |                       | UJAS 13-15     | G01424     |        |  |  |
|                |        | 1      |          |       |                       | UJAS 13-16     | G01425     |        |  |  |
|                |        | 1-1/8  |          |       |                       | 2-1/4          | UJAS 13-18 | G01426 |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
| 5              | 7/8    | 7/8    | 1-5/8    | 1-5/8 | 2                     | UJAS 14-14     | G01427     |        |  |  |
|                |        | 15/16  |          |       |                       | UJAS 14-15     | G01428     |        |  |  |
|                |        | 1      |          |       |                       | UJAS 14-16     | G01429     |        |  |  |
|                |        | 1-1/8  |          |       |                       | 2-1/4          | UJAS 14-18 | G01430 |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
| 5              | 15/16  | 15/16  | 1-5/8    | 1-5/8 | 2                     | UJAS 15-15     | G01431     |        |  |  |
|                |        | 1      |          |       |                       | UJAS 15-16     | G01432     |        |  |  |
|                |        | 1-1/8  |          |       |                       | 2-1/4          | UJAS 15-18 | G01433 |  |  |
| 5              | 1      | 1      | 1-5/8    | 1-5/8 | 2                     | UJAS 16-16     | G01434     |        |  |  |
|                |        | 1-1/8  |          |       |                       | 2-1/4          | UJAS 16-18 | G01435 |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
| 5              | 1-1/8  | 1-1/8  | 2-1/4    | 2-1/4 | 3                     | UJAS 18-18     | G01436     |        |  |  |
| UJNL SERIES    |        |        |          |       | SWING DIAMETER 2-3/4" |                |            |        |  |  |
| 5-1/2          | 1      | 1      | 2        | 2     | 3-3/4                 | UJNL 16-16     | 17354      |        |  |  |
|                |        | 1-1/8  |          |       |                       | UJNL 16-18     | 17356      |        |  |  |
|                |        | 1-3/16 |          |       |                       | UJNL 16-19     | 17358      |        |  |  |
|                |        | 1-1/4  |          |       |                       | UJNL 16-20     | 17360      |        |  |  |
|                |        | 1-3/8  |          |       |                       | UJNL 16-22     | 17362      |        |  |  |
|                |        | 1-7/16 |          |       |                       | UJNL 16-23     | 17364      |        |  |  |
|                |        | 1-1/2  |          |       |                       | UJNL 16-24     | 17366      |        |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
| 5-1/2          | 1-1/8  | 1-1/8  | 2-1/4    | 2-1/4 | 3-3/4                 | UJNL 18-18     | 17368      |        |  |  |
|                |        | 1-3/16 |          |       |                       | UJNL 18-19     | 17370      |        |  |  |
|                |        | 1-1/4  |          |       |                       | UJNL 18-20     | 17372      |        |  |  |
|                |        | 1-3/8  |          |       |                       | UJNL 18-22     | 17374      |        |  |  |
|                |        | 1-7/16 |          |       |                       | UJNL 18-23     | 17376      |        |  |  |
|                |        | 1-1/2  |          |       |                       | UJNL 18-24     | 17378      |        |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
| 5-1/2          | 1-3/16 | 1-3/16 | 2-1/4    | 2     | 3-1/4                 | UJNL 19-19     | 17380      |        |  |  |
|                |        | 1-1/4  |          |       |                       | UJNL 19-20     | 17382      |        |  |  |
|                |        | 1-3/8  |          |       |                       | UJNL 19-22     | 17384      |        |  |  |
|                |        | 1-7/16 |          |       |                       | UJNL 19-23     | 17386      |        |  |  |
|                |        | 1-1/2  |          |       |                       | UJNL 19-24     | 17388      |        |  |  |
|                |        |        |          |       |                       |                |            |        |  |  |
| 5-1/2          | 1-1/4  | 1-1/4  | 2-1/4    | 2     | 3-1/4                 | UJNL 20-20     | 17390      |        |  |  |
|                |        | 1-3/8  |          |       |                       | UJNL 20-22     | 17392      |        |  |  |
|                |        | 1-7/16 |          |       |                       | UJNL 20-23     | 17394      |        |  |  |
|                |        | 1-1/2  |          |       |                       | UJNL 20-24     | 17396      |        |  |  |
| 5-1/2          | 1-3/8  | 1-3/8  | 2-1/4    | 2-1/4 | 3-1/4                 | UJNL 22-22     | 17398      |        |  |  |
|                |        | 1-7/16 |          |       |                       | UJNL 22-23     | 17400      |        |  |  |
|                |        | 1-1/2  |          |       |                       | UJNL 22-24     | 17402      |        |  |  |
| 5-1/2          | 1-7/16 | 1-7/16 | 2-1/4    | 2-1/4 | 3-1/4                 | UJNL 23-23     | 17404      |        |  |  |
|                |        | 1-1/2  |          |       |                       | UJNL 23-24     | 17406      |        |  |  |
| 5-1/2          | 1-1/2  | 1-1/2  | 2-1/4    | 2-1/4 | 3-1/4                 | UJNL 24-24     | 17408      |        |  |  |

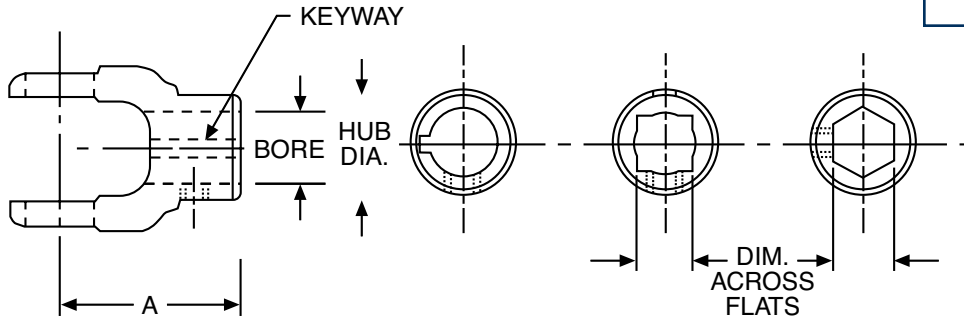
## UJYS/UJL Series Cast Steel

### Yokes

These yokes are for assembly with UJASC/UJLC Center Kits.  
All yokes are furnished with a 3/8-16 hex socket setscrew otherwise noted.

### STANDARD TOLERANCES

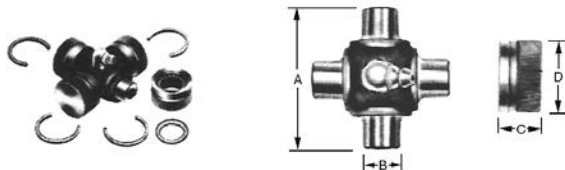
| DIMENSION |         | TOLERANCE                                      |
|-----------|---------|------------------------------------------------|
| Bore      | Round   | +.002- .000                                    |
|           | Square  | 3/4-13/16 +.000-+.002<br>7/8-1-1/2 +.001 +.003 |
|           | Hexagon | +.002 +.004                                    |



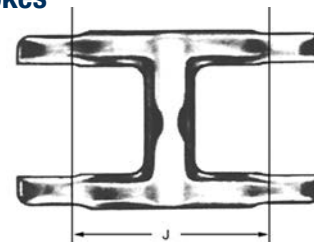
### ALL DIMENSIONS IN INCHES

| A           | Round Bores |              |                |                   |                       |                |           |                                                                                                                                                                                                                                                                                      |          |                       | Square Bores      |                |           | Hexagon Bores     |                |           |  |
|-------------|-------------|--------------|----------------|-------------------|-----------------------|----------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------|-------------------|----------------|-----------|-------------------|----------------|-----------|--|
|             | Bore        | Hub Dia.     | Keyway         | Setscrew Location | Approx. Weight (Lbs.) | Catalog Number | Item Code | Dim. Across Flats                                                                                                                                                                                                                                                                    | Hub Dia. | Approx. Weight (Lbs.) | Setscrew Location | Catalog Number | Item Code | Setscrew Location | Catalog Number | Item Code |  |
| UJYS Series |             |              |                |                   |                       |                |           |                                                                                                                                                                                                                                                                                      |          |                       |                   |                |           |                   |                |           |  |
| 2-1/2       | 0.625       | 1.63         | 3/16x3/32      | (4)               | 3/4                   | UJYS 10        | G01437    | —                                                                                                                                                                                                                                                                                    | —        | —                     | —                 | —              | —         | —                 | —              | —         |  |
|             | 0.750       |              | 3/16x3/32, (5) | (3)               |                       | UJYS12         | G01438    | 0.750                                                                                                                                                                                                                                                                                | 1.63     | 3/4                   | (3)               | UJYS 12S       | G01444    | —                 | —              | —         |  |
|             | 0.813       |              | 1/4x1/8, (5)   | (3)               |                       | UJYS 13        | G01439    | —                                                                                                                                                                                                                                                                                    | —        | —                     | —                 | —              | —         | —                 | —              |           |  |
|             | 0.875       |              | (1)            | (4)               |                       | UJYS14         | G01440    | .875 (7)                                                                                                                                                                                                                                                                             | 2.25     | 3/4                   | (4)               | UJYS 14S       | G01445    | (3)               | UJYS 14H       | G01447    |  |
|             | 0.938       | 1/4x1/8, (5) | 5/16-24, (4)   | UJYS15            | G01441                | —              | —         | —                                                                                                                                                                                                                                                                                    | —        | —                     | —                 | —              | —         | —                 |                |           |  |
|             | 1.000       | (1)          |                | UJYS16            | G01442                | 1.000 (7)      | 2.25      | 1                                                                                                                                                                                                                                                                                    | (4)      | UJYS 16S              | G01446            | —              | —         | —                 |                |           |  |
|             | 1.125       | 2.25         |                | (2)               | (4)                   | 1-1/4          | UJYS18    | G01443                                                                                                                                                                                                                                                                               | —        | —                     | —                 | —              | —         | —                 | —              |           |  |
| UJL Series  |             |              |                |                   |                       |                |           |                                                                                                                                                                                                                                                                                      |          |                       |                   |                |           |                   |                |           |  |
| 2-3/4       | 1.000       | 2.00         | 1/4x1/8 (3)    | (4)               | 1-1/2                 | UJL16          | 17424     | 1.000                                                                                                                                                                                                                                                                                | 2.00     | 1-1/2                 | (4)               | UJL16S         | 17450     | —                 | —              | —         |  |
|             | 1.125       | 2.25         | 1/4x1/8        | (5)               | 1-1/4                 | UJL18          | 17426     | 1.126                                                                                                                                                                                                                                                                                | 2.25     | 1-1/2                 | (5)               | —              | —         | —                 | —              | —         |  |
|             | 1.188       |              |                |                   |                       | UJL19          | 17428     | (1) Two keyways 180° apart, 3/16x3/32 and 1/4x1/8<br>(2) Two keyways 180° apart, 1/4x1/8 and 5/16x5/32<br>(3) Located 90° from shown<br>(4) Located as shown<br>(5) Located 180° from shown<br>(6) Additional setscrew over keyway<br>(7) Has both .875 and 1.000 square bores @ 45° |          |                       |                   |                |           |                   |                |           |  |
|             | 1.250       |              |                |                   |                       | UJL20          | 17430     |                                                                                                                                                                                                                                                                                      |          |                       |                   |                |           |                   |                |           |  |
|             | 1.375       |              |                |                   |                       | UJL22          | 17432     |                                                                                                                                                                                                                                                                                      |          |                       |                   |                |           |                   |                |           |  |
|             | 1.438       |              | 3/8x3/16       | (4), (6)          |                       | UJL23          | 17434     |                                                                                                                                                                                                                                                                                      |          |                       |                   |                |           |                   |                |           |  |
|             | 1.500       |              |                |                   |                       | UJL24          | 17436     |                                                                                                                                                                                                                                                                                      |          |                       |                   |                |           |                   |                |           |  |

### Center Kits



### Double Yokes



### ALL DIMENSIONS IN INCHES

| Center Kits*         |      |      |        |                       |              |           | Double Yokes         |                         |                       |                |           |
|----------------------|------|------|--------|-----------------------|--------------|-----------|----------------------|-------------------------|-----------------------|----------------|-----------|
| A                    | B    | C    | D      | Approx. Weight (Lbs.) | Catalog Item | Item Code | J                    | Maximum Operating Angle | Approx. Weight (Lbs.) | Catalog Number | Item Code |
| <b>UJYS Series**</b> |      |      |        |                       |              |           | <b>UJYS Series**</b> |                         |                       |                |           |
| 1-61/64              | .547 | .594 | 0.938  | 1/2                   | UJASC        | G06130    | 2-1/2                | 15°                     | 1                     | UJYSD          | G06133    |
| <b>UJS Series***</b> |      |      |        |                       |              |           | <b>UJS Series***</b> |                         |                       |                |           |
| 1-61/64              | .547 | .594 | 0.969  | 1/2                   | UJSC-969     | G06146    | 2-1/2                | 15°                     | 1                     | UJSD           | 17460     |
| <b>UJL Series</b>    |      |      |        |                       |              |           | —                    |                         |                       |                |           |
| 2-5/16               | .644 | .625 | 1.0625 | 3/4                   | UJLC         | 17466     | —                    | —                       | —                     | —              | —         |

\* Center kits include 1 cross, 4 bearings and 4 lock rings.

\*\* Yokes from UJYS Series and double yoke UJYSD are only compatible with UJASC center kit.

\*\*\* Yokes from UJS Series (old series) and double yoke UJSD are only compatible with UJSC-969 center kit.

# Universal Joints

## JP Series Single and Double Molded Type



### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE     |
|------------|-----|---------------|
| Bore       | All | + .001 - .000 |

### Reference Pages

Mounting — 320

### Materials

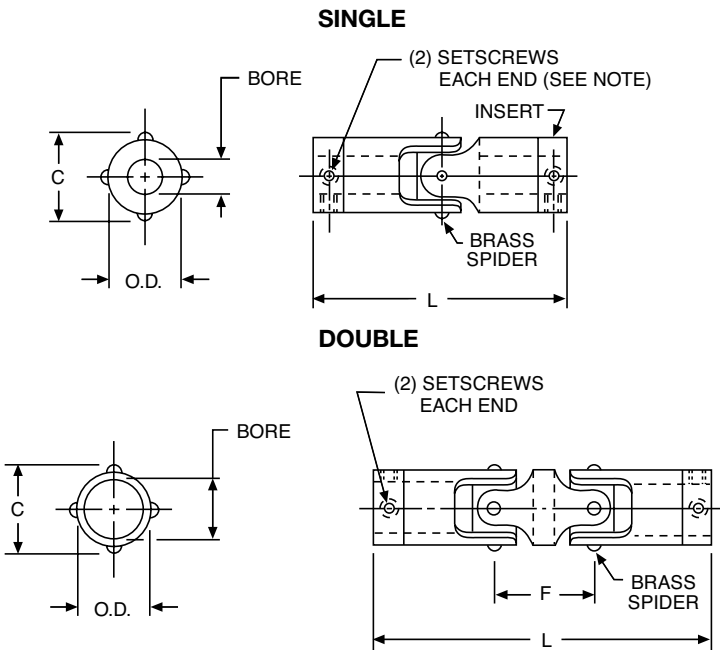
Delrin Body  
Nickel Plated Brass Spider and Insert

**MOLDED DELRIN BODY** provides vibration dampening and electrical insulation.

**MAX. ANGULAR DISPLACEMENT** — Single 45° — Double 90°

**MAX. AMBIENT TEMPERATURE** — 180°F

**COMPLETE WITH SETSCREWS**



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore | Bore Depth (Typical) | O.D. | C   | L       |         | Double Only |                      | Setscrew | Single         |           | Double         |           |
|------|----------------------|------|-----|---------|---------|-------------|----------------------|----------|----------------|-----------|----------------|-----------|
|      |                      |      |     | Single  | Double  | F           | Max. Parallel Offset |          | Catalog Number | Item Code | Catalog Number | Item Code |
| 1/8  | .39                  | 1/4  | .27 | 1-3/64  | 1-23/64 | 5/16        | .22                  | #4 - 40  | JP25 - 1/8*    | 54194     | JPD25 - 1/8    | 54202     |
| 1/8  | .52                  | 3/8  | .41 | 1-31/64 | 2       | 17/32       | .36                  | #4 - 40  | JP37 - 1/8*    | 54195     | JPD37 - 1/8    | 54203     |
| 3/16 | .63                  | 1/2  | .54 | 1-13/16 | 2-7/16  | 5/8         | .43                  | #6 - 32  | JP37 - 3/16    | 54196     | JPD37 - 3/16   | 54204     |
| 3/16 | .63                  | 1/2  | .54 | 1-13/16 | 2-7/16  | 5/8         | .43                  | #6 - 32  | JP50 - 3/16    | 54197     | JPD50 - 3/16   | 54205     |
| 1/4  | .86                  | 5/8  | .68 | 2-41/64 | 3-33/64 | 7/8         | .61                  | #8 - 32  | JP50 - 1/4     | 54198     | JPD50 - 1/4    | 54206     |
| 5/16 | .86                  | 5/8  | .68 | 2-41/64 | 3-33/64 | 7/8         | .61                  | #8 - 32  | JP62 - 1/4     | 54199     | JPD62 - 1/4    | 54207     |
| 3/8  | .86                  | 5/8  | .68 | 2-41/64 | 3-33/64 | 7/8         | .61                  | #8 - 32  | JP62 - 5/16    | 54200     | JPD62 - 5/16   | 54208     |
| 3/8  | .86                  | 5/8  | .68 | 2-41/64 | 3-33/64 | 7/8         | .61                  | #8 - 32  | JP62 - 3/8     | 54201     | JPD62 - 3/8    | 54209     |

\* One setscrew each end.

### LOAD DATA

| Basic Size | Maximum Torque† (Lb. Ins.) |        |
|------------|----------------------------|--------|
|            | Single                     | Double |
| 25         | 5                          | 2.5    |
| 37         | 16                         | 7      |
| 50         | 26                         | 12     |
| 62         | 60                         | 47     |

† This is the ultimate or breaking torque for static, zero angle conditions.  
Actual operating conditions will dictate use of significantly lower values.

## JPE Series With Slide Extension

Molded Type

**MOLDED DELRIN BODY** — provides vibration dampening and electrical insulation.

**MAX. ANGULAR DISPLACEMENT** — Single 45° — Double 90°

**MAX. AMBIENT TEMPERATURE** — 180°F

**COMPLETE WITH SETSCREWS**



### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE     |
|------------|-----|---------------|
| Bore       | All | + .001 - .000 |

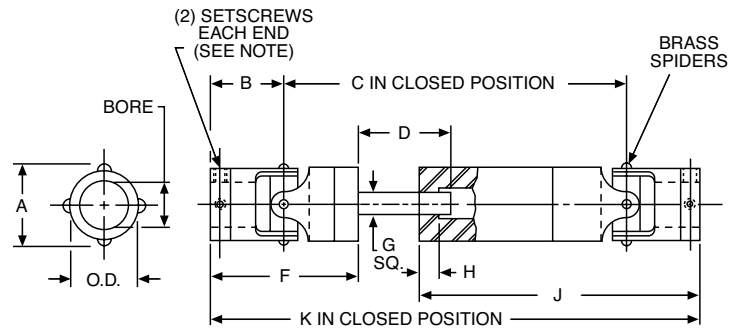
### Reference Pages

Mounting — 312

### Materials

Delrin Body

Nickel Plated Brass Spider and Insert



### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore | Bore Depth (Typical) | O.D. | A   | B   | C       | D     | E   | F       | G (Sq.) | H     | J       | K       | Setscrew | Catalog Number | Item Code |
|------|----------------------|------|-----|-----|---------|-------|-----|---------|---------|-------|---------|---------|----------|----------------|-----------|
| 1/8  | .52                  | 3/8  | .41 | .74 | 2-59/64 | 1-1/8 | -   | 1-47/64 | 3/16    | 23/64 | 2-43/64 | 4-13/32 | #4 - 40  | JPE37 - 1/8    | 54210     |
| 3/16 | .52                  | 3/8  | .41 | .74 | 2-59/64 | 1-1/8 | -   | 1-47/64 | 3/16    | 23/64 | 2-43/64 | 4-13/32 | #4 - 40  | JPE37 - 3/16   | 54211     |
| 3/16 | .63                  | 1/2  | .54 | .91 | 2-23/64 | 1-1/8 | 3/8 | 1-34/64 | 3/16    | 23/64 | 2-9/16  | 4-11/64 | #6 - 32  | JPE50 - 3/16   | 54212     |
| 1/4  | .63                  | 1/2  | .54 | .91 | 2-23/64 | 1-1/8 | 3/8 | 1-34/64 | 3/16    | 23/64 | 2-9/16  | 4-11/64 | #6 - 32  | JPE50 - 1/4    | 54213     |

### LOAD DATA

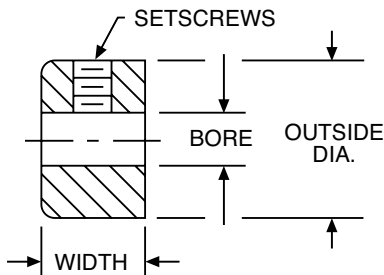
| Basic Size | Maximum Recommended Torque (Lb. Ins.) |      |
|------------|---------------------------------------|------|
|            | Closed                                | Open |
| JPE37      | 8                                     | 5    |
| JPE50      | 14                                    | 10   |

†This is the ultimate or breaking torque for static, zero angle conditions. Actual operating conditions will dictate use of significantly lower values.

# Setscrew Collars

## SC/SSC Series

### Steel and Stainless Steel



#### STANDARD TOLERANCES

| DIMENSIONS |          | TOLERANCE     |
|------------|----------|---------------|
| Bore       | 1/8-1    | + .001 + .003 |
|            | 1-1/16-3 | + .001 + .004 |

#### Materials

Stainless Steel—Type 303 Austenitic.  
Steel—Low Carbon, Zinc plated finish.

**STEEL BORE SIZES FROM 1/8" TO 3"**

**STAINLESS STEEL BORE SIZES FROM 1/8" TO 2"**

**STAINLESS STEEL COLLARS ARE CORROSION-RESISTANT AND NON-MAGNETIC** suitable for temperatures up to 800°F. Ideal for applications requiring hygienic cleanliness.

**ALL COLLARS COMPLETE WITH STANDARD HOLLOW POINT SETSCREWS.**

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | Outside Diameter | Width | Alloy Steel    |           | Stainless Steel |           |
|---------|------------------|-------|----------------|-----------|-----------------|-----------|
|         |                  |       | Catalog Number | Item Code | Catalog Number  | Item Code |
| 1/8     | 3/8              | 1/4   | SC12           | 67697     | SSC12           | 67740     |
| 3/16    | 7/16             | 1/4   | SC18           | 67698     | SSC18           | 67741     |
| 1/4     | 1/2              | 5/16  | SC25           | 67699     | SSC25           | 67742     |
| 5/16    | 5/8              | 11/32 | SC31           | 67700     | SSC31           | 67743     |
| 3/8     | 3/4              | 3/8   | SC37           | 67701     | SSC37           | 67744     |
| 7/16    | 7/8              | 7/16  | SC43           | 67702     | —               | —         |
| 1/2     | 1                | 7/16  | SC50           | 67703     | SSC50           | 67745     |
| 9/16    | 1                | 7/16  | SC56           | 67704     | —               | —         |
| 5/8     | 1-1/8            | 1/2   | SC62           | 67705     | SSC62           | 67746     |
| 11/16   | 1-1/4            | 9/16  | SC68           | 67706     | —               | —         |
| 3/4     | 1-1/4            | 9/16  | SC75           | 67707     | SSC75           | 67747     |
| 13/16   | 1-1/4            | 9/16  | SC81           | 67708     | —               | —         |
| 7/8     | 1-1/2            | 9/16  | SC87           | 67709     | SSC87           | 67748     |
| 15/16   | 1-5/8            | 9/16  | SC93           | 67710     | —               | —         |
| 1       | 1-1/2            | 5/8   | SC100          | 67711     | SSC100          | 67749     |
| 1-1/16  | 1-3/4            | 5/8   | SC106          | 67712     | —               | —         |
| 1-1/8   | 1-3/4            | 5/8   | SC112          | 67713     | SSC112          | 67784     |
| 1-3/16  | 2                | 11/16 | SC118          | 67714     | —               | —         |
| 1-1/4   | 2                | 11/16 | SC125          | 67715     | SSC125          | 67785     |
| 1-5/16  | 2-1/8            | 11/16 | SC131          | 67716     | —               | —         |
| 1-3/8   | 2-1/8            | 3/4   | SC137          | 67717     | —               | —         |
| 1-7/16  | 2-1/4            | 3/4   | SC143          | 67718     | —               | —         |
| 1-1/2   | 2-1/4            | 3/4   | SC150          | 67719     | SSC150          | 67788     |
| 1-9/16  | 2-1/2            | 13/16 | SC156          | 67720     | —               | —         |
| 1-5/8   | 2-1/2            | 13/16 | SC162          | 67721     | —               | —         |
| 1-11/16 | 2-1/2            | 13/16 | SC168          | 67722     | —               | —         |
| 1-3/4   | 2-5/8            | 7/8   | SC175          | 67723     | SSC175          | 67789     |
| 1-13/16 | 2-5/8            | 7/8   | SC181          | 67724     | —               | —         |
| 1-7/8   | 2-5/8            | 7/8   | SC187          | 67725     | —               | —         |
| 1-15/16 | 3                | 7/8   | SC193          | 67726     | —               | —         |
| 2       | 3                | 7/8   | SC200          | 67727     | SSC200          | 67790     |
| 2-1/8   | 3                | 7/8   | SC212          | 67728     | —               | —         |
| 2-3/16  | 3-1/4            | 15/16 | SC218          | 67729     | —               | —         |
| 2-1/4   | 3-1/4            | 15/16 | SC225          | 67730     | —               | —         |
| 2-5/16  | 3-1/4            | 15/16 | SC231          | 67731     | —               | —         |
| 2-3/8   | 3-1/4            | 15/16 | SC237          | 67732     | —               | —         |
| 2-7/16  | 3-1/2            | 1     | SC243          | 67733     | —               | —         |
| 2-1/2   | 3-1/2            | 1     | SC250          | 67734     | —               | —         |
| 2-9/16  | 3-3/4            | 1     | SC256          | 67735     | —               | —         |
| 2-11/16 | 4                | 1-1/8 | SC268          | 67736     | —               | —         |
| 2-3/4   | 4                | 1-1/8 | SC275          | 67737     | —               | —         |
| 2-15/16 | 4                | 1-1/8 | SC293          | 67738     | —               | —         |
| 3       | 4                | 1-1/8 | SC300          | 67739     | —               | —         |

# Clamping Collars

## CSC/CSSC Series

### Threaded Type; Steel and Stainless Steel

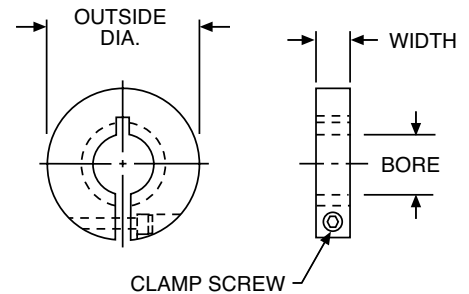
**DESIGN PROVIDES CONVENIENT SETTING, ADJUSTING AND REMOVAL**  
prevents shaft damage.

**OSHA CONFORMANCE** collars have completely recessed screw head.

**BORE THREADS FROM 10-32 TO 200-12**

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore Thread | Outside Dia. | Width | Clamp Screws | Steel          |           | Stainless Steel |           |
|-------------|--------------|-------|--------------|----------------|-----------|-----------------|-----------|
|             |              |       |              | Catalog Number | Item Code | Catalog Number  | Item Code |
| 10-32       | 11/16        | 1/4   | 4-40         | CSC10-32       | 49237     | —               | —         |
| 1/4-20      | 13/16        | 1/4   | 4-40         | CSC25-20       | 49238     | CSSC25-20       | 49265     |
| 1/4-28      |              |       |              | CSC25-28       | 49239     | —               | —         |
| 5/16-18     |              |       |              | CSC31-18       | 49240     | —               | —         |
| 5/16-24     |              |       |              | CSC31-24       | 49241     | —               | —         |
| 3/8-16      | 1-1/16       | 5/16  | 6-32         | CSC37-16       | 49242     | CSSC37-16       | 49269     |
| 3/8-24      | 1-1/4        | 3/8   | 8-32         | CSC37-24       | 49243     | CSSC37-24       | 49270     |
| 1/2-13      |              |       |              | CSC50-13       | 49244     | CSSC50-13       | 49271     |
| 1/2-20      |              |       |              | CSC50-20       | 49245     | CSSC50-20       | 49272     |
| 5/8-11      | 1-1/2        | 13/32 | 10-32        | CSC62-11       | 49246     | CSSC62-11       | 49273     |
| 5/8-18      |              |       |              | CSC62-18       | 49247     | CSSC62-18       | 49274     |
| 3/4-10      | 1-3/4        | 1/2   | 1/4-28       | CSC75-10       | 49248     | CSSC75-10       | 49275     |
| 3/4-16      |              |       |              | CSC75-16       | 49249     | CSSC75-16       | 49276     |
| 7/8-9       | 1-7/8        | 1/2   | 1/4-28       | CSC87-9        | 49250     | —               | —         |
| 7/8-14      |              |       |              | CSC87-14       | 49251     | —               | —         |
| 1-8         | 2            | 1/2   | 1/4-28       | CSC100-8       | 49252     | CSSC100-8       | 49279     |
| 1-14        |              |       |              | CSC100-14      | 49253     | CSSC100-14      | 49280     |
| 1-1/8-7     | 2-1/8        | 1/2   | 1/4-28       | CSC125-7       | 49254     | —               | —         |
| 1-1/8-12    |              |       |              | CSC112-12      | 49255     | —               | —         |
| 1-1/4-7     | 2-1/4        | 1/2   | 1/4-28       | CSC125-7       | 49256     | —               | —         |
| 1-1/4-12    |              |       |              | CSC125-12      | 49257     | CSSC125-12      | 49284     |
| 1-1/2-6     | 2-1/2        | 1/2   | 1/4-28       | CSC150-6       | 49258     | —               | —         |
| 1-1/2-12    |              |       |              | CSC150-12      | 49259     | —               | —         |
| 1-3/4-16    | 3            | 5/8   | 5/16-24      | CSC175-16      | 49260     | —               | —         |
| 2-12        | 3-1/4        | 5/8   | 5/16-24      | CSC200-12      | 49261     | —               | —         |



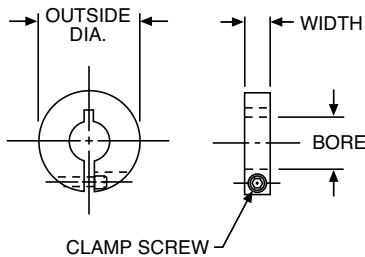
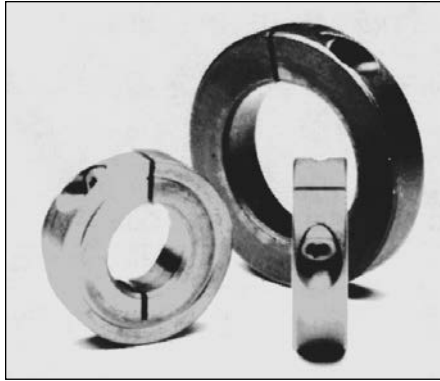
#### Materials

Steel—Low Carbon,  
Black Oxide Finish  
Stainless—Type 303 Austenitic

# Clamping Collars

## CSC/CSSC/CASC Series

### 1 Piece Type Steel, Stainless Steel and Aluminum



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE     |
|------------|-----|---------------|
| Bore       | All | + .003 - .000 |

#### Materials

Steel—Low Carbon  
Black Oxide Finish Stainless—Type 303  
Austenitic

#### Load Data

Capacity is based on a standard steel, one-piece collar mounted with recommended screw torque on a lightly oiled shaft. Capacity is load to move collar .010". Data shown is for guidance only. In applications involving control of axial loads, capacity should be determined experimentally on actual parts involved.

**DESIGN PROVIDES CONVENIENT SETTING, ADJUSTING AND REMOVAL** prevents shaft damage.

**OSHA CONFORMANCE** collars have completely recessed screw head.

**BORE THREADS FROM 1/8" TO 3"**

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | O.D.   | Width | Clamp Screws | Steel          |           | Stainless Steel |           | Aluminum       |           |
|---------|--------|-------|--------------|----------------|-----------|-----------------|-----------|----------------|-----------|
|         |        |       |              | Catalog Number | Item Code | Catalog Number  | Item Code | Catalog Number | Item Code |
| 1/8     | 13/16  | 1/4   | 4-40         | CSC12          | 49000     | CSSC12          | 49094     | —              | —         |
| 3/16    |        |       |              | CSC18          | 49001     | CSSC18          | 49095     | CASC18         | 49048     |
| 1/4     |        |       |              | CSC25          | 49002     | CSSC25          | 49096     | CASC25         | 49049     |
| 5/16    |        |       |              | CSC31          | 49003     | CSSC31          | 49097     | CASC31         | 49050     |
| 3/8     | 1-1/16 | 5/16  | 6-32         | CSC37          | 49004     | CSSC37          | 49098     | CASC37         | 49051     |
| 7/16    |        |       |              | CSC43          | 49005     | CSSC43          | 49099     | —              | —         |
| 1/2     | 1-1/4  | 3/8   | 8-32         | CSC50          | 49006     | CSSC50          | 49100     | CASC50         | 49053     |
| 9/16    |        |       |              | CSC56          | 49007     | CSSC56          | 49101     | CASC56         | 49054     |
| 5/8     | 1-1/2  | 13/32 | 10-32        | CSC62          | 49008     | CSSC62          | 49102     | CASC62         | 49055     |
| 11/16   |        |       |              | CSC68          | 49009     | —               | —         | —              | —         |
| 3/4     | 1-3/4  |       |              | CSC75          | 49010     | CSSC75          | 49104     | CASC75         | 49057     |
| 13/16   |        |       |              | CSC81          | 49011     | —               | —         | —              | —         |
| 7/8     | 1-7/8  |       |              | CSC87          | 49012     | CSSC87          | 49106     | CASC87         | 49059     |
| 15/16   |        |       |              | CSC93          | 49013     | CSSC93          | 49107     | —              | —         |
| 1       | 1-1/16 | 2     |              | CSC100         | 49014     | CSSC100         | 49108     | CASC100        | 49061     |
| 1-1/8   |        |       |              | CSC106         | 49015     | CSSC106         | 49109     | —              | —         |
| 1-1/8   | 2-1/8  | 1/2   | 1/4-28       | CSC112         | 49016     | CSSC112         | 49110     | CASC125        | 49065     |
| 1-3/16  |        |       |              | CSC118         | 49017     | CSSC118         | 49111     | —              | —         |
| 1-3/8   | 2-3/8  |       |              | CSC137         | 49020     | —               | —         | —              | —         |
| 1-5/16  |        |       |              | CSC143         | 49021     | CSSC143         | 49115     | —              | —         |
| 1-1/2   | 2-1/2  |       |              | CSC150         | 49022     | CSSC150         | 49116     | CASC150        | 49069     |
| 1-9/16  |        |       |              | CSC156         | 49023     | —               | —         | —              | —         |
| 1-5/8   | 3      |       |              | CSC162         | 49024     | —               | —         | —              | —         |
| 1-11/16 |        |       |              | CSC168         | 49025     | —               | —         | —              | —         |
| 1-3/4   |        |       |              | CSC175         | 49026     | —               | —         | CASC175        | 49073     |
| 1-7/8   | 3-1/4  | 5/8   | 5/16-24      | CSC187         | 49028     | —               | —         | —              | —         |
| 1-15/16 |        |       |              | CSC193         | 49029     | CSSC193         | 49123     | —              | —         |
| 2       |        |       |              | CSC200         | 49030     | CSSC200         | 49124     | CASC200        | 49077     |
| 2-3/16  | 3-1/2  |       |              | CSC218         | 49033     | —               | —         | —              | —         |
| 2-1/4   |        |       |              | CSC225         | 49034     | —               | —         | —              | —         |
| 2-3/8   |        |       |              | CSC237         | 49036     | —               | —         | —              | —         |
| 2-7/16  | 4      |       |              | CSC243         | 49037     | —               | —         | —              | —         |
| 2-1/2   |        |       |              | CSC250         | 49038     | —               | —         | —              | —         |
| 2-5/8   |        |       |              | CSC262         | 49040     | —               | —         | —              | —         |
| 2-11/16 | 4-1/4  | 3/4   | 3/8-24       | CSC268         | 49041     | —               | —         | —              | —         |
| 2-3/4   |        |       |              | CSC275         | 49042     | —               | —         | —              | —         |
| 2-7/8   |        |       |              | CSC287         | 49044     | —               | —         | —              | —         |
| 2-15/16 | 4-1/2  |       |              | CSC293         | 49045     | —               | —         | —              | —         |
| 3       |        |       |              | CSC300         | 49046     | —               | —         | —              | —         |

#### DIMENSION IN INCHES

| Bore        | Axial Load Capacity (Lbs.) | Screw Size | Recommended Screw Torque (Lb. Ins.) |                 |
|-------------|----------------------------|------------|-------------------------------------|-----------------|
|             |                            |            | Steel                               | Stainless Steel |
| 1/8-5/16    | 400                        | 4-40       | 20                                  | 16              |
| 3/8-7/16    | 600                        | 6-32       | 30                                  | 24              |
| 1/2-9/16    | 1400                       | 8-32       | 55                                  | 35              |
| 5/8-11/16   | 1800                       | 10-32      | 90                                  | 72              |
| 3/4-1-9/16  | 4000                       | 1/4-28     | 220                                 | 170             |
| 1-5/8-2-3/8 | 6500                       | 5/16-24    | 435                                 | 340             |
| 2-7/16-3    | 8500                       | 3/8-24     | 710                                 | 550             |

# Clamping Collars

## 2SC/2SSC Series

### 2 Piece Type Steel, Stainless Steel and Aluminum

#### DESIGN PROVIDES CONVENIENT SETTING, ADJUSTING AND REMOVAL

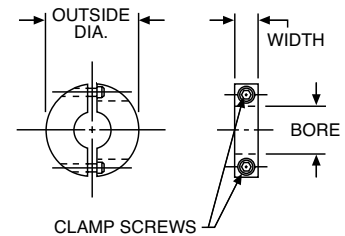
prevents shaft damage.

**OSHA CONFORMANCE** collars have completely recessed screw head.

**BORE THREADS FROM 1/4" TO 3"**

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore                                 | O.D.   | Width            | Clamp<br>Screws | Steel                                |                                  | Stainless Steel                    |                              |
|--------------------------------------|--------|------------------|-----------------|--------------------------------------|----------------------------------|------------------------------------|------------------------------|
|                                      |        |                  |                 | Catalog<br>Number                    | Item<br>Code                     | Catalog<br>Number                  | Item<br>Code                 |
| 1/4<br>5/16                          | 13/16  | 1/4              | 4-40            | 2SC25<br>2SC31                       | 49143<br>49144                   | 2SSC25<br>2SSC31                   | 49190<br>49191               |
| 3/8<br>7/16                          | 1-1/16 | 5/16             | 6-32            | 2SC37<br>2SC43                       | 49145<br>49146                   | 2SSC37<br>2SSC43                   | 49192<br>49193               |
| 1/2<br>9/16                          | 1-1/4  | 3/8              | 8-32            | 2SC50<br>2SC56                       | 49147<br>49148                   | 2SSC50<br>2SSC56                   | 49194<br>49195               |
| 5/8<br>11/16                         | 1-1/2  | 13/32            | 10-32           | 2SC62<br>2SC68                       | 49149<br>49150                   | 2SSC62<br>2SSC68                   | 49196<br>49197               |
| 3/4<br>13/16                         | 1-3/4  | 1/2              | 1/4-28          | 2SC75<br>2SC81                       | 49151<br>49152                   | 2SSC75<br>—                        | 49198<br>—                   |
| 7/8<br>15/16                         | 1-7/8  |                  |                 | 2SC87<br>2SC93                       | 49153<br>49154                   | 2SSC87                             | 49200                        |
| 1<br>1-1/16                          | 2      |                  |                 | 2SC100<br>2SC106                     | 49155<br>49156                   | 2SSC100<br>2SSC106                 | 49202<br>49203               |
| 1-1/8<br>1-3/16                      | 2-1/8  |                  |                 | 2SC112<br>2SC118                     | 49157<br>49158                   | 2SSC112<br>2SSC118                 | 49204<br>49205               |
| 1-1/4<br>1-5/16                      | 2-1/4  |                  |                 | 2SC125<br>2SC131                     | 49159<br>49160                   | 2SSC125<br>2SSC131                 | 49206<br>49207               |
| 1-3/8<br>1-7/16                      | 2-3/8  |                  |                 | 2SC137<br>2SC143                     | 49161<br>49162                   | —<br>2SSC143                       | —<br>49209                   |
| 1-1/2<br>1-9/16                      | 2-1/2  |                  |                 | 2SC150<br>2SC156                     | 49163<br>49164                   | 2SSC150<br>—                       | 49210<br>—                   |
| 1-5/8<br>1-11/16<br>1-3/4<br>1-13/16 | 3      |                  |                 | 2SC162<br>2SC168<br>2SC175<br>—      | 49165<br>49166<br>49167<br>—     | —<br>—<br>—<br>—                   | —<br>—<br>—<br>—             |
| 1-7/8<br>1-15/16<br>2<br>2-1/16      | 3-1/4  |                  |                 | 2SC187<br>2SC193<br>2SC200<br>—      | 49169<br>49170<br>49171<br>—     | 2SSC187<br>2SSC193<br>2SSC200<br>— | 49216<br>49217<br>49218<br>— |
| 2-1/8<br>2-3/16<br>2-1/4<br>2-3/8    | 3-1/2  |                  |                 | 2SC212<br>2SC218<br>2SC225<br>2SC237 | 49173<br>49174<br>49175<br>49177 | —<br>—<br>—<br>—                   | —<br>—<br>—<br>—             |
| 2-7/16<br>2-1/2                      | 4      | 2SC243<br>2SC250 | 49178<br>49179  | —<br>—                               | —<br>—                           |                                    |                              |
| 2-5/8<br>2-11/16<br>2-3/4            | 4-1/4  | 3/4              | 3/8-24          | 2SC262<br>2SC268<br>2SC275           | 49181<br>49182<br>49183          | —<br>—<br>—                        | —<br>—<br>—                  |
| 2-7/8<br>2-15/16<br>3                | 4-1/2  |                  |                 | 2SC287<br>2SC293<br>2SC300           | 49185<br>49186<br>49187          | —<br>—<br>—                        | —<br>—<br>—                  |



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE     |
|------------|-----|---------------|
| Bore       | All | + .003 - .000 |

#### Materials

Steel—Low Carbon, Black Oxide Finish  
Stainless—Type 303 Austenitic

#### Load Data

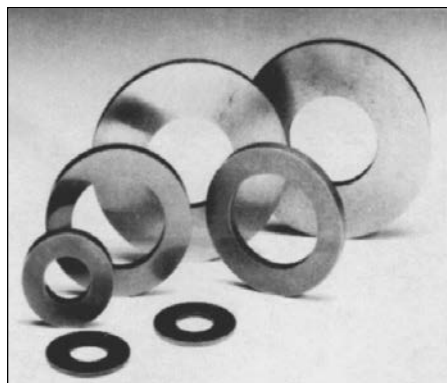
Capacity is based on a standard steel, one-piece collar mounted with recommended screw torque on a lightly oiled shaft. Capacity is load to move collar .010". Data shown is for guidance only. In applications involving control of axial loads, capacity should be determined experimentally on actual parts involved.

#### DIMENSION IN INCHES

| Bore        | Axial Load Capacity (Lbs.) | Screw Size | Recommended Screw Torque (Lb. Ins.) |                 |
|-------------|----------------------------|------------|-------------------------------------|-----------------|
|             |                            |            | Steel                               | Stainless Steel |
| 1/8-5/16    | 400                        | 4-40       | 20                                  | 16              |
| 3/8-7/16    | 600                        | 6-32       | 30                                  | 24              |
| 1/2-9/16    | 1400                       | 8-32       | 55                                  | 35              |
| 5/8-11/16   | 1800                       | 10-32      | 90                                  | 72              |
| 3/4-1-9/16  | 4000                       | 1/4-28     | 220                                 | 170             |
| 1-5/8-2-3/8 | 6500                       | 5/16-24    | 435                                 | 340             |
| 2-7/16-3    | 8500                       | 3/8-24     | 710                                 | 550             |

# Thrust Washers

## Steel and Stainless Steel



**HARDENED AND GROUND STEEL BORE SIZES FROM 3/16" TO 2"**  
**STAINLESS STEEL BORE SIZES FROM 3/16" TO 1/2"**

**ALL DIMENSIONS IN INCHES**  
**ORDER BY CATALOG NUMBER OR ITEM CODE**

### STANDARD TOLERANCES

| DIMENSIONS |              | TOLERANCE       |
|------------|--------------|-----------------|
| Bore       | 06700 Series | + .0015 + .0070 |
|            | 18000 Series | + .002 + .007   |
| O.D.       | 06700 Series | + .000 - .005   |
|            | 18000 Series | ± .030          |
| Thickness  | All          | + .000 - .005   |

| Bore                  | Outside Diameter | Thick-ness | Catalog Number |
|-----------------------|------------------|------------|----------------|
| <b>HARDENED STEEL</b> |                  |            |                |
| 3/16                  | 9/32             | 1/16       | 18800          |
|                       | 3/8              | 1/16       | 18804          |
|                       |                  | 3/32       | 18806          |
|                       | 7/16             | 1/16       | 06724*         |
| 1/4                   | 1/2              | 1/16       | 18808          |
|                       |                  | 3/32       | 18810          |
| 5/16                  | 5/8              | 9/16       | 06726*         |
|                       |                  | 5/64       | 06728*         |
|                       |                  | 1/16       | 18812          |
|                       |                  | 1/8        | 18814          |
| 3/8                   | 5/8              | 1/16       | 18816          |
|                       |                  | 1/8        | 18818          |
| 7/16                  | 7/8              | 3/32       | 06730*         |
|                       |                  | 5/32       | 18820          |
| 1/2                   | 3/4              | 1/16       | 18822          |
|                       |                  | 1/8        | 18824          |
|                       | 7/8              | 1/8        | 06734*         |
|                       |                  | 1/16       | 18828          |
| 9/16                  | 1-1/8            | 5/32       | 18830          |
|                       |                  | 3/16       | 18832          |
|                       |                  | 1-1/4      | 18834          |
|                       |                  | 3/32       | 18836          |
| 5/8                   | 1-3/8            | 1/16       | 18838          |
|                       |                  | 1/8        | 18840          |
|                       |                  | 3/32       | 18842          |
|                       |                  | 3/16       | 18844          |
|                       |                  | 1-3/8      | 18846          |
|                       |                  | 3/32       | 18848          |
| 3/4                   | 1-1/2            | 3/16       | 18850          |
|                       |                  | 1-3/4      | 18852          |
|                       |                  | 1          | 18854          |
|                       |                  | 3/32       | 18856          |
|                       |                  | 3/16       | 18858          |
|                       |                  | 1-5/16     | 18860          |
| 1                     | 2                | 1/8        | 18862          |
|                       |                  | 3/16       | 18864          |
|                       |                  | 1-3/4      | 18866          |
|                       |                  | 2          | 18866          |

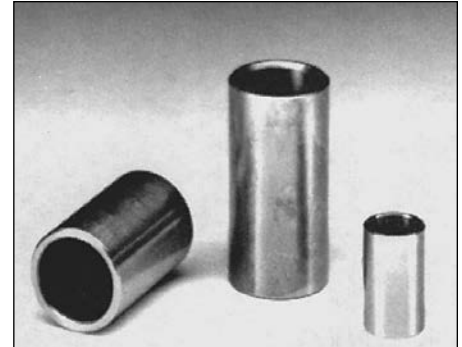
| Bore             | Outside Diameter | Thick-ness   | Catalog Number |
|------------------|------------------|--------------|----------------|
| HARDENED STEEL   |                  |              |                |
| 7/8              | 1-3/16           | 3/32         | 18868          |
|                  | 2                | 1/8          | 18870          |
|                  | 2                | 3/16         | 18872          |
|                  | 2-1/4            | 3/16         | 18874          |
| 1                | 1-9/16           | 1/8<br>3/16  | 18876<br>18878 |
|                  | 2                | 1/8<br>3/16  | 18880<br>18882 |
|                  | 2-1/4            | 9/64<br>3/16 | 18884<br>18886 |
|                  | 2-1/2            | 1/4          | 18888          |
| 1-1/16           | 2-1/2            | 1/4          | 18890          |
| 1-1/8            | 2-1/2            | 1/4          | 18894          |
| 1-3/16           | 2                | 3/16         | 18896          |
| 1-1/4            | 2                | 9/64<br>3/16 | 18898<br>18922 |
|                  | 2-7/16           | 9/64<br>1/4  | 18900<br>18924 |
|                  | 2-3/4            | 9/64         | 18902          |
|                  | 3                | 1/4          | 18904          |
| 1-5/16           | 2-3/4            | 1/4          | 18906          |
| 1-3/8            | 3                | 5/32<br>1/4  | 18908<br>18910 |
|                  |                  | 5/32<br>1/4  | 18912<br>18914 |
| 1-1/2            | 3-1/4            | 1/8          | 18916          |
|                  |                  | 5/32<br>5/16 | 18918<br>18920 |
| STAINLESS STEEL† |                  |              |                |
| 3/16             | 7/16             | 1/16         | 06760          |
| 1/4              | 9/16             | 1/16         | 06762          |
| 5/16             | 5/8              | 5/64         | 06764          |
| 3/8              | 11/16            | 3/32         | 06766          |
| 1/2              | 7/8              | 1/8          | 06770          |

\*These washers also listed with AO Bearings.  
†These washers also listed with SAO Bearings.

### BORE SIZES FROM 3/16" TO 1-1/4"

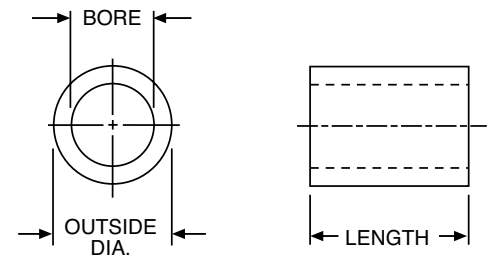
**MULTI-PURPOSE BUSHINGS** suitable for use as hole reducers, spacers, standoffs or slip bushings.

**ADAPTABLE FOR OTHER USES** including wear sleeves, liners or cutting arbor studs.



#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER

| Bore  | Outside Diameter | Thick-ness | Catalog Number |
|-------|------------------|------------|----------------|
| 3/16  | 1/4              | 5/8        | 18510          |
|       | 5/16             |            | 18512          |
|       | 3/8              |            | 18516          |
| 1/4   | 5/16             | 5/8        | 18514          |
|       | 3/8              |            | 18518          |
|       | 1/2              | 3/4        | 18522          |
| 5/16  | 3/8              | 5/8        | 18520          |
|       | 1/2              |            | 18524          |
|       | 1/2              | 3/4        | 18526          |
| 3/8   | 1/2              | 5/8        | 18528          |
|       | 5/8              |            | 18530          |
|       | 5/8              | 3/4        | 18532          |
| 7/16  | 1/2              | 3/4        | 18534          |
|       | 5/8              |            | 18536          |
|       | 5/8              | 1-1/4      | 18538          |
| 1/2   | 5/8              | 3/4        | 18540          |
|       | 3/4              |            | 18542          |
|       | 3/4              | 1          | 18544          |
| 5/8   | 3/4              | 1-1/4      | 18546          |
|       | 7/8              |            | 18554          |
|       | 7/8              | 1          | 18556          |
| 3/4   | 7/8              | 1-1/4      | 18560          |
|       | 1                |            | 18562          |
|       | 1-3/8            | 1-1/2      | 18568          |
| 7/8   | 1-3/8            | 2          | 18574          |
|       | 1-1/2            |            | 18626          |
|       | 1-1/2            | 1-1/2      | 18606          |
| 1     | 1                | 1-1/2      | 18576          |
|       | 1-1/4            |            | 18596          |
|       | 1-3/8            | 2          | 18602          |
| 1-1/8 | 2                | 1-1/2      | 18622          |
|       | 1-1/4            |            | 18598          |
|       | 1-3/8            | 2          | 18604          |
| 1-1/4 | 1-1/2            | 3          | 18614          |
|       | 2                |            | 18624          |
|       | 2                | 3          | 18624          |

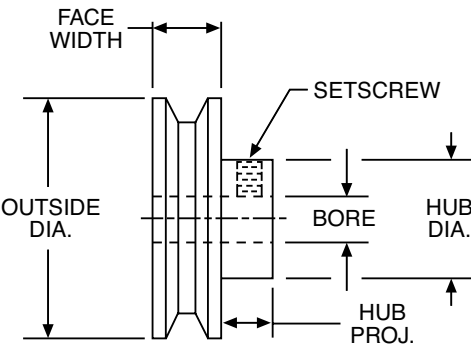
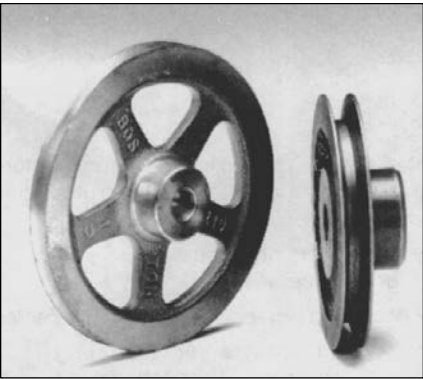


#### STANDARD TOLERANCES

| DIMENSIONS |             | TOLERANCE      |
|------------|-------------|----------------|
| BORE       | All         | ± .0005        |
| O.D.       | Up to 1-1/4 | + .0005 +.0015 |
|            | Over 1-1/4  | + .001 +.002   |
| LENGTH     | Up to 1"    | + .000 -.007   |
|            | Over 1"     | + .000 -.010   |

# Grooved Pulleys

## G1200 Round Belt Type



BRASS IRON AND STEEL  
BORE SIZES FROM 3/16" TO 3/4"  
COMPLETE WITH STANDARD SETSCREWS

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore                                          | Outside Diameter          | Hub Dia.                 | Project | V Groove   | Style                      | Catalog Number                   | Item Code                        |
|-----------------------------------------------|---------------------------|--------------------------|---------|------------|----------------------------|----------------------------------|----------------------------------|
| BRASS—3/16" ROUND BELT (or smaller)—1/4" FACE |                           |                          |         |            |                            |                                  |                                  |
| 3/16                                          | 1/2<br>7/8                | 1/2<br>5/8               | 1/4     | 74°<br>46° | Plain                      | G1214<br>G1215                   | 18700<br>18702                   |
| 1/4                                           | 1<br>1-1/2                | 5/8                      | 5/16    | 46°        | Plain                      | G1216<br>G1217                   | 18704<br>18706                   |
| 5/16                                          | 2<br>3<br>4               | 5/8<br>3/4<br>3/4        | 5/16    | 46°        | Webbed<br>Spoked<br>Spoked | G1218<br>G1219<br>G1220          | 18708<br>18710<br>18712          |
| IRON†—3/8" ROUND BELTS (or smaller)—1/2" FACE |                           |                          |         |            |                            |                                  |                                  |
| 1/2                                           | 1<br>1-1/2<br>2<br>3<br>4 | 15/16<br>1<br>1<br>1-1/4 | 1/2     | 53°        | Plain                      | G1202<br>G1203<br>G1204<br>G1205 | 18718<br>18720<br>18722<br>18724 |
|                                               | 5/8                       | 1-5/8                    | 3/4     |            | Webbed                     | G1206<br>G1207<br>G1208          | 18726<br>18728<br>18730          |
|                                               |                           |                          |         |            | Spoked                     | G1209                            | 18732                            |
|                                               |                           |                          |         |            | 3/4                        | 8                                | 1-3/4                            |

†Outside diameter, sides, grooves, hole and ends of hub finished.

### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE    |
|------------|-----|--------------|
| BORE       | All | +.001 - .000 |

# Miniature Timing Belts and Pulleys

## Miniature HTD Timing Belt Drives

### Basic Construction

Timing belts are essentially flat belts with the addition of evenly spaced teeth along the surface that contacts toothed pulleys. Power is transmitted smoothly and without slippage. Pulley pitch diameters are larger than their outside diameters and the belt pitch lines lie within the flat portion. Tension members are molded in the flat portion to serve as load-carrying elements. Miniature HTD timing belts have deep curvilinear tooth forms, as contrasted to trapezoidal for conventional timing belts. Greater strength, lower tooth pressures and decreased stress concentration result in superior performance.

### Selection

The following general guidelines apply to selection of miniature HTD timing belts and pulleys:  
Design with ample reserve horsepower capacity and apply the proper service factors.

The belt must have six or more teeth in engagement with the smaller pulley to carry rated Horsepower.

Avoid small pulley diameters where practical to assure satisfactory belt life.

Belt speed should not exceed 6500 feet per minute.

At least one pulley in the drive should be flanged.

For vertical shafts or where center distance exceeds eight times the smaller pulley diameter, both pulleys should be flanged.

Horsepower Rating Tables provide ratings for operation no more than ten hours per day under uniform loading. Selection procedures is as follows:

1. Select Service Factor for chart below.
2. Determine Design Horsepower.

**Design Horsepower = Application Horsepower x Service Factor**

3. Select small pulley and belt size from the rating tables, choosing a combination whose rating does not exceed the Design Horsepower.
4. For speed increasing applications an additional amount must be added to the Service Factor.
5. For speeds higher than shown in Rating Tables, consult factory.

### SERVICE FACTORS

| Load Classification                                           | Service Factor |
|---------------------------------------------------------------|----------------|
| Uniform to 10 hrs./day                                        | 1.0            |
| Uniform over 10 hrs./day<br>Moderate Shock to 10 hrs./day     | 1.5            |
| Moderate Shock over 10 hrs./day<br>Heavy Shock to 10 hrs./day | 2.0            |

### SPEED-UP DRIVES

| Ratio Range       | Additional Factor |
|-------------------|-------------------|
| 1 through 1.24    | 0                 |
| 1.25 through 1.74 | 0.1               |
| 1.75 through 2.49 | 0.2               |
| 2.50 through 3.49 | 0.3               |
| 3.50 and over     | 0.4               |

# Miniature Timing Belts and Pulleys

## Miniature HTD Timing Belt Drives (Continued)

### Horsepower Ratings

#### 3mm Pitch—6mm Wide Belt

NUMBER OF GROOVES ON THE SMALL PULLEY

|                     | 10   | 11   | 12   | 14   | 15   | 16   | 18   | 20   | 22   | 24   | 25   | 28    | 30    | 32    |      |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|------|
| PD                  | .376 | .414 | .451 | .526 | .564 | .602 | .677 | .752 | .827 | .902 | .940 | 1.053 | 1.128 | 1.203 |      |
| RPM of Small Pulley | 100  | .005 | .005 | .006 | .007 | .008 | .009 | .010 | .011 | .012 | .013 | .013  | .016  | .019  | .020 |
|                     | 300  | .016 | .017 | .018 | .021 | .023 | .025 | .029 | .033 | .037 | .040 | .041  | .048  | .055  | .059 |
|                     | 500  | .022 | .024 | .027 | .030 | .032 | .035 | .039 | .043 | .048 | .053 | .055  | .062  | .066  | .070 |
|                     | 700  | .031 | .035 | .037 | .042 | .046 | .049 | .054 | .061 | .068 | .075 | .078  | .087  | .092  | .098 |
|                     | 1160 | .040 | .045 | .050 | .056 | .061 | .066 | .072 | .078 | .089 | .097 | .101  | .113  | .120  | .127 |
|                     | 1500 | .052 | .058 | .064 | .072 | .078 | .085 | .093 | .101 | .115 | .125 | .130  | .145  | .155  | .165 |
|                     | 1750 | .061 | .068 | .075 | .085 | .091 | .099 | .108 | .117 | .134 | .146 | .152  | .170  | .182  | .194 |
|                     | 2500 | .067 | .074 | .080 | .091 | .101 | .107 | .117 | .134 | .148 | .161 | .168  | .192  | .200  | .213 |
|                     | 3500 | .094 | .103 | .113 | .127 | .141 | .151 | .165 | .188 | .207 | .226 | .236  | .268  | .278  | .296 |

#### 3mm Pitch—9mm Wide Belt

NUMBER OF GROOVES ON THE SMALL PULLEY

|                     | 10   | 11   | 12   | 14   | 15   | 16   | 18   | 20   | 22   | 24   | 25   | 28    | 30    | 32    |      |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|------|
| PD                  | .376 | .414 | .451 | .526 | .564 | .602 | .677 | .752 | .827 | .902 | .940 | 1.053 | 1.128 | 1.203 |      |
| RPM of Small Pulley | 100  | .007 | .008 | .009 | .011 | .013 | .014 | .016 | .017 | .019 | .021 | .022  | .025  | .030  | .032 |
|                     | 300  | .025 | .027 | .029 | .033 | .036 | .040 | .046 | .052 | .059 | .063 | .066  | .076  | .087  | .092 |
|                     | 500  | .035 | .038 | .043 | .048 | .051 | .055 | .062 | .068 | .076 | .084 | .088  | .098  | .104  | .111 |
|                     | 700  | .049 | .056 | .059 | .067 | .073 | .078 | .085 | .096 | .107 | .119 | .124  | .138  | .146  | .156 |
|                     | 1160 | .063 | .071 | .079 | .089 | .097 | .104 | .114 | .123 | .141 | .154 | .160  | .179  | .190  | .203 |
|                     | 1500 | .082 | .092 | .101 | .114 | .123 | .135 | .147 | .160 | .182 | .198 | .206  | .230  | .246  | .263 |
|                     | 1750 | .097 | .108 | .119 | .135 | .144 | .157 | .171 | .185 | .212 | .231 | .241  | .269  | .289  | .308 |
|                     | 2500 | .106 | .117 | .127 | .144 | .160 | .169 | .185 | .212 | .235 | .255 | .266  | .304  | .317  | .338 |
|                     | 3500 | .149 | .163 | .179 | .201 | .223 | .239 | .262 | .298 | .328 | .358 | .372  | .425  | .441  | .470 |

#### 5mm Pitch—9mm Wide Belt

NUMBER OF GROOVES ON THE SMALL PULLEY

|                     | 11   | 12   | 14   | 15   | 16    | 18    | 20    | 22    | 24    | 25    | 28    | 30    |
|---------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| PD                  | .689 | .752 | .877 | .940 | 1.003 | 1.128 | 1.253 | 1.379 | 1.504 | 1.566 | 1.754 | 1.880 |
| RPM of Small Pulley | 100  | .021 | .024 | .027 | .030  | .033  | .039  | .042  | .045  | .051  | .053  | .069  |
|                     | 300  | .063 | .069 | .081 | .090  | .096  | .108  | .126  | .138  | .153  | .159  | .204  |
|                     | 500  | .090 | .099 | .117 | .126  | .132  | .150  | .165  | .183  | .198  | .206  | .249  |
|                     | 700  | .129 | .138 | .162 | .174  | .186  | .210  | .231  | .255  | .279  | .291  | .348  |
|                     | 1160 | .162 | .180 | .207 | .225  | .240  | .270  | .300  | .327  | .360  | .375  | .447  |
|                     | 1500 | .210 | .231 | .270 | .291  | .309  | .348  | .387  | .423  | .465  | .484  | .579  |
|                     | 1750 | .243 | .270 | .315 | .339  | .360  | .405  | .453  | .495  | .540  | .562  | .675  |
|                     | 2500 | .267 | .291 | .342 | .366  | .393  | .441  | .492  | .540  | .588  | .613  | .735  |
|                     | 3500 | .372 | .405 | .477 | .510  | .549  | .615  | .690  | .756  | .822  | .856  | 1.03  |

# Miniature Timing Belts and Pulleys

## Miniature HTD Timing Belt Drives (Continued)

### Horsepower Ratings

5mm Pitch—15mm Wide Belt

NUMBER OF GROOVES ON THE SMALL PULLEY

|                     | 11   | 12   | 14   | 15   | 16    | 18    | 20    | 22    | 24    | 28    | 30    |
|---------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| PD                  | .689 | .752 | .877 | .940 | 1.003 | 1.128 | 1.253 | 1.379 | 1.504 | 1.754 | 1.880 |
| RPM of Small Pulley | 100  | .038 | .043 | .049 | .054  | .060  | .071  | .076  | .082  | .093  | .115  |
|                     | 300  | .115 | .126 | .148 | .164  | .175  | .197  | .230  | .252  | .280  | .340  |
|                     | 500  | .164 | .181 | .214 | .230  | .241  | .274  | .302  | .335  | .362  | .423  |
|                     | 700  | .236 | .252 | .296 | .318  | .340  | .384  | .423  | .467  | .511  | .593  |
|                     | 1160 | .296 | .329 | .379 | .412  | .439  | .494  | .549  | .599  | .659  | .769  |
|                     | 1500 | .384 | .423 | .494 | .533  | .566  | .637  | .709  | .775  | .852  | .995  |
|                     | 1750 | .445 | .494 | .577 | .621  | .649  | .742  | .830  | .907  | .989  | 1.16  |
|                     | 2500 | .489 | .533 | .626 | .670  | .720  | .808  | .901  | .989  | 1.07  | 1.25  |
|                     | 3500 | .681 | .742 | .874 | .934  | 1.00  | 1.12  | 1.26  | 1.38  | 1.50  | 1.88  |

Belt life will be reduced for ratings to the left of the heavy line.

### Center Distance

To calculate the approximate Belt Length:

$$BL = 2C + \frac{D_1 - D_2}{4C} + 1.57 (D_1 + D_2)$$

An approximate formula for center distance of a timing belt drive is:

$$C = \frac{P}{4} \left[ NB - \frac{N_1 + N_2}{2} \right] + \sqrt{\left( NB - \frac{N_1 + N_2}{2} \right)^2 - 2 \left( \frac{N_1 - N_2}{\pi} \right)^2}$$

$$BL = 2C + \frac{(D_1 - D_2)}{4C} + 1.57 (D_1 + D_2)$$

Where:

C = Center Distance—Inches

P = Belt Pitch—Inches

NB = Number of Teeth in Belt

N<sub>1</sub> = Number of Grooves in larger Pulley

N<sub>2</sub> = Number of Grooves in smaller Pulley

BL = Belt Length

D<sub>1</sub> = Pitch Diameter of larger Pulley

D<sub>2</sub> = Pitch Diameter of smaller Pulley

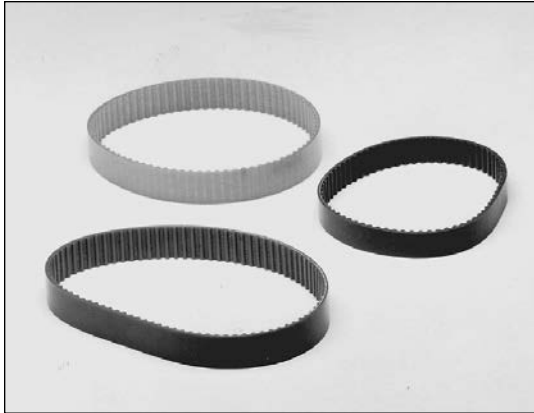
### Installation Suggestions

1. Use care in handling belts to avoid breakage of the reinforcing fibers.
2. Make sure shafts are parallel and pulleys in alignment.
3. Belt should fit snugly, neither too loose nor too tight. Avoid preload, which can cause premature failure.
4. Provision for some Center Distance adjustment will ease the installation and permit proper initial fitting of belts.

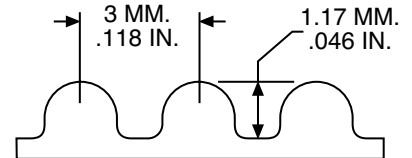
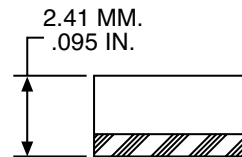
# Miniature HTD® Timing Belts

## 3M Series 6 and 9mm Widths

### 3mm Pitch



**NEOPRENE-NYLON COVERED, FIBERGLASS REINFORCED**  
**AMBIENT TEMPERATURE RANGE— -18°C TO +85°C**  
**BREAKING STRENGTH—6 mm WIDTH – 74.4 KGS**  
**9 mm WIDTH – 111.6 KGS**



#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number of Grooves | Pitch Length |        | 6mm Belt Width |           | 9mm Belt Width |           |
|-------------------|--------------|--------|----------------|-----------|----------------|-----------|
|                   | mm           | Inch   | Catalog Number | Item Code | Catalog Number | Item Code |
| 35                | 105          | 4.134  | 3M035060       | 54214     | 3M035090       | 54290     |
| 37                | 111          | 4.370  | 3M037060       | 54215     | 3M037090       | 54291     |
| 48                | 144          | 5.669  | 3M048060       | 54216     | 3M048090       | 54292     |
| 49                | 147          | 5.787  | 3M049060       | 54217     | 3M049090       | 54293     |
| 50                | 150          | 5.905  | 3M050060       | 54218     | 3M050090       | 54294     |
| 52                | 156          | 6.142  | 3M052060       | 54219     | 3M052090       | 54295     |
| 53                | 159          | 6.260  | 3M053060       | 54220     | 3M053090       | 54296     |
| 56                | 168          | 6.614  | 3M056060       | 54221     | 3M056090       | 54297     |
| 59                | 177          | 6.968  | 3M059060       | 54222     | 3M059090       | 54298     |
| 60                | 180          | 7.087  | 3M060060       | 54223     | 3M060090       | 54299     |
| 65                | 195          | 7.677  | 3M065060       | 54224     | 3M065090       | 54300     |
| 67                | 201          | 7.913  | 3M067060       | 54225     | 3M067090       | 54301     |
| 68                | 204          | 8.031  | 3M068060       | 54226     | 3M068090       | 54302     |
| 69                | 207          | 8.150  | 3M069060       | 54227     | 3M069090       | 54303     |
| 70                | 210          | 8.268  | 3M070060       | 54228     | 3M070090       | 54304     |
| 71                | 213          | 8.386  | 3M071060       | 54229     | 3M071090       | 54305     |
| 75                | 225          | 8.858  | 3M075060       | 54230     | 3M075090       | 54306     |
| 78                | 234          | 9.213  | 3M078060       | 54231     | 3M078090       | 54307     |
| 80                | 240          | 9.449  | 3M080060       | 54232     | 3M080090       | 54308     |
| 84                | 252          | 9.921  | 3M084060       | 54233     | 3M084090       | 54309     |
| 85                | 255          | 10.039 | 3M085060       | 54234     | 3M085090       | 54310     |
| 89                | 267          | 10.512 | 3M089060       | 54236     | 3M089090       | 54312     |
| 90                | 270          | 10.630 | 3M090060       | 54237     | 3M090090       | 54313     |
| 92                | 276          | 10.866 | 3M092060       | 54238     | 3M092090       | 54314     |
| 94                | 282          | 11.102 | 3M094060       | 54239     | 3M094090       | 54315     |
| 95                | 285          | 11.220 | 3M095060       | 54240     | 3M095090       | 54316     |
| 96                | 288          | 11.339 | 3M096060       | 54241     | 3M096090       | 54317     |
| 97                | 291          | 11.457 | 3M097060       | 54242     | 3M097090       | 54318     |
| 99                | 297          | 11.693 | 3M099060       | 54243     | 3M099090       | 54319     |
| 100               | 300          | 11.811 | 3M100060       | 54244     | 3M100090       | 54320     |
| 104               | 312          | 12.283 | 3M104060       | 54245     | 3M104090       | 54321     |
| 106               | 318          | 12.520 | 3M106060       | 54246     | 3M106090       | 54322     |
| 111               | 333          | 13.110 | 3M111060       | 54247     | 3M111090       | 54323     |
| 112               | 336          | 13.228 | 3M112060       | 54248     | 3M112090       | 54324     |
| 113               | 339          | 13.346 | 3M113060       | 54249     | 3M113090       | 54325     |
| 115               | 345          | 13.583 | 3M115060       | 54250     | 3M115090       | 54326     |
| 119               | 357          | 14.055 | 3M119060       | 54251     | 3M119090       | 54327     |

| Number of Grooves | Pitch Length |        | 6mm Belt Width |           | 9mm Belt Width |           |
|-------------------|--------------|--------|----------------|-----------|----------------|-----------|
|                   | mm           | Inch   | Catalog Number | Item Code | Catalog Number | Item Code |
| 121               | 363          | 14.291 | 3M121060       | 54252     | 3M121090       | 54328     |
| 128               | 384          | 15.118 | 3M128060       | 54253     | 3M128090       | 54329     |
| 130               | 390          | 15.354 | 3M130060       | 54254     | 3M130090       | 54330     |
| 132               | 396          | 15.591 | 3M132060       | 54255     | 3M132090       | 54331     |
| 140               | 420          | 16.535 | 3M140060       | 54256     | 3M140090       | 54332     |
| 145               | 435          | 17.126 | 3M145060       | 54257     | 3M145090       | 54333     |
| 149               | 447          | 17.598 | 3M149060       | 54258     | 3M149090       | 54334     |
| 153               | 459          | 18.071 | 3M153060       | 54259     | 3M153090       | 54335     |
| 155               | 465          | 18.307 | 3M155060       | 54260     | 3M155090       | 54336     |
| 158               | 474          | 18.661 | 3M158060       | 54261     | 3M158090       | 54337     |
| 160               | 480          | 18.898 | 3M160060       | 54262     | 3M160090       | 54338     |
| 162               | 486          | 19.134 | 3M162060       | 54263     | 3M162090       | 54339     |
| 163               | 489          | 19.252 | 3M163060       | 54264     | 3M163090       | 54340     |
| 167               | 501          | 19.724 | 3M167060       | 54265     | 3M167090       | 54341     |
| 171               | 513          | 20.197 | 3M171060       | 54266     | 3M171090       | 54342     |
| 175               | 525          | 20.670 | 3M175060       | 54267     | 3M175090       | 54343     |
| 177               | 531          | 20.905 | 3M177060       | 54268     | 3M177090       | 54344     |
| 179               | 537          | 21.142 | 3M179060       | 54269     | 3M179090       | 54345     |
| 188               | 564          | 22.205 | 3M188060       | 54270     | 3M188090       | 54346     |
| 192               | 576          | 22.677 | 3M192060       | 54271     | 3M192090       | 54347     |
| 199               | 597          | 23.504 | 3M199060       | 54272     | 3M199090       | 54348     |
| 200               | 600          | 23.622 | 3M200060       | 54273     | 3M200090       | 54349     |
| 204               | 612          | 24.094 | 3M204060       | 54274     | 3M204090       | 54350     |
| 211               | 633          | 24.921 | 3M211060       | 54275     | 3M211090       | 54351     |
| 223               | 669          | 26.338 | 3M223060       | 54276     | 3M223090       | 54352     |
| 237               | 711          | 27.992 | 3M237060       | 54277     | 3M237090       | 54353     |
| 250               | 750          | 29.527 | 3M250060       | 54278     | 3M250090       | 54354     |
| 251               | 753          | 29.646 | 3M251060       | 54279     | 3M251090       | 54355     |
| 294               | 892          | 34.724 | 3M294060       | 54280     | 3M294090       | 54356     |
| 315               | 945          | 37.205 | 3M315060       | 54281     | 3M315090       | 54357     |
| 354               | 1062         | 41.811 | 3M354060       | 54282     | 3M354090       | 54358     |
| 375               | 1125         | 44.291 | 3M375060       | 54283     | 3M375090       | 54360     |
| 415               | 1245         | 49.016 | 3M415060       | 54284     | 3M415090       | 54361     |
| 421               | 1263         | 49.724 | 3M421060       | 54285     | 3M421090       | 54362     |
| 500               | 1500         | 59.055 | 3M500060       | 54286     | 3M500090       | 54363     |
| 510               | 1530         | 60.235 | 3M510060       | 54287     | 3M510090       | 54364     |
| 621               | 1863         | 73.346 | 3M621060       | 54288     | 3M621090       | 54365     |

\*Registered trademark of UNIROYAL, INC.

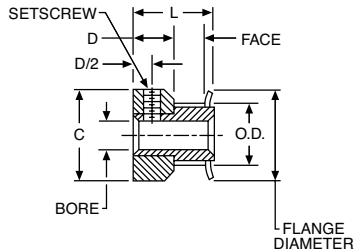
# Timing Belt Pulleys

## PA Series For 6mm Wide Belts 3mm Pitch; Aluminum

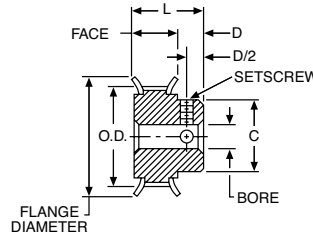
ALUMINUM ALLOY – CLEAR ANODIZED  
COMPLETE WITH SETSCREWS



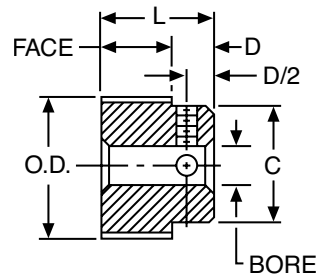
**WITH FLANGES  
10 TO 17 GROOVES**



**WITH FLANGES  
18 TO 44 GROOVES**



**WITHOUT FLANGES**



### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE      |
|------------|---------------|----------------|
| Bore       | All           | +.001 to -.000 |
|            | 10-26 Grooves | +.002 to -.000 |
| O.D.       | 28-48 Grooves | +.003 to -.000 |
|            | 60-72 Grooves | +.004 to -.000 |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number of Grooves | Pitch Dia. | O.D.  | B     | Face Width | C     | D     | L           | Flange Dia. | Setscrew*   | With Flanges   |           | Without Flanges |             |       |
|-------------------|------------|-------|-------|------------|-------|-------|-------------|-------------|-------------|----------------|-----------|-----------------|-------------|-------|
|                   |            |       |       |            |       |       |             |             |             | Catalog Number | Item Code | Catalog Number  | Item Code   |       |
| 10                | .376       | .346  | .125  | .282       | .505  | 15/64 | 9/16        | .505        | #4-40       | PA3010DF060    | 54448     | -               | -           |       |
| 11                | .414       | .384  |       |            | .530  |       |             | .530        |             | PA3011DF060    | 54449     | -               | -           |       |
| 12                | .451       | .421  | .1875 |            | .580  |       |             | .580        | PA3012DF060 | 54450          | -         | -               |             |       |
| 13                | .489       | .459  |       |            | .610  |       |             | .610        | PA3013DF060 | 54451          | -         | -               |             |       |
| 14                | .526       | .496  |       |            | .635  |       |             | .635        | PA3014DF060 | 54452          | -         | -               |             |       |
| 15                | .564       | .534  |       |            | .685  |       |             | .685        | PA3015DF060 | 54453          | -         | -               |             |       |
| 16                | .602       | .572  |       |            | .710  |       |             | .710        | PA3016DF060 | 54454          | -         | -               |             |       |
| 17                | .639       | .609  |       |            | .740  |       |             | .740        | PA3017DF060 | 54455          | -         | -               |             |       |
| 18                | .677       | .647  | .250  | .386       | .442  | 19/64 | 11/16       | .790        | #8-32       | PA3018DF060    | 54456     | PA3018NF060     | 54471       |       |
| 19                | .714       | .684  |       |            | .468  |       |             | .815        |             | PA3019DF060    | 54457     | PA3019NF060     | 54472       |       |
| 20                | .752       | .722  |       |            | .500  |       |             | .895        |             | PA3020DF060    | 54458     | PA3020NF060     | 54473       |       |
| 22                | .827       | .797  |       |            | .562  |       |             | .945        |             | PA3022DF060    | 54459     | PA3022NF060     | 54474       |       |
| 24                | .902       | .872  |       |            | .625  |       |             | 1.025       |             | PA3024DF060    | 54460     | PA3024NF060     | 54475       |       |
| 25                | .940       | .910  |       |            | .625  |       |             | 1.060       |             | PA3025DF060    | 54461     | PA3025NF060     | 54476       |       |
| 26                | .977       | .947  |       |            | .625  |       |             | 1.105       |             | PA3026DF060    | 54462     | PA3026NF060     | 54477       |       |
| 28                | 1.053      | 1.023 |       |            | .701  |       |             | 1.173       |             | PA3028DF060    | 54463     | PA3028NF060     | 54478       |       |
| 30                | 1.128      | 1.098 |       | .776       | 1.250 |       | PA3030DF060 | 54464       |             | PA3030NF060    | 54479     |                 |             |       |
| 32                | 1.203      | 1.173 |       | .851       | 1.323 |       | PA3032DF060 | 54465       |             | PA3032NF060    | 54480     |                 |             |       |
| 34                | 1.278      | 1.248 |       | .407       | .921  |       | 23.32       | 1.398       |             | PA3034DF060    | 54466     | PA3034NF060     | 54481       |       |
| 36                | 1.353      | 1.323 |       |            | 1.000 |       |             | 1.473       |             | PA3036DF060    | 54467     | PA3036NF060     | 54482       |       |
| 38                | 1.429      | 1.399 |       |            | 1.075 |       |             | 1.549       |             | PA3038DF060    | 54468     | PA3038NF060     | 54483       |       |
| 40                | 1.504      | 1.474 |       |            | 1.150 |       |             | 1.625       |             | PA3040DF060    | 54469     | PA3040NF060     | 54484       |       |
| 44                | 1.654      | 1.624 |       |            | 1.300 |       |             | 1.775       |             | PA3044DF060    | 54470     | PA3044NF060     | 54485       |       |
| 48                | 1.805      | 1.775 | .3125 |            | .407  | 1.250 |             | 21/64       |             | 47/64          | -         | -               | PA3048NF060 | 54486 |
| 50                | 1.880      | 1.850 |       |            |       |       |             |             |             |                | -         | -               | -           | -     |
| 56                | 2.105      | 2.075 |       | -          |       |       | -           |             |             |                | -         | -               | PA3056NF060 | 54488 |
| 60                | 2.256      | 2.226 |       | -          |       |       | -           |             |             |                | -         | -               | PA3060NF060 | 54489 |
| 62                | 2.331      | 2.301 |       | -          |       |       | -           |             |             |                | -         | -               | PA3062NF060 | 54490 |
| 72                | 2.707      | 2.677 |       | -          |       |       | -           |             |             |                | -         | -               | PA3072NF060 | 54991 |

\*Pulleys with 10 to 13 grooves have one setscrew. All others have two at 90°

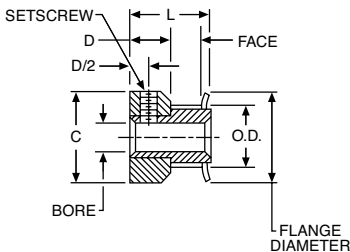
# Timing Belt Pulleys

## PA Series For 9mm Wide Belts 3mm Pitch; Aluminum

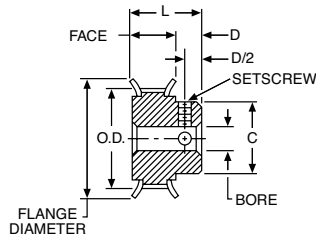


ALUMINUM ALLOY – CLEAR ANODIZED  
COMPLETE WITH SETSCREWS

WITH FLANGES  
10 TO 17 GROOVES



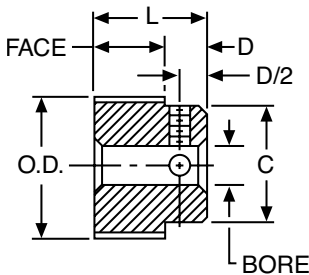
WITH FLANGES  
18 TO 44 GROOVES



### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE      |
|------------|---------------|----------------|
| Bore       | All           | +.001 to -.000 |
|            | 10-26 Grooves | +.002 to -.000 |
| O.D.       | 28-48 Grooves | +.003 to -.000 |
|            | 60-72 Grooves | +.004 to -.000 |

WITHOUT FLANGES



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number of Grooves | Pitch Dia. | O.D.  | B     | Face Width | C     | D     | L     | Flange Dia. | Setscrew* | With Flanges   |           | Without Flanges |             |       |
|-------------------|------------|-------|-------|------------|-------|-------|-------|-------------|-----------|----------------|-----------|-----------------|-------------|-------|
|                   |            |       |       |            |       |       |       |             |           | Catalog Number | Item Code | Catalog Number  | Item Code   |       |
| 10                | .376       | .346  | .125  | .401       | .505  | 15/64 | 11/16 | .505        | #4-40     | PA3010DF090    | 54492     | —               | —           |       |
| 11                | .414       | .384  |       |            | .530  |       |       | .530        |           | PA3011DF090    | 54493     | —               | —           |       |
| 12                | .451       | .421  | .1875 |            | .580  |       |       | .580        |           | PA3012DF090    | 54494     | —               | —           |       |
| 13                | .489       | .459  |       |            | .610  |       |       | .610        |           | PA3013DF090    | 54495     | —               | —           |       |
| 14                | .526       | .496  |       |            | .635  |       |       | .635        |           | PA3014DF090    | 54496     | —               | —           |       |
| 15                | .564       | .534  |       |            | .685  |       |       | .685        |           | PA3015DF090    | 54497     | —               | —           |       |
| 16                | .602       | .572  |       |            | .710  |       |       | .710        |           | PA3016DF090    | 54498     | —               | —           |       |
| 17                | .639       | .609  |       |            | .740  |       |       | .740        |           | PA3017DF090    | 54499     | —               | —           |       |
| 18                | .677       | .647  | .250  | .506       | .442  | 19/64 | 13/16 | .790        | #8-32     | PA3018DF090    | 54500     | PA3018NF090     | 54515       |       |
| 19                | .714       | .684  |       |            | .468  |       |       | .815        |           | PA3019DF090    | 54501     | PA3019NF090     | 54516       |       |
| 20                | .752       | .722  |       |            | .500  |       |       | .895        |           | PA3020DF090    | 54502     | PA3020NF090     | 54517       |       |
| 22                | .827       | .797  |       |            | .562  |       |       | .945        |           | PA3022DF090    | 54503     | PA3022NF090     | 54518       |       |
| 24                | .902       | .872  |       |            | .625  |       |       | 1.025       |           | PA3024DF090    | 54504     | PA3024NF090     | 54519       |       |
| 25                | .940       | .910  |       |            | .625  |       |       | 1.060       |           | PA3025DF090    | 54505     | PA3025NF090     | 54520       |       |
| 26                | .977       | .947  |       |            | .625  |       |       | 1.105       |           | PA3026DF090    | 54506     | PA3026NF090     | 54521       |       |
| 28                | 1.053      | 1.023 |       | .527       | .701  |       | 27/32 | 1.173       |           | PA3028DF090    | 54507     | PA3028NF090     | 54522       |       |
| 30                | 1.128      | 1.098 |       |            | .776  |       |       | 1.250       |           | PA3030DF090    | 54508     | PA3030NF090     | 54523       |       |
| 32                | 1.203      | 1.173 |       |            | .851  |       |       | 1.323       |           | PA3032DF090    | 54509     | PA3032NF090     | 54524       |       |
| 34                | 1.278      | 1.248 |       |            | .921  |       |       | 1.398       |           | PA3034DF090    | 54510     | PA3034NF090     | 54525       |       |
| 36                | 1.353      | 1.323 |       |            | 1.000 |       |       | 1.473       |           | PA3036DF090    | 54511     | PA3036NF090     | 54526       |       |
| 38                | 1.429      | 1.399 |       |            | 1.075 |       |       | 1.549       |           | PA3038DF090    | 54512     | PA3038NF090     | 54527       |       |
| 40                | 1.504      | 1.474 |       |            | 1.150 |       |       | 1.625       |           | PA3040DF090    | 54513     | PA3040NF090     | 54528       |       |
| 44                | 1.654      | 1.624 |       |            | 1.300 |       |       | 1.775       |           | PA3044DF090    | 54514     | PA3044NF090     | 54529       |       |
| 48                | 1.805      | 1.775 | .3125 | .500       | 1.250 | 3/8   | 7/8   | —           |           | —              | —         | PA3048NF090     | 54530       |       |
| 50                | 1.880      | 1.850 |       |            |       |       |       | —           |           | —              | —         | —               | PA3050NF090 | 54531 |
| 56                | 2.105      | 2.075 |       |            |       |       |       | —           |           | —              | —         | —               | PA3056NF090 | 54532 |
| 60                | 2.256      | 2.226 |       |            |       |       |       | —           |           | —              | —         | —               | PA3060NF090 | 54533 |
| 62                | 2.331      | 2.301 |       |            |       |       |       | —           |           | —              | —         | —               | PA3062NF090 | 54534 |
| 72                | 2.707      | 2.677 |       |            |       |       |       | —           |           | —              | —         | —               | PA3072NF090 | 54535 |

\*Pulleys with 10 to 13 grooves have one setscrew. All others have two at 90°

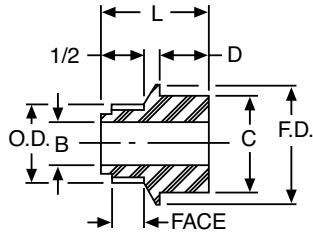
# Timing Belt Pulleys

## PL Series For 9mm Wide Belts

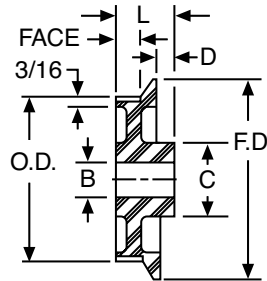
3mm Pitch; Lexan

### LEXAN – FIBERGLASS REINFORCED

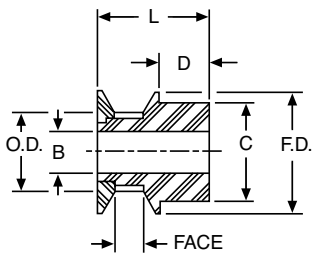
#### SINGLE FLANGE 10-28 GROOVES



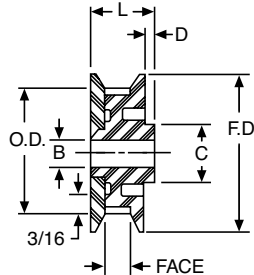
#### SINGLE FLANGE 32-120 GROOVES



#### DOUBLE FLANGE 10-28 GROOVES



#### DOUBLE FLANGE 32-80 GROOVES



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| Bore       | All | +.001 to -.000 |

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number of Grooves | Pitch Dia. | O.D.  | B    | Face Width | C   | D    | L     | Flange Dia. | Single Flange  |           | Double Flange  |           |
|-------------------|------------|-------|------|------------|-----|------|-------|-------------|----------------|-----------|----------------|-----------|
|                   |            |       |      |            |     |      |       |             | Catalog Number | Item Code | Catalog Number | Item Code |
| 10                | .376       | .346  | 3/16 | 7/16       | 5/8 | 1/4  | 3/4*  | .63         | PL3010SF090    | 54536     | PL3010DF090    | 54560     |
| 11                | .414       | .384  |      |            |     |      |       |             | PL3011SF090    | 54537     | PL3011DF090    | 54561     |
| 12                | .451       | .421  |      |            |     |      |       |             | PL3012SF090    | 54538     | PL3012DF090    | 54562     |
| 13                | .489       | .459  |      |            |     |      |       |             | PL3013SF090    | 54539     | PL3013DF090    | 54563     |
| 14                | .526       | .496  |      |            |     |      |       |             | PL3014SF090    | 54540     | PL3014DF090    | 54564     |
| 15                | .564       | .534  |      |            |     |      |       |             | PL3015SF090    | 54541     | PL3015DF090    | 54565     |
| 16                | .602       | .572  |      |            |     |      |       |             | PL3016SF090    | 54542     | PL3016DF090    | 54566     |
| 17                | .639       | .609  |      |            |     |      |       |             | PL3017SF090    | 54543     | PL3017DF090    | 54567     |
| 18                | .677       | .647  |      |            |     |      |       |             | PL3018SF090    | 54544     | PL3018DF090    | 54568     |
| 19                | .714       | .684  |      |            |     |      |       |             | PL3019SF090    | 54545     | PL3019DF090    | 54569     |
| 20                | .752       | .722  | 1/4  | 7/16       | 3/4 | 5/16 | 13/16 | .69         | PL3020SF090    | 54546     | PL3020DF090    | 54570     |
| 22                | .827       | .797  |      |            |     |      |       |             | PL3022SF090    | 54547     | PL3022DF090    | 54571     |
| 25                | .940       | .910  |      |            |     |      |       |             | PL3025SF090    | 54548     | PL3025DF090    | 54572     |
| 28                | 1.053      | 1.023 |      |            |     |      |       |             | PL3028SF090    | 54549     | PL3028DF090    | 54573     |
| 32                | 1.203      | 1.173 |      |            |     |      |       |             | PL3032SF090    | 54550     | PL3032DF090    | 54574     |
| 36                | 1.353      | 1.323 |      |            |     |      |       |             | PL3036SF090    | 54551     | PL3036DF090    | 54575     |
| 40                | 1.504      | 1.474 |      |            |     |      |       |             | PL3040SF090    | 54552     | PL3040DF090    | 54576     |
| 48                | 1.805      | 1.775 |      |            |     |      |       |             | PL3048SF090    | 54553     | PL3048DF090    | 54577     |
| 60                | 2.256      | 2.226 |      |            |     |      |       |             | PL3060SF090    | 54554     | PL3060DF090    | 54578     |
| 72                | 2.707      | 2.677 |      |            |     |      |       |             | PL3072SF090    | 54555     | PL3072DF090    | 54579     |
| 80                | 3.008      | 2.978 | 5/16 | 1/2        | 1   | 3/8  | 7/8   | 13/16**     | PL3080SF090    | 54556     | PL3080DF090    | 54580     |
| 84                | 3.158      | 3.128 |      |            |     |      |       |             | PL3084SF090    | 54557     | -              | -         |
| 96                | 3.609      | 3.579 |      |            |     |      |       |             | PL3096SF090    | 54558     | -              | -         |
| 120               | 4.511      | 4.481 |      |            |     |      |       |             | PL3120NF090†   | 54559     | -              | -         |

\*13/16" for Double Flanges

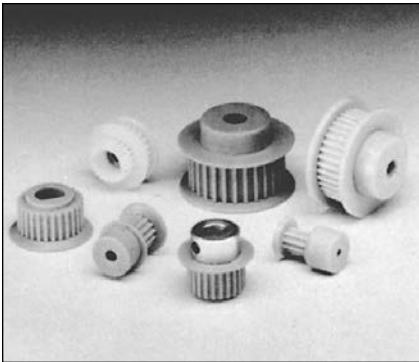
\*\*7/8" for Double Flanges

†No Flange

E

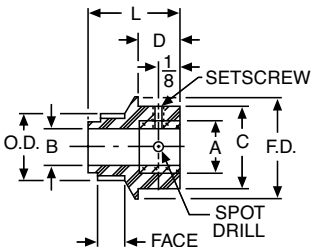
# Timing Belt Pulleys

## PLB Series For 9mm Wide Belts 3mm Pitch; Lexan

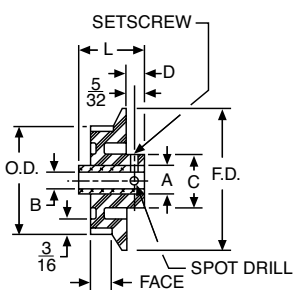


LEXAN – FIBERGLASS REINFORCED  
KNURLED ALUMINUM INSERTS  
COMPLETE WITH SETSCREWS

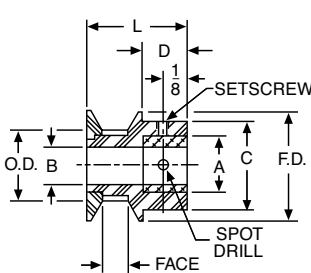
SINGLE FLANGE  
10-16 GROOVES



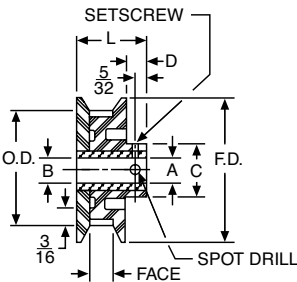
SINGLE FLANGE  
17-28 GROOVES



DOUBLE FLANGE  
10-16 GROOVES



DOUBLE FLANGE  
17-28 GROOVES



### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| Bore       | All | +.001 to -.000 |

### ORDER BY CATALOG NUMBER OR ITEM CODE

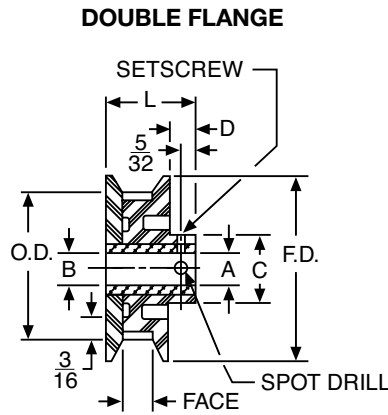
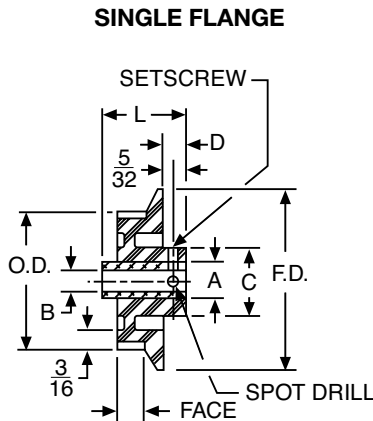
| Number of Grooves | Pitch Dia. | O.D.             | B                  | Face Width | C                | D     | Insert Dia. | L     | Flange Dia.     | Set-screw        | Single Flange      |           | Double Flanges   |           |                  |       |
|-------------------|------------|------------------|--------------------|------------|------------------|-------|-------------|-------|-----------------|------------------|--------------------|-----------|------------------|-----------|------------------|-------|
|                   |            |                  |                    |            |                  |       |             |       |                 |                  | Catalog Number     | Item Code | Catalog Number   | Item Code |                  |       |
| 10                | .376       | .346             | 3/16               | 7/16       | 5/8              | 1 1/4 | 3/8         | 3/4   | .63             | #6-32            | PLB3010SF090       | 54581     | PLB3010DF090     | 54633     |                  |       |
| 11                | .414       | .384             |                    |            |                  |       |             |       |                 |                  | PLB3011SF090       | 54582     | PLB3011DF090     | 54634     |                  |       |
| 12                | .451       | .421             |                    |            |                  |       |             |       |                 |                  | PLB3012SF090       | 54583     | PLB3012DF090     | 54635     |                  |       |
| 13                | .489       | .459             |                    |            |                  |       |             |       |                 |                  | PLB3013SF090       | 54584     | PLB3013DF090     | 54636     |                  |       |
| 14                | .526       | .496             |                    |            |                  |       |             |       |                 |                  | PLB3014SF090       | 54585     | PLB3014DF090     | 54637     |                  |       |
| 15                | .564       | .534             |                    |            |                  |       |             |       |                 |                  | PLB3015SF090       | 54586     | PLB3015DF090     | 54638     |                  |       |
| 16                | .602       | .572             |                    |            |                  |       |             |       |                 |                  | PLB3016SF090       | 54587     | PLB3016DF090     | 54639     |                  |       |
| 17                | .639       | .609             | 3/16<br>1/4        |            | 11/16            |       |             | 1/4   | 13/16           |                  | .87                | #6-32     | PLB3017SF09-3/16 | 54588     | PLB3017DF09-3/16 | 54640 |
| 18                | .677       | .647             | 3/16<br>1/4        |            |                  |       |             |       |                 |                  |                    |           | PLB3017SF09-1/4  | 54589     | PLB3017DF09-1/4  | 54641 |
|                   |            |                  |                    |            |                  |       |             |       |                 |                  |                    |           | PLB3018SF09-3/16 | 54590     | PLB3018DF09-3/16 | 54642 |
|                   |            |                  |                    |            |                  |       |             |       |                 |                  |                    |           | PLB3018SF09-1/4  | 54591     | PLB3018DF09-1/4  | 54643 |
| 19                | .714       | .684             | 3/16               |            |                  |       |             |       |                 |                  |                    |           | PLB3019SF09-3/16 | 54592     | PLB3019DF09-3/16 | 54644 |
|                   |            |                  |                    |            |                  |       |             |       |                 |                  |                    |           | PLB3019SF-09-1/4 | 54593     | PLB3019DF09-1/4  | 54645 |
|                   |            |                  |                    |            |                  |       |             |       |                 |                  |                    |           | PLB3020SF09-3/16 | 54594     | PLB3020DF09-3/16 | 54646 |
| 20                | .752       | .722             | 3/16<br>1/4        |            | PLB3020SF09-1/4  |       |             | 54595 |                 | PLB3020DF09-1/4  | 54647              |           |                  |           |                  |       |
|                   |            |                  |                    |            | PLB3022SF09-3/16 |       |             | 54596 |                 | PLB3022DF09-3/16 | 54649              |           |                  |           |                  |       |
|                   |            |                  |                    |            | 25               |       |             | .940  |                 | .910             | 1/4<br>5/16<br>3/8 |           | PLB3025SF09-1/4  | 54598     | PLB3025DF09-1/4  | 54650 |
| PLB3025SF09-5/16  | 54599      | PLB3025DF09-5/16 | 54651              |            |                  |       |             |       |                 |                  |                    |           |                  |           |                  |       |
| PLB3025SF09-3/8   | 54600      | PLB3025DF09-3/8  | 54652              |            |                  |       |             |       |                 |                  |                    |           |                  |           |                  |       |
| 28                | 1.053      | 1.023            | 1/4<br>5/16<br>3/8 |            | 3/4              |       |             | 1/2   |                 | 1.19             | #8-32              |           | PLB3028SF09-1/4  | 54601     | PLB3028DF09-1/4  | 54653 |
|                   |            |                  |                    |            |                  |       |             |       |                 |                  |                    |           | PLB3028SF09-5/16 | 54602     | PLB3028DF09-5/16 | 54654 |
|                   |            |                  |                    |            |                  |       |             |       | PLB3028SF09-3/8 |                  |                    | 54603     | PLB3028DF09-3/8  | 54655     |                  |       |

# Timing Belt Pulleys

## PLB Series For 9mm Wide Belts

3mm Pitch; Lexan

LEXAN – FIBERGLASS REINFORCED  
KNURLED ALUMINUM INSERTS  
COMPLETE WITH SETSCREWS



### STANDARD TOLERANCES

| Dimension |     | Tolerance        |
|-----------|-----|------------------|
| Bore      | All | +0.001 to -0.000 |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number of Grooves | Pitch Dia. | O.D.  | B                  | Face Width | C     | D    | Insert Dia.      | L     | Flange Dia.     | Set-screw        | Single Flange    |                  | Double Flanges   |           |                 |       |                 |
|-------------------|------------|-------|--------------------|------------|-------|------|------------------|-------|-----------------|------------------|------------------|------------------|------------------|-----------|-----------------|-------|-----------------|
|                   |            |       |                    |            |       |      |                  |       |                 |                  | Catalog Number   | Item Code        | Catalog Number   | Item Code |                 |       |                 |
| 32                | 1.203      | 1.173 | 1/4<br>5/16<br>3/8 | 7/16       | 3/4   | 1/4  | 1/2              | 13/16 | 1.44            | #8-32            | PLB3032SF09-1/4  | 54604            | PLB3032DF09-1/4  | 54656     |                 |       |                 |
| 36                | 1.353      | 1.323 | 1/4<br>5/16<br>3/8 |            | 7/8   |      |                  |       | 1.57            |                  | PLB3032SF09-5/16 | 54605            | PLB3032DF09-5/16 | 54657     |                 |       |                 |
|                   |            |       | 1/4<br>5/16<br>3/8 |            |       |      |                  |       | PLB3032SF09-3/8 |                  | 54606            | PLB3032DF09-3/8  | 54658            |           |                 |       |                 |
| 40                | 1.504      | 1.474 | 1/4<br>5/16<br>3/8 |            |       |      |                  |       | 1.76            |                  | PLB3036SF09-1/4  | 54607            | PLB3036DF09-1/4  | 54659     |                 |       |                 |
| 48                | 1.805      | 1.775 | 1/4<br>5/16<br>3/8 |            | 7/8   |      |                  |       | 2.02            |                  | PLB3036SF09-5/16 | 54608            | PLB3036DF09-5/16 | 54660     |                 |       |                 |
|                   |            |       | 1/4<br>5/16<br>3/8 |            |       |      |                  |       | PLB3036SF09-3/8 |                  | 54609            | PLB3036DF09-3/8  | 54661            |           |                 |       |                 |
| 60                | 2.256      | 2.226 | 5/16<br>3/8<br>1/2 |            |       |      |                  |       | 5/16            |                  | 5/8              | 13/16†           | 2.46             | #10-32    | PLB3040SF09-1/4 | 54610 | PLB3040DF09-1/4 |
| 72                | 2.707      | 2.677 | 5/16<br>3/8<br>1/2 |            | 2.92  |      | PLB3040SF09-5/16 | 54611 |                 |                  |                  |                  | PLB3040DF09-5/16 |           | 54663           |       |                 |
|                   |            |       | 5/16<br>3/8<br>1/2 |            | 2.92  |      | PLB3040SF09-3/8  | 54612 |                 |                  |                  |                  | PLB3040DF09-3/8  |           | 54664           |       |                 |
| 80                | 3.008      | 2.978 | 5/16<br>3/8<br>1/2 |            | 13/16 | 3.29 | PLB3048SF09-1/4  | 54613 |                 | PLB3048DF09-1/4  |                  |                  | 54665            |           |                 |       |                 |
| 84                | 3.158      | 3.128 | 5/16<br>3/8<br>1/2 |            |       | 3.38 | PLB3048SF09-5/16 | 54614 |                 | PLB3048DF09-5/16 | 54666            |                  |                  |           |                 |       |                 |
|                   |            |       | 5/16<br>3/8<br>1/2 |            |       | 3.38 | PLB3048SF09-3/8  | 54615 |                 | PLB3048DF09-3/8  | 54667            |                  |                  |           |                 |       |                 |
| 96                | 3.609      | 3.579 | 5/16<br>3/8<br>1/2 | 1          |       | 3/8  | 7/8              | 3.83  |                 | PLB3060SF09-5/16 | 54616            | PLB3060DF09-5/16 | 54668            |           |                 |       |                 |
| 120               | 4.511      | 4.481 | 3/8<br>1/2         |            |       |      |                  | –     |                 | PLB3060SF09-3/8  | 54617            | PLB3060DF09-3/8  | 54669            |           |                 |       |                 |
|                   |            |       | 3/8<br>1/2         |            |       |      |                  | –     |                 | PLB3060SF09-1/2  | 54618            | PLB3060DF09-1/2  | 54670            |           |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3072SF09-5/16 | 54619            | PLB3072DF09-5/16 | 54671     |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3072SF09-3/16 | 54620            | PLB3072DF09-3/8  | 54672     |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3072SF09-1/2  | 54621            | PLB3072DF09-1/2  | 54673     |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3080SF09-5/16 | 54622            | PLB3080DF09-5/16 | 54674     |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3080SF09-3/8  | 54623            | PLB3020DF09-3/8  | 54675     |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3080SF09-1/2  | 54624            | PLB3080DF09-1/2  | 54676     |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3084SF09-5/16 | 54625            | –                | –         |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3084SF09-3/8  | 54626            | –                | –         |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3084SF09-1/2  | 54627            | –                | –         |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3096SF09-5/16 | 54628            | –                | –         |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3096SF09-3/8  | 54629            | –                | –         |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3096SF09-1/2  | 54630            | –                | –         |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3120NF09-3/8* | 54631            | –                | –         |                 |       |                 |
|                   |            |       |                    |            |       |      |                  |       |                 |                  | PLB3120NF09-1/2* | 54632            | –                | –         |                 |       |                 |

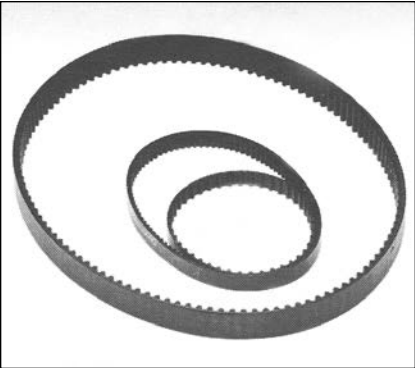
†7/8" for Double Flange

\*No Flange

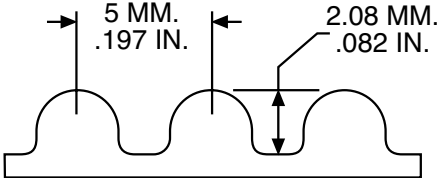
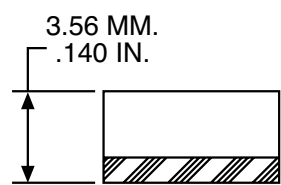
# Miniature HTD® Timing Belts

## 5M Series 9 and 15mm Widths

### 5mm Pitch



NEOPRENE-NYLON COVERED, FIBERGLASS REINFORCED  
AMBIENT TEMPERATURE RANGE— -18°C TO +85°C  
BREAKING STRENGTH—6 mm WIDTH – 234 KGS  
9 mm WIDTH – 390 KGS



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number of Grooves | Pitch Length |        | 9mm Belt Width |           | 15mm Belt Width |           |
|-------------------|--------------|--------|----------------|-----------|-----------------|-----------|
|                   | mm           | Inch   | Catalog Number | Item Code | Catalog Number  | Item Code |
| 64                | 320          | 12.598 | —              | —         | 5M064150        | 54407     |
| 66                | 330          | 12.992 | 5M066090       | 54367     | 5M066150        | 54408     |
| 70                | 350          | 13.779 | 5M070090       | 54368     | 5M070150        | 54409     |
| 75                | 375          | 14.764 | 5M075090       | 54369     | 5M075150        | 54410     |
| 80                | 400          | 15.748 | 5M080090       | 54370     | 5M080150        | 54411     |
| 85                | 425          | 16.732 | 5M085090       | 54371     | 5M085150        | 54412     |
| 90                | 450          | 17.716 | 5M090090       | 54372     | 5M090150        | 54413     |
| 95                | 475          | 18.700 | 5M095090       | 54373     | 5M095150        | 54414     |
| 100               | 500          | 19.685 | 5M100090       | 54374     | 5M100150        | 54415     |
| 107               | 535          | 21.063 | 5M107090       | 54376     | 5M107150        | 54417     |
| 113               | 565          | 22.244 | 5M113090       | 54377     | 5M113150        | 54418     |
| 120               | 600          | 23.622 | 5M120090       | 54378     | 5M120150        | 54419     |
| 123               | 615          | 24.213 | 5M123090       | 54379     | 5M123150        | 54420     |
| 127               | 635          | 25.000 | 5M127090       | 54380     | 5M127150        | 54421     |
| 133               | 665          | 26.181 | 5M133090       | 54381     | 5M133150        | 54422     |
| 134               | 670          | 26.378 | 5M134090       | 54382     | 5M134150        | 54423     |
| 142               | 710          | 27.953 | 5M142090       | 54383     | 5M142150        | 54424     |
| 148               | 740          | 29.134 | 5M148090       | 54384     | 5M148150        | 54425     |
| 151               | 755          | 29.724 | 5M151090       | 54385     | 5M151150        | 54426     |
| 160               | 800          | 31.596 | 5M160090       | 54386     | 5M160150        | 54427     |
| 166               | 830          | 32.677 | 5M166090       | 54387     | 5M166150        | 54428     |
| 167               | 835          | 32.874 | 5M167090       | 54388     | 5M167150        | 54429     |
| 170               | 850          | 33.464 | 5M170090       | 54389     | 5M170150        | 54430     |
| 178               | 890          | 35.039 | 5M178090       | 54390     | 5M178150        | 54431     |
| 185               | 925          | 36.417 | 5M185090       | 54391     | 5M185150        | 54432     |
| 186               | 930          | 36.614 | 5M186090       | 54392     | 5M186150        | 54433     |
| 190               | 950          | 37.401 | 5M190090       | 54393     | 5M190150        | 54434     |
| 200               | 1000         | 39.370 | 5M200090       | 54394     | 5M200150        | 54435     |
| 210               | 1050         | 41.339 | 5M210090       | 54395     | 5M210150        | 54436     |
| 225               | 1125         | 44.291 | 5M225090       | 54396     | 5M225150        | 54437     |
| 254               | 1270         | 50.000 | 5M254090       | 54397     | 5M254150        | 54438     |
| 284               | 1420         | 55.905 | 5M284090       | 54398     | 5M284150        | 54439     |
| 319               | 1595         | 62.795 | 5M319090       | 54399     | 5M319150        | 54440     |
| 358               | 1790         | 70.472 | 5M358090       | 54400     | 5M358150        | 54441     |
| 360               | 1800         | 70.866 | 5M360090       | 54401     | 5M360150        | 54442     |
| 374               | 1870         | 73.622 | 5M374090       | 54402     | 5M374150        | 54443     |
| 379               | 1895         | 74.606 | 5M379090       | 54403     | 5M379150        | 54444     |
| 389               | 1945         | 76.575 | 5M389090       | 54404     | 5M389150        | 54445     |
| 400               | 2000         | 78.740 | 5M400090       | 54405     | 5M400150        | 54446     |
| 505               | 2525         | 99.409 | 5M505090       | 54406     | 5M505150        | 54447     |

®Registered trademark of UNIROYAL, INC.

# Timing Belt Pulleys

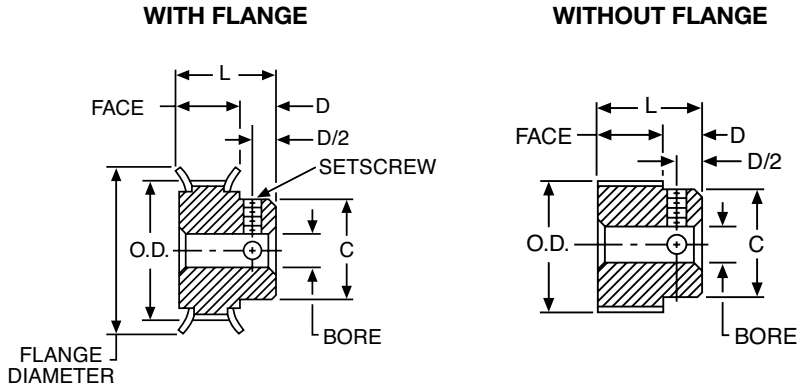
## PA Series For 9mm Wide Belts 5mm Pitch; Aluminum

ALUMINUM ALLOY – CLEAR ANODIZED  
COMPLETE WITH SETSCREWS



### STANDARD TOLERANCES

| Dimension |               | Tolerance        |
|-----------|---------------|------------------|
| Bore      | All           | +0.001 to -0.000 |
| O.D.      | 12-16 Grooves | +0.002 to -0.000 |
|           | 17-32 Grooves | +0.003 to -0.000 |
|           | 34-62 Grooves | +0.004 to -0.000 |
|           | 72 Grooves    | +0.005 to -0.000 |



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number<br>of<br>Grooves | Pitch<br>Dia. | O.D.  | B     | Face<br>Width | C      | D     | L     | Flange<br>Dia. | Setscrew* | With Flanges      |              | Without Flanges   |              |       |
|-------------------------|---------------|-------|-------|---------------|--------|-------|-------|----------------|-----------|-------------------|--------------|-------------------|--------------|-------|
|                         |               |       |       |               |        |       |       |                |           | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code |       |
| 12                      | .752          | .707  | .250  | 35/64         | 7/16   | 1/4   | 51/64 | 7/8            | #8-32     | PA5012DF090       | 54677        | PA5012NF090       | 54694        |       |
| 13                      | .815          | .770  |       |               | 1/2    |       |       | 15/16          |           | PA5013DF090       | 54678        | PA5013NF090       | 54695        |       |
| 14                      | .877          | .832  |       |               | 1/2    |       |       | 1              |           | PA5014DF090       | 54679        | PA5014NF090       | 54696        |       |
| 15                      | .940          | .895  |       |               | 9/16   |       |       | 1-1/16         |           | PA5015DF090       | 54680        | PA5015NF090       | 54697        |       |
| 16                      | 1.003         | .958  |       |               | 9/16   |       |       | 1-3/32         |           | PA5016DF090       | 54681        | PA5016NF090       | 54698        |       |
| 17                      | 1.065         | 1.020 |       |               | 5/8    |       |       | 1-3/16         |           | PA5017DF090       | 54682        | PA5017NF090       | 54699        |       |
| 18                      | 1.128         | 1.083 |       |               | 11/16  |       |       | 1-1/4          |           | PA5018DF090       | 54683        | PA5018NF090       | 54700        |       |
| 19                      | 1.191         | 1.146 |       |               | 3/4    |       |       | 1-5/16         |           | PA5019DF090       | 54684        | PA5019NF090       | 54701        |       |
| 20                      | 1.253         | 1.208 |       |               | 13/16  |       |       | 1-3/8          |           | PA5020DF090       | 54685        | PA5020NF090       | 54702        |       |
| 22                      | 1.379         | 1.334 |       |               | 15/16  |       |       | 1-1/2          |           | PA5022DF090       | 54686        | PA5022NF090       | 54703        |       |
| 24                      | 1.504         | 1.459 |       |               | 1      |       |       | 1-5/8          |           | PA5024DF090       | 54687        | PA5024NF090       | 54704        |       |
| 25                      | 1.566         | 1.521 |       |               | 1      |       |       | 1-11/16        |           | PA5025DF090       | 54688        | PA5025NF090       | 54705        |       |
| 26                      | 1.629         | 1.584 | .3125 | 35/64         | 1-1/16 | 5/16  | 55/64 | 1-3/4          | #8-32     | PA5026DF090       | 54689        | PA5026NF090       | 54706        |       |
| 28                      | 1.754         | 1.709 |       |               | 1-3/16 |       |       | 1-7/8          |           | PA5028DF090       | 54690        | PA5028NF090       | 54707        |       |
| 30                      | 1.880         | 1.835 |       |               | 1-3/16 |       |       | 2              |           | PA5030DF090       | 54691        | PA5030NF090       | 54708        |       |
| 32                      | 2.005         | 1.960 |       |               | 1-1/4  |       |       | 2-1/8          |           | PA5032DF090       | 54692        | PA5032NF090       | 54709        |       |
| 34                      | 2.130         | 2.085 |       |               | 1-3/8  |       |       | 2-1/4          |           | PA5034DF090       | 54693        | PA5034NF090       | 54710        |       |
| 36                      | 2.256         | 2.211 |       |               | -      |       |       | -              |           | -                 | -            | PA5036NF090       | 54711        |       |
| 38                      | 2.381         | 2.336 |       |               | -      |       |       | -              |           | -                 | -            | PA5038NF090       | 54712        |       |
| 40                      | 2.506         | 2.461 |       |               | -      |       |       | -              |           | -                 | -            | PA5040NF090       | 54713        |       |
| 44                      | 2.757         | 2.712 |       |               | -      |       |       | -              |           | -                 | -            | PA5044NF090       | 54714        |       |
| 48                      | 3.008         | 2.963 |       |               | -      |       |       | -              |           | -                 | -            | PA5048NF090       | 54715        |       |
| 50                      | 3.133         | 3.088 | .375  |               | 35/64  | 1-1/2 | 25/64 | 15/16          | -         | #10-32            | -            | -                 | PA5050NF090  | 54716 |
| 56                      | 3.509         | 3.464 |       |               |        | -     |       |                | -         |                   | -            | -                 | PA5056NF090  | 54717 |
| 60                      | 3.760         | 3.715 |       |               |        | -     |       |                | -         |                   | -            | -                 | PA5060NF090  | 54718 |
| 62                      | 3.885         | 3.840 |       |               |        | -     |       |                | -         |                   | -            | -                 | PA5062NF090  | 54719 |
| 72                      | 4.511         | 4.466 |       |               |        | -     |       |                | -         |                   | -            | -                 | PA5072NF090  | 54720 |

\*Pulleys with 12 and 13 grooves have one setscrew. All others have two at 90°

# Timing Belt Pulleys

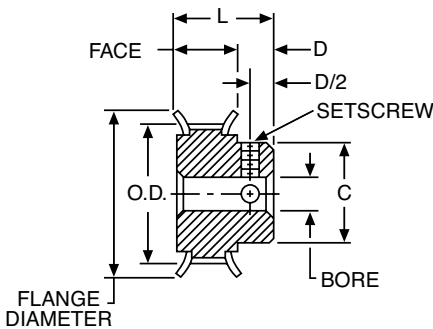
## PA Series For 15mm Wide Belts

5mm Pitch; Aluminum

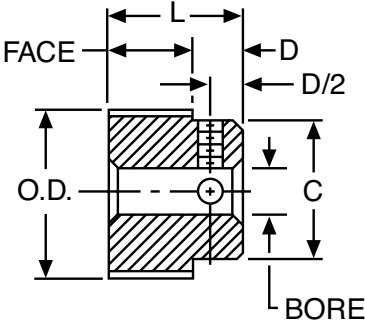


ALUMINUM ALLOY – CLEAR ANODIZED†  
COMPLETE WITH SETSCREWS

WITH FLANGE



WITHOUT FLANGE



### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE      |
|------------|---------------|----------------|
| Bore       | All           | +.001 to -.000 |
| O.D.       | 12-16 Grooves | +.002 to -.000 |
|            | 17-32 Grooves | +.003 to -.000 |
|            | 34-62 Grooves | +.004 to -.000 |
|            | 72 Grooves    | +.005 to -.000 |

ORDER BY CATALOG NUMBER OR ITEM CODE

| Number<br>of<br>Grooves | Pitch<br>Dia. | O.D.  | B     | Face<br>Width | C      | D       | L           | Flange<br>Dia. | Setscrew* | With Flanges      |              | Without Flanges   |              |
|-------------------------|---------------|-------|-------|---------------|--------|---------|-------------|----------------|-----------|-------------------|--------------|-------------------|--------------|
|                         |               |       |       |               |        |         |             |                |           | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code |
| 12                      | .752          | .707  | .250  | 25/32         | 7/16   | 1/4     | 1-1/32      | 7/8            | #8-32     | PA5012DF150       | 54721        | PA5012NF150       | 54738        |
| 13                      | .815          | .770  |       |               | 1/2    |         |             | 15/16          |           | PA5013DF150       | 54722        | PA5013NF150       | 54739        |
| 14                      | .877          | .832  |       |               | 1/2    |         |             | 1              |           | PA5014DF150       | 54723        | PA5014NF150       | 54740        |
| 15                      | .940          | .895  |       |               | 9/16   |         |             | 1-1/16         |           | PA5015DF150       | 54724        | PA5015NF150       | 54741        |
| 16                      | 1.003         | .958  |       |               | 9/16   |         |             | 1-3/32         |           | PA5016DF150       | 54725        | PA5016NF150       | 54742        |
| 17                      | 1.065         | 1.020 |       |               | 5/8    |         |             | 1-3/16         |           | PA5017DF150       | 54726        | PA5017NF150       | 54743        |
| 18                      | 1.128         | 1.083 |       |               | 11/16  |         |             | 1-1/4          |           | PA5018DF150       | 54727        | PA5018NF150       | 54744        |
| 19                      | 1.191         | 1.146 |       |               | 3/4    |         |             | 1-5/16         |           | PA5019DF150       | 54728        | PA5019NF150       | 54745        |
| 20                      | 1.253         | 1.208 |       |               | 13/16  | 1-3/8   | PA5020DF150 | 54729          |           | PA5020NF150       | 54746        |                   |              |
| 22                      | 1.379         | 1.334 |       |               | 15/16  | 1-1/2   | PA5022DF150 | 54730          |           | PA5022NF150       | 54747        |                   |              |
| 24                      | 1.504         | 1.459 |       |               | 1      | 1-5/8   | PA5024DF150 | 54731          |           | PA5024NF150       | 54748        |                   |              |
| 25                      | 1.566         | 1.521 |       |               | 1      | 1-11/16 | PA5025DF150 | 54732          |           | PA5025NF150       | 54749        |                   |              |
| 26                      | 1.629         | 1.584 |       |               | 1-1/16 | 1-3/4   | PA5026DF150 | 54733          |           | PA5026NF150       | 54750        |                   |              |
| 28                      | 1.754         | 1.709 |       |               | 1-3/16 | 5/16    | 1-3/32      | 1-7/8          |           | PA5028DF150       | 54734        | PA5028NF150       | 54751        |
| 30                      | 1.880         | 1.835 |       |               | 1-3/16 | 2       | PA5030DF150 | 54735          |           | PA5030NF150       | 54752        |                   |              |
| 32                      | 2.005         | 1.960 |       |               | 1-1/4  | 2-1/8   | PA5032DF150 | 54736          |           | PA5032NF150       | 54753        |                   |              |
| 34                      | 2.130         | 2.085 |       |               | 1-3/8  | 2-1/4   | PA5034DF150 | 54737          |           | PA5034NF150       | 54754        |                   |              |
| 36                      | 2.256         | 2.211 | .3125 |               |        |         |             | -              | #10-32    | -                 | -            | PA5036NF150       | 54755        |
| 38                      | 2.381         | 2.336 |       |               |        |         |             | -              |           | -                 | -            | PA5038NF150       | 54756        |
| 40                      | 2.506         | 2.461 |       |               |        |         |             | -              |           | -                 | -            | PA5040NF150       | 54757        |
| 44                      | 2.757         | 2.712 |       |               |        |         |             | -              |           | -                 | -            | PA5044NF150       | 54758        |
| 48                      | 3.008         | 2.963 | .375  |               | 1-1/2  | 13/32   | 1-3/16      | -              |           | -                 | -            | PA5048NF150       | 54759        |
| 50                      | 3.133         | 3.088 |       |               |        |         |             | -              |           | -                 | -            | PA5050NF150       | 54760        |
| 56                      | 3.509         | 3.464 |       |               |        |         |             | -              |           | -                 | -            | PA5056NF150       | 54761        |
| 60                      | 3.760         | 3.715 |       |               |        |         |             | -              |           | -                 | -            | PA5060NF150       | 54762        |
| 62                      | 3.885         | 3,840 |       |               |        |         |             | -              |           | -                 | -            | PA5062NF150       | 54763        |
| 72                      | 4.511         | 4.466 |       |               |        |         |             | -              |           | -                 | -            | PA5072NF150       | 54764        |

\*Pulleys with 12 and 13 grooves have one setscrew. All others have two at 90°

†44-72 grooves, material is A356-T6 (cast).

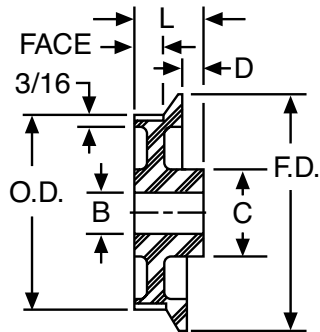
# Timing Belt Pulleys

## PL Series For 9mm Wide Belts

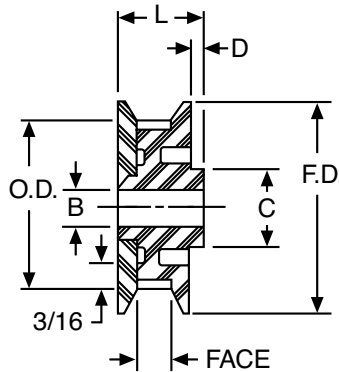
5mm Pitch; Lexan

LEXAN – FIBERGLASS REINFORCED

SINGLE FLANGE



DOUBLE FLANGE



### STANDARD TOLERANCES

| Dimension |     | Tolerances     |
|-----------|-----|----------------|
| Bore      | All | +.001 to -.000 |

ORDER BY CATALOG NUMBER OR ITEM CODE

| Number<br>of<br>Grooves | Pitch<br>Dia. | O.D.  | B    | Face<br>Width | C     | D    | L     | Flange<br>Dia. | Single Flange     |              | Double Flange     |              |             |       |
|-------------------------|---------------|-------|------|---------------|-------|------|-------|----------------|-------------------|--------------|-------------------|--------------|-------------|-------|
|                         |               |       |      |               |       |      |       |                | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code |             |       |
| 11                      | .689          | .644  | 3/16 | 7/16          | 11/16 | 3/4* | 13/16 | .87            | PL5011SF090       | 54765        | PL5011DF090       | 54782        |             |       |
| 12                      | .752          | .707  |      |               |       |      |       | .93            | PL5012SF090       | 54766        | PL5012DF090       | 54783        |             |       |
| 13                      | .815          | .770  |      |               |       |      |       | .99            | PL5013SF090       | 54767        | PL5013DF090       | 54784        |             |       |
| 14                      | .877          | .832  |      |               |       |      |       | 1.06           | PL5014SF090       | 54768        | PL5014DF090       | 54785        |             |       |
| 15                      | .940          | .895  | 1/4  |               | 3/4   | 1/4  |       | 1.19           | PL5015SF090       | 54769        | PL5015DF090       | 54786        |             |       |
| 16                      | 1.003         | .958  |      |               |       |      |       | 1.19           | PL5016SF090       | 54770        | PL5016DF090       | 54787        |             |       |
| 17                      | 1.065         | 1.020 |      |               |       |      |       | 1.24           | PL5017SF090       | 54771        | PL5017DF090       | 54788        |             |       |
| 18                      | 1.128         | 1.083 |      |               |       |      |       | 1.31           | PL5018SF090       | 54772        | PL5018DF090       | 54789        |             |       |
| 19                      | 1.191         | 1.146 |      |               | 1.38  |      |       | PL5019SF090    | 54773             | PL5019DF090  | 54790             |              |             |       |
| 20                      | 1.253         | 1.208 |      |               | 1.44  |      |       | PL5020SF090    | 54774             | PL5020DF090  | 54791             |              |             |       |
| 22                      | 1.379         | 1.334 |      |               | 1.57  |      |       | PL5022SF090    | 54775             | PL5022DF090  | 54792             |              |             |       |
| 25                      | 1.566         | 1.521 |      |               | 1.76  |      |       | PL5025SF090    | 54776             | PL5025DF090  | 54793             |              |             |       |
| 28                      | 1.754         | 1.709 |      |               | 1.95  |      |       | PL5028SF090    | 54777             | PL5028DF090  | 54794             |              |             |       |
| 29                      | 1.817         | 1.772 |      |               | 2.02  |      |       | PL5029SF090    | 54778             | PL5029DF090  | 54795             |              |             |       |
| 30                      | 1.880         | 1.835 |      |               | 2.08  |      |       | PL5030SF090    | 54779             | PL5030DF090  | 54796             |              |             |       |
| 40                      | 2.506         | 2.461 |      |               | 5/16  |      |       | 5/16           | 13/16*            | 2.71         | PL5040SF090       | 54780        | PL5040DF090 | 54797 |
| 50                      | 3.133         | 3.088 |      |               |       |      |       |                |                   | 3.29         | PL5050SF090       | 54781        | PL5050DF090 | 54798 |

\*7/8" for Double Flange.

# Timing Belt Pulleys

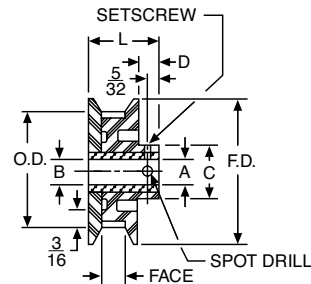
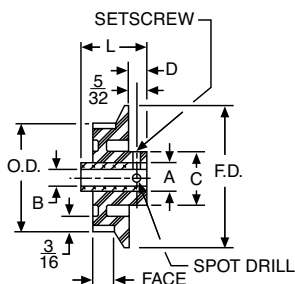
## PLB Series For 9mm Wide Belts

5mm Pitch; Lexan

LEXAN – FIBERGLASS REINFORCED  
KNURLED ALUMINUM INSERTS  
COMPLETE WITH SETSCREWS

### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE       |
|------------|-----|-----------------|
| Bore       | All | +0.001 to -.000 |



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Number of Grooves | Pitch Dia. | O.D.  | B                  | Face Width | C     | D   | Insert Dia. | L    | Flange Dia. | Set-screw* | Single Flange    |           | Double Flanges   |           |
|-------------------|------------|-------|--------------------|------------|-------|-----|-------------|------|-------------|------------|------------------|-----------|------------------|-----------|
|                   |            |       |                    |            |       |     |             |      |             |            | Catalog Number   | Item Code | Catalog Number   | Item Code |
| 11                | .689       | .644  | 3/16<br>1/4        | 11/16      | 11/16 | 3/8 | 13/16       | 1.38 | .87         | #6-32      | PLB5011SF09-3/16 | 54799     | PLB5011DF09-3/16 | 54846     |
| 12                | .752       | .707  | 3/16<br>1/4        |            |       |     |             |      | .93         |            | PLB5011SF09-1/4  | 54800     | PLB5011DF09-1/4  | 54847     |
| 13                | .815       | .770  | 3/16<br>1/4        |            |       |     |             |      | .99         |            | PLB5012SF09-3/16 | 54801     | PLB5012DF09-3/16 | 54848     |
| 14                | .877       | .832  | 3/16<br>1/4        |            |       |     |             |      | 1.06        |            | PLB5012SF09-1/4  | 54802     | PLB5012DF09-1/4  | 54849     |
| 15                | .940       | .895  | 1/4<br>5/16<br>3/8 | 3/4        | 3/4   | 1/2 | 13/16       | 1.38 | 1.19        | #8-32      | PLB5013SF09-3/16 | 54803     | PLB5013DF09-3/16 | 54850     |
| 16                | 1.003      | .958  | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 1.19        |            | PLB5013SF09-1/4  | 54804     | PLB5013DF09-1/4  | 54851     |
| 17                | 1.065      | 1.020 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 1.24        |            | PLB5014SF09-3/16 | 54805     | PLB5014DF09-3/16 | 54852     |
| 18                | 1.128      | 1.083 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 1.31        |            | PLB5014SF09-1/4  | 54806     | PLB5014DF09-1/4  | 54853     |
| 19                | 1.191      | 1.146 | 1/4<br>5/16<br>3/8 | 7/16       | 7/16  | 1/2 | 13/16       | 1.38 | 1.38        | #8-32      | PLB5015SF09-3/16 | 54807     | PLB5015DF09-3/16 | 54854     |
| 20                | 1.253      | 1.208 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 1.44        |            | PLB5015SF09-1/4  | 54808     | PLB5015DF09-1/4  | 54855     |
| 22                | 1.379      | 1.334 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 1.57        |            | PLB5015SF09-5/16 | 54809     | PLB5015DF09-5/16 | 54856     |
| 25                | 1.566      | 1.521 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 1.76        |            | PLB5016SF09-3/8  | 54810     | PLB5016DF09-3/8  | 54857     |
| 28                | 1.754      | 1.709 | 1/4<br>5/16<br>3/8 | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 | 1.95        | #8-32      | PLB5016SF09-1/4  | 54811     | PLB5016DF09-1/4  | 54858     |
| 29                | 1.817      | 1.772 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 2.02        |            | PLB5016SF09-5/16 | 54812     | PLB5016DF09-5/16 | 54859     |
| 30                | 1.880      | 1.835 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 2.08        |            | PLB5017SF09-3/8  | 54813     | PLB5017DF09-3/8  | 54860     |
| 40                | 2.506      | 2.461 | 1/4<br>5/16<br>3/8 |            |       |     |             |      | 2.71        |            | PLB5017SF09-1/4  | 54814     | PLB5017DF09-1/4  | 54861     |
| 50                | 3.133      | 3.088 | 1/4<br>5/16<br>3/8 | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 | 3.29        | #10-32     | PLB5017SF09-5/16 | 54815     | PLB5017DF09-5/16 | 54862     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5018SF09-3/8  | 54816     | PLB5018DF09-3/8  | 54863     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5018SF09-1/4  | 54817     | PLB5018DF09-1/4  | 54864     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5018SF09-5/16 | 54818     | PLB5018DF09-5/16 | 54865     |
|                   |            |       | 1/2                | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 |             | #10-32     | PLB5019SF09-3/8  | 54819     | PLB5019DF09-3/8  | 54866     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5019SF09-1/4  | 54820     | PLB5019DF09-1/4  | 54867     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5019SF09-5/16 | 54821     | PLB5019DF09-5/16 | 54868     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5020SF09-3/8  | 54822     | PLB5020DF09-3/8  | 54869     |
|                   |            |       | 1/2                | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 |             | #10-32     | PLB5020SF09-1/4  | 54823     | PLB5020DF09-1/4  | 54870     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5020SF09-5/16 | 54824     | PLB5020DF09-5/16 | 54871     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5022SF09-3/8  | 54825     | PLB5022DF09-3/8  | 54872     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5022SF09-1/4  | 54826     | PLB5022DF09-1/4  | 54873     |
|                   |            |       | 1/2                | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 |             | #10-32     | PLB5022SF09-5/16 | 54827     | PLB5022DF09-5/16 | 54874     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5025SF09-3/8  | 54828     | PLB5025DF09-3/8  | 54875     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5025SF09-1/4  | 54829     | PLB5025DF09-1/4  | 54876     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5025SF09-5/16 | 54830     | PLB5025DF09-5/16 | 54877     |
|                   |            |       | 1/2                | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 |             | #10-32     | PLB5028SF09-3/8  | 54831     | PLB5028DF09-3/8  | 54878     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5028SF09-1/4  | 54832     | PLB5028DF09-1/4  | 54879     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5028SF09-5/16 | 54833     | PLB5028DF09-5/16 | 54880     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5029SF09-3/8  | 54834     | PLB5029DF09-3/8  | 54881     |
|                   |            |       | 1/2                | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 |             | #10-32     | PLB5029SF09-1/4  | 54835     | PLB5029DF09-1/4  | 54882     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5029SF09-5/17 | 54836     | PLB5029DF09-5/17 | 54883     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5030SF09-3/8  | 54837     | PLB5030DF09-3/8  | 54884     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5030SF09-1/4  | 54838     | PLB5030DF09-1/4  | 54885     |
|                   |            |       | 1/2                | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 |             | #10-32     | PLB5030SF09-5/16 | 54839     | PLB5030DF09-5/16 | 54886     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5040SF09-3/8  | 54840     | PLB5040DF09-3/8  | 54887     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5040SF09-1/2  | 54841     | PLB5040DF09-1/2  | 54888     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5050SF09-3/8  | 54842     | PLB5050DF09-3/8  | 54889     |
|                   |            |       | 1/2                | 7/8        | 7/8   | 1/2 | 13/16       | 1.38 |             | #10-32     | PLB5050SF09-5/16 | 54843     | PLB5050DF09-5/16 | 54890     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5050SF09-1/2  | 54844     | PLB5050DF09-1/2  | 54891     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5050SF09-3/8  | 54845     | PLB5050DF09-3/8  | 54892     |
|                   |            |       | 1/2                |            |       |     |             |      |             |            | PLB5050SF09-1/2  | 54846     | PLB5050DF09-1/2  | 54893     |

†7/8" for Double Flange

\*No Flange

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# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

F



BOST-BRONZ is Boston Gear’s all-purpose, oil-impregnated porous bronze bearing material. It is manufactured of highest purity metal powders by the powder metallurgy process. This process provides uniformly distributed pores between the metal particles which absorb oil by capillary action. BOST-BRONZ has a self-contained oil supply (approximately 20% by volume) which provides a uniform, protective film over the entire bearing surface. Composition and physical properties are as follows: –

BOST-BRONZ can be used for production and replacement requirements in practically every known industry. It has proven to be efficient under heavy loads at moderate speeds and also under light loads at high speeds. It is ideally suited for applications where normal lubrication is difficult or impossible to provide.

| Coefficient of Friction |           |
|-------------------------|-----------|
| Static                  | .1 - .3   |
| Dynamic                 | .02 - .04 |

### Accuracy

The close tolerances of BOST-BRONZ bearings are made possible through expertly controlled manufacturing methods. In addition, the lubricating features of BOST-BRONZ permit reduced shaft clearances — a precision product with precision performance.

### Performance

Because of its porous construction, BOST-BRONZ bearings have an oil reservoir when idle — an oil film to start on — an oil film to run on, assuring low starting torque and smooth, quiet positive performance.

### Adaptability

BOST-BRONZ bearings are designed for immediate installation and may be used in most applications without additional machining. Oil holes or grooves are not required and turning or boring bearing diameters is normally unnecessary.

| Composition %                                                                                                                      | Density in Grams per Cu. Cent. Impregnated | Tensile Strength Lbs. per Sq. In. | Yield Strength in Compression (0.2% Offset) Lbs. per Sq. In. | Elongation in One Inch % | Porosity by Volume % |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------|--------------------------------------------------------------|--------------------------|----------------------|
| Copper (Cu) 87.5-90.5<br>Iron 1.0 Max.<br>Lead (a)<br>Carbon (Graphite Max.) 1.75 Max.<br>Tin 9.5-10.5<br>Total Other Elements .05 | 6.4/6.8                                    | 14,000                            | 11,000                                                       | 1.0                      | 19 Min.              |
| Conforms to ASTM B438-73 Grade 1, Type 2, and SAE-841 Mil-B-5687C TYPE 1 comp A (Ref:Oil is a SAE 20-30 weight)                    |                                            |                                   |                                                              |                          |                      |

(a) Included in other elements

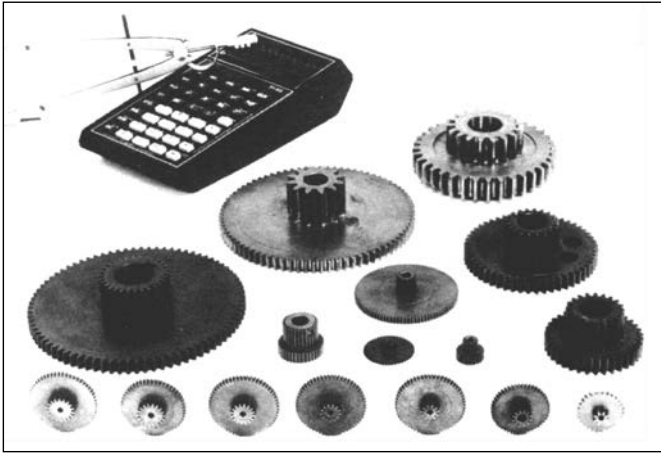
# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

## Non-Listed Sizes

The stock sizes of BOST-BRONZ bearings listed in this catalog will satisfy the majority of industrial applications. Tooling is available for many metric and additional inch sizes. Where tooling is not available, special sizes can be made to order.

## Special Shapes

Many special shapes can be made economically by the powdered metal process. This process is particularly economical for the production of comparatively simple shapes in large volume. More complicated shapes may also be economical to produce by this process when the savings in machining justify the cost of more expensive tooling.



## Special Compositions

In addition to our standard BOST-BRONZ, many special compositions can be furnished on a made-to-order basis.

## Applications

BOST-BRONZ bearings can be used on any application where the load-carrying capacity required falls within the capabilities of the material. BOST-BRONZ bearings operate efficiently under heavy loads at slow speeds. Because these bearings are supplied with oil impregnation, the original oil content provides long-lasting lubrication. For even longer life requirements, many applications incorporate impregnated felts or other reservoir techniques about the bearing.

## Selection

In general, sleeve bearings should be selected with a length of one to two times the shaft diameter and an O.D. approximately 25% larger than the shaft diameter.

A general guide to determination of limiting load and velocity values for sleeve bearings has been established by the use of PV calculations. PV represents Pressure x Velocity, for example 100 psi x 20 fpm yields a PV of 2000.

Maximum PV values for BOST-BRONZ bearings:

Cylindrical & Flange Bearings - 50,000

Thrust Bearings - 10,000

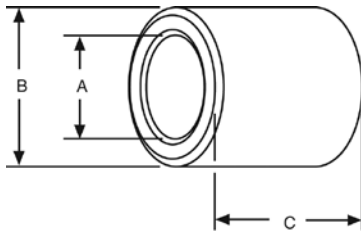
For complete selection and application information, see Engineering Section, Pages 174-182.

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# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

## Plain Cylindrical Bearings

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE



### STANDARD TOLERANCES

| DIMENSIONS      | TOLERANCE       |
|-----------------|-----------------|
| A 1/8 – 1 1/2   | + .000, – .001  |
| 1 3/4 – 2 1/2   | + .000, – .0015 |
| B 2 3/4 – 3 1/2 | + .000, – .002  |
| C 1/8 – 1-1/2   | ± .005          |
| 1 3/4 – 3       | ± .0075         |
| 4               | ± .010          |

### CONCENTRICITY

| DIMENSIONS    | TOLERANCE |
|---------------|-----------|
| A 1/8 – 1 1/2 | .003      |
| 1 5/8 – 3     | .004      |
| 3 1/4 – 3 1/2 | .005      |

Prices on unlisted sizes and other Boston Gear powder metal parts provided on request.

| A            | B            | C            | Catalog Number | Item Code | A             | B             | C       | Catalog Number | Item Code |
|--------------|--------------|--------------|----------------|-----------|---------------|---------------|---------|----------------|-----------|
| 1/8<br>.127  | 1/4<br>.252  | 1/8          | B24-1          | 34504     | 3/8<br>.377   | 9/16<br>.5645 | 3/8     | B69-3          | 34648     |
|              |              | 1/4          | B24-2          | 34506     |               |               | 1/2     | B69-4          | 34650     |
|              |              | 3/8          | B24-3          | 34508     |               |               | 5/8     | B69-5          | 34652     |
|              |              | 1/2          | B24-4          | 34510     |               |               | 3/4     | B69-6          | 34654     |
| 5/16<br>.315 | 1/8          | B25-1        | 34512          | 7/8       |               |               | B69-7   | 34656          |           |
|              | 1/4          | B25-2        | 34514          | 1         |               |               | B69-8   | 34658          |           |
|              | 3/8          | B25-3        | 34516          | 1-1/4     |               |               | B69-10  | 34660          |           |
|              | 1/2          | B25-4        | 34518          | 3/8       |               |               | B610-3  | 34676          |           |
| 3/16<br>.189 | 1/4<br>.252  | 5/8          | B25-5          | 34520     |               | 1/2           | B610-4  | 34678          |           |
|              |              | 1/4          | B34-2          | 34522     |               | 5/8           | B610-5  | 34680          |           |
|              |              | 3/8          | B34-3          | 34524     |               | 3/4           | B610-6  | 34682          |           |
|              |              | 1/2          | B34-4          | 34526     |               | 7/8           | B610-7  | 34684          |           |
|              | 5/16<br>.314 | 5/8          | B34-5          | 34528     |               | 1             | B610-8  | 34686          |           |
|              |              | 3/4          | B34-6          | 34530     |               | 1-1/4         | B610-10 | 34688          |           |
|              |              | 1/4          | B35-2          | 34532     | 3/8           | B612-3        | 34690   |                |           |
|              |              | 3/8          | B35-3          | 34534     | 1/2           | B612-4        | 34692   |                |           |
|              | 3/8<br>.377  | 1/2          | B35-4          | 34536     | 3/4           | B612-6        | 34694   |                |           |
|              |              | 5/8          | B35-5          | 34538     | 1             | B612-8        | 34696   |                |           |
|              |              | 3/4          | B35-6          | 34540     | 1-1/4         | B612-10       | 34698   |                |           |
|              |              | 3/8          | B36-3          | 13561     | 3/8           | B79-3         | 34662   |                |           |
|              | 1/4<br>.252  | 5/16<br>.315 | 1/2            | B36-4     | 13563         | 1/2           | B79-4   | 34664          |           |
|              |              |              | 5/8            | B36-5     | 13565         | 3/4           | B79-6   | 34668          |           |
|              |              |              | 3/4            | B36-6     | 13567         | 7/8           | B79-7   | 34670          |           |
|              |              |              | 1/4            | B45-2     | 13569         | 1             | B79-8   | 34672          |           |
| 3/8<br>.377  |              | 3/8          | B45-3          | 13571     | 1-1/4         | B79-10        | 34674   |                |           |
|              |              | 1/2          | B45-4          | 13573     | 3/8           | B710-3        | 34700   |                |           |
|              |              | 3/4          | B45-6          | 13575     | 1/2           | B710-4        | 34702   |                |           |
|              |              | 7/16<br>.439 | 1/4            | B46-2     | 34542         | 5/8           | B710-5  | 34704          |           |
| 5/16         |              |              | B46-2 1/2      | 34544     | 3/4           | B710-6        | 34706   |                |           |
| 3/8          |              |              | B46-3          | 34546     | 7/8           | B710-7        | 34708   |                |           |
| 1/2          |              |              | B46-4          | 34548     | 1             | B710-8        | 34710   |                |           |
| 5/8          |              |              | B46-5          | 34550     | 1-1/4         | B710-10       | 34712   |                |           |
| 3/4          |              |              | B46-6          | 34552     | 11/16         | 1/2           | B711-4  | 34714          |           |
| 7/8          |              |              | B46-7          | 34554     | 1             | B711-8        | 34716   |                |           |
| 1            |              |              | B46-8          | 34556     | 1-1/2         | B711-12       | 34718   |                |           |
| 5/16<br>.314 |              | 7/16<br>.439 | 1-1/4          | B46-10    | 34558         | 5/8<br>.628   | 1-1/2   | B711-12        | 34718     |
|              | 3/8          |              | B47-3          | 34560     | 1/2           |               | B810-4  | 34720          |           |
|              | 1/2          |              | B47-4          | 34562     | 5/8           |               | B810-5  | 34722          |           |
|              | 5/8          |              | B47-5          | 34564     | 3/4           |               | B810-6  | 34724          |           |
|              | 1/2<br>.502  | 3/4          | B47-6          | 34566     | 7/8           | B810-7        | 34726   |                |           |
|              |              | 7/8          | B47-7          | 34568     | 1             | B810-8        | 34728   |                |           |
|              |              | 1            | B47-8          | 34570     | 1-1/8         | B810-9        | 34730   |                |           |
|              |              | 3/8          | B48-3          | 34572     | 1-1/4         | B810-10       | 34732   |                |           |
|              | 3/8<br>.377  | 1/2          | B48-4          | 34574     | 1-1/2         | B810-12       | 34734   |                |           |
|              |              | 5/8          | B48-5          | 34576     | 11/16<br>.690 | 1/2           | B811-4  | 34736          |           |
|              |              | 3/4          | B48-6          | 34578     |               | 5/8           | B811-5  | 34738          |           |
|              |              | 7/8          | B48-7          | 34580     |               | 3/4           | B811-6  | 34740          |           |
|              | 1            | B48-8        | 34582          | 7/8       |               | B811-7        | 34742   |                |           |
|              | 3/8<br>.377  | 7/16<br>.439 | 1-1/4          | B48-10    | 34584         | 1             | B811-8  | 34744          |           |
|              |              |              | 3/8            | B56-3     | 34586         | 1-1/8         | B811-9  | 34746          |           |
|              |              |              | 1/2            | B56-4     | 34588         | 1-1/4         | B811-10 | 34748          |           |
| 5/8          |              |              | B56-5          | 34590     | 1-1/2         | B811-12       | 34750   |                |           |
| 1/2<br>.502  |              | 3/4          | B56-6          | 34592     | 3/4<br>.753   | 1-1/2         | B811-12 | 34750          |           |
|              |              | 7/8          | B56-7          | 34594     |               | 1/2           | B812-4  | 34752          |           |
|              |              | 1            | B56-8          | 34596     |               | 5/8           | B812-5  | 34754          |           |
|              |              | 1/4          | B57-2          | 34598     |               | 3/4           | B812-6  | 34756          |           |
| 3/8<br>.377  |              | 3/8          | B57-3          | 34600     | 7/8           | B812-7        | 34758   |                |           |
|              |              | 1/2          | B57-4          | 34602     | 1             | B812-8        | 34760   |                |           |
|              |              | 5/8          | B57-5          | 34604     | 1-1/8         | B812-9        | 34762   |                |           |
|              |              | 3/4          | B57-6          | 34606     | 1-1/4         | B812-10       | 34764   |                |           |
| 5/16<br>.314 |              | 7/8          | B57-7          | 34608     | 1-1/2         | B812-12       | 34766   |                |           |
|              |              | 1            | B57-8          | 34610     | 1-3/4         | B812-14       | 34768   |                |           |
|              |              | 1-1/4        | B57-10         | 34612     | 2             | B812-16       | 34770   |                |           |
|              |              | 1-3/8        | B57-11         | 34614     | 1/2           | B813-4        | 34772   |                |           |
| 3/8<br>.377  | 7/16<br>.440 | 3/4          | B58-3          | 34616     | 3/4           | B813-6        | 34774   |                |           |
|              |              | 1/2          | B58-4          | 34618     | 1             | B813-8        | 34776   |                |           |
|              |              | 5/8          | B58-5          | 34620     | 1-1/2         | B813-12       | 34778   |                |           |
|              |              | 3/4          | B58-6          | 34622     | 1/2           | B814-4        | 34780   |                |           |
|              | 1/2<br>.502  | 7/8          | B58-7          | 34624     | 5/8           | B814-5        | 34782   |                |           |
|              |              | 1            | B58-8          | 34626     | 3/4           | B814-6        | 34784   |                |           |
|              |              | 1-1/4        | B58-10         | 34628     | 7/8           | B814-7        | 34786   |                |           |
|              |              | 1-1/2        | B58-12         | 34630     | 1             | B814-8        | 34788   |                |           |
|              | 3/8<br>.377  | 1-3/4        | B58-14         | 34632     | 1-1/4         | B814-10       | 34790   |                |           |
|              |              | 1/2          | B67-4          | 13577     | 1-1/2         | B814-12       | 34792   |                |           |
|              |              | 5/8          | B67-5          | 13579     | 3/4           | B816-6        | 13585   |                |           |
|              |              | 3/4          | B67-6          | 13581     | 1             | B816-8        | 13587   |                |           |
|              | 3/8<br>.377  | 1/2<br>.502  | 1              | B67-8     | 13583         | 1-1/2         | B816-12 | 13589          |           |
|              |              |              | 3/8            | B68-3     | 34634         | 2             | B816-16 | 13591          |           |
|              |              |              | 1/2            | B68-4     | 34636         | 1/2           | B911-4  | 34794          |           |
|              |              |              | 5/8            | B68-5     | 34638         | 3/4           | B911-6  | 34796          |           |
| 3/8<br>.377  | 1/2<br>.502  | 3/4          | B68-6          | 34640     | 1             | B911-8        | 34798   |                |           |
|              |              | 7/8          | B68-7          | 34642     | 1-1/2         | B911-12       | 34800   |                |           |
|              |              | 1            | B68-8          | 34644     |               |               |         |                |           |
|              |              | 1-1/4        | B68-10         | 34646     |               |               |         |                |           |

On A and B dimensions, tolerances apply to actual (decimal) dimensions.

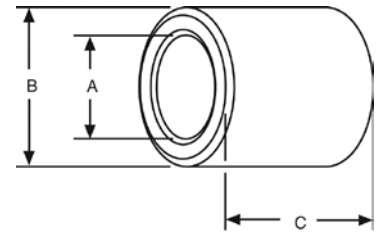
# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A             | B              | C     | Catalog Number | Item Code |
|---------------|----------------|-------|----------------|-----------|
| 9/16<br>.565  | 3/4<br>.753    | 1/2   | B912-4         | 34802     |
|               |                | 3/4   | B912-6         | 34804     |
|               |                | 1     | B912-8         | 34806     |
|               | 13/16<br>.815  | 1-1/2 | B912-12        | 34808     |
|               |                | 1/2   | B913-4         | 34810     |
|               |                | 3/4   | B913-6         | 34812     |
| 5/8<br>.627   | 3/4<br>.753    | 1     | B913-8         | 34814     |
|               |                | 1-1/4 | B913-10        | 34816     |
|               |                | 1-1/2 | B913-12        | 34818     |
|               | 13/16<br>.815  | 1/2   | B1012-4        | 34820     |
|               |                | 5/8   | B1012-5        | 34822     |
|               |                | 3/4   | B1012-6        | 34824     |
|               |                | 7/8   | B1012-7        | 34826     |
|               |                | 1     | B1012-8        | 34828     |
|               |                | 1-1/8 | B1012-9        | 34830     |
|               | 7/8<br>.878    | 1-1/4 | B1012-10       | 34834     |
|               |                | 1-1/2 | B1012-12       | 34832     |
|               | 1              | 1/2   | B1013-4        | 34836     |
|               |                | 5/8   | B1013-5        | 34838     |
|               |                | 3/4   | B1013-6        | 34840     |
|               |                | 7/8   | B1013-7        | 35400     |
|               |                | 1     | B1013-8        | 34842     |
|               | 15/16<br>.9405 | 1-1/4 | B1013-10       | 34844     |
|               |                | 1-1/2 | B1013-12       | 34846     |
|               |                | 2     | B1013-16       | 34848     |
| 5/8<br>.628   | 1<br>1.003     | 5/8   | B1014-5        | 34850     |
|               |                | 3/4   | B1014-6        | 34852     |
|               |                | 7/8   | B1014-7        | 34854     |
|               |                | 1     | B1014-8        | 34856     |
|               |                | 1-1/4 | B1014-10       | 34858     |
|               |                | 1-1/2 | B1014-12       | 34860     |
|               | 15/16<br>.9405 | 1-3/4 | B1014-14       | 34862     |
|               |                | 2     | B1014-16       | 34864     |
| 11/16<br>.690 | 7/8<br>.878    | 1/2   | B1016-4        | 34866     |
|               |                | 5/8   | B1016-5        | 34868     |
|               |                | 3/4   | B1016-6        | 34870     |
|               |                | 7/8   | B1016-7        | 34872     |
|               |                | 1     | B1016-8        | 34874     |
|               |                | 1-1/4 | B1016-10       | 34876     |
|               | 15/16<br>.9405 | 1-1/2 | B1016-12       | 34878     |
|               |                | 1-3/4 | B1016-14       | 34880     |
|               |                | 2     | B1016-16       | 34882     |
| 3/4<br>.753   | 7/8<br>.878    | 3/4   | B1114-6        | 34884     |
|               |                | 1     | B1114-8        | 34886     |
|               |                | 1-1/4 | B1114-10       | 34888     |
|               |                | 1-1/2 | B1114-12       | 34890     |
|               |                | 1-3/4 | B1114-14       | 34892     |
|               |                | 2     | B1114-16       | 34894     |
|               | 15/16<br>.9405 | 1/2   | B1214-4        | 34896     |
|               |                | 5/8   | B1214-5        | 34898     |
|               |                | 3/4   | B1214-6        | 34900     |
|               |                | 7/8   | B1214-7        | 34902     |
|               |                | 1     | B1214-8        | 34904     |
|               |                | 1-1/4 | B1214-10       | 34906     |
|               | 1<br>1.003     | 1-1/2 | B1214-12       | 34908     |
|               |                | 1-5/8 | B1214-13       | 34910     |
|               | 15/16<br>.9405 | 1/2   | B1215-4        | 34912     |
|               |                | 5/8   | B1215-5        | 34914     |
|               |                | 3/4   | B1215-6        | 34916     |
|               |                | 7/8   | B1215-7        | 34918     |
|               |                | 1     | B1215-8        | 34920     |
|               |                | 1-1/4 | B1215-10       | 34922     |
|               | 1<br>1.003     | 1-1/2 | B1215-12       | 34924     |
|               |                | 1-3/4 | B1215-14       | 34926     |
|               |                | 2     | B1215-16       | 34928     |
|               | 15/16<br>.9405 | 1/2   | B1216-4        | 34930     |
|               |                | 5/8   | B1216-5        | 34932     |
|               |                | 3/4   | B1216-6        | 34934     |
|               |                | 7/8   | B1216-7        | 34936     |
|               |                | 1     | B1216-8        | 34938     |
|               |                | 1-1/4 | B1216-10       | 34940     |
|               | 1<br>1.003     | 1-1/2 | B1216-12       | 34942     |
|               |                | 1-3/4 | B1216-14       | 34944     |
|               |                | 2     | B1216-16       | 34946     |
|               |                | 2-1/2 | B1216-18       | 34948     |
|               |                | 3     | B1216-20       | 34950     |

| A              | B                | C     | Catalog Number | Item Code |
|----------------|------------------|-------|----------------|-----------|
| 3/4<br>.753    | 1-1/8<br>1.128   | 1/2   | B1218-4        | 34952     |
|                |                  | 3/4   | B1218-6        | 34954     |
|                |                  | 1     | B1218-8        | 34956     |
|                | 1-1/4<br>1.253   | 1-1/4 | B1218-10       | 34958     |
|                |                  | 1-1/2 | B1218-12       | 34960     |
|                |                  | 1-3/4 | B1218-14       | 34962     |
| 13/16<br>.8155 | 1<br>1.003       | 2     | B1218-16       | 34964     |
|                |                  | 3/4   | B1220-6        | 34966     |
|                |                  | 1     | B1220-8        | 34968     |
|                | 7/8<br>.878      | 1-1/4 | B1220-10       | 34970     |
|                |                  | 1-1/2 | B1220-12       | 34972     |
|                |                  | 2     | B1220-16       | 34976     |
| 5/8<br>.627    | 1<br>1.003       | 3/4   | B1316-6        | 34978     |
|                |                  | 1     | B1316-8        | 34980     |
|                |                  | 1-1/4 | B1316-10       | 34982     |
|                |                  | 1-1/2 | B1316-12       | 34984     |
|                |                  | 1-3/4 | B1316-14       | 34986     |
|                |                  | 2     | B1316-16       | 34988     |
|                | 15/16<br>.9405   | 3/4   | B1416-6        | 34990     |
|                |                  | 7/8   | B1416-7        | 34992     |
|                |                  | 1     | B1416-8        | 34994     |
|                |                  | 1-1/4 | B1416-10       | 34996     |
|                |                  | 1-1/2 | B1416-12       | 34998     |
|                |                  | 3/4   | B1418-6        | 35000     |
| 3/4<br>.753    | 1<br>1.003       | 7/8   | B1418-7        | 35002     |
|                |                  | 1     | B1418-8        | 35004     |
|                |                  | 1-1/8 | B1418-9        | 35006     |
|                |                  | 1-1/4 | B1418-10       | 35008     |
|                |                  | 1-3/8 | B1418-11       | 35010     |
|                |                  | 1-1/2 | B1418-12       | 35012     |
|                | 15/16<br>.9405   | 1-3/4 | B1418-14       | 35014     |
|                |                  | 2     | B1418-16       | 35016     |
|                |                  | 2-1/2 | B1418-20       | 35018     |
|                |                  | 3/4   | B1420-6        | 35020     |
|                |                  | 1     | B1420-8        | 35022     |
|                |                  | 1-1/4 | B1420-10       | 35024     |
|                | 1<br>1.003       | 1-1/2 | B1420-12       | 35026     |
|                |                  | 2     | B1420-16       | 35028     |
|                |                  | 3/4   | B1519-6        | 35030     |
|                |                  | 1     | B1519-8        | 35032     |
|                |                  | 1-1/4 | B1519-10       | 35034     |
|                |                  | 1-1/2 | B1519-12       | 35036     |
|                | 15/16<br>.9405   | 2     | B1519-16       | 35038     |
|                |                  | 3/4   | B1520-6        | 35040     |
|                |                  | 1     | B1520-8        | 35042     |
|                |                  | 1-1/4 | B1520-10       | 35044     |
|                |                  | 1-3/4 | B1520-14       | 35048     |
|                |                  | 2     | B1520-16       | 35050     |
| 1<br>1.004     | 1-1/8<br>1.128   | 3/4   | B1618-6        | 35052     |
|                |                  | 1     | B1618-8        | 35054     |
|                |                  | 1-1/4 | B1618-10       | 35056     |
|                |                  | 1-1/2 | B1618-12       | 35058     |
|                |                  | 1-3/4 | B1618-14       | 35060     |
|                |                  | 2     | B1618-16       | 35062     |
|                | 1-1/4<br>1.253   | 3/4   | B1619-6        | 13593     |
|                |                  | 1     | B1619-8        | 13595     |
|                |                  | 1-1/4 | B1619-10       | 13597     |
|                |                  | 1-1/2 | B1619-12       | 13599     |
|                |                  | 1-3/4 | B1619-14       | 13601     |
|                |                  | 2     | B1619-16       | 13603     |
|                | 15/16<br>.9405   | 3/4   | B1620-6        | 35064     |
|                |                  | 7/8   | B1620-7        | 35066     |
|                |                  | 1     | B1620-8        | 35068     |
|                |                  | 1-1/4 | B1620-10       | 35070     |
|                |                  | 1-3/8 | B1620-11       | 35072     |
|                |                  | 1-1/2 | B1620-12       | 35074     |
|                | 1<br>1.004       | 1-3/4 | B1620-14       | 35076     |
|                |                  | 2     | B1620-16       | 35078     |
|                |                  | 2-1/4 | B1620-18       | 35080     |
|                |                  | 2-1/2 | B1620-20       | 35082     |
|                |                  | 3     | B1620-24       | 35084     |
|                |                  | 1     | B1621-8        | 35086     |
|                | 1-5/16<br>1.3155 | 1-1/4 | B1621-10       | 35088     |
|                |                  | 1-1/2 | B1621-12       | 35090     |
|                |                  | 1-3/4 | B1621-14       | 35092     |
|                |                  | 2     | B1621-16       | 35094     |
|                |                  | 2-1/2 | B1621-20       | 35096     |
|                |                  | 3     | B1621-24       | 35098     |

## Plain Cylindrical Bearings



### STANDARD TOLERANCES

| DIMENSIONS      | TOLERANCE      |
|-----------------|----------------|
| A 1/8 – 1 1/2   | +.000, – .001  |
| 1 3/4 – 2 1/2   | +.000, – .0015 |
| B 2 3/4 – 3 1/2 | +.000, – .002  |
| C 1/8 – 1 1/2   | ± .005         |
| 1 3/4 – 3       | ± .0075        |
| 4               | ± .010         |

### CONCENTRICITY

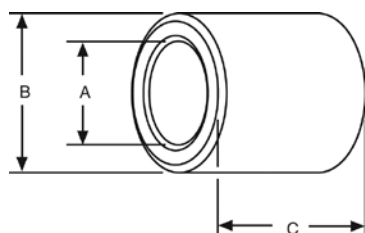
| DIMENSIONS    | TOLERANCE |
|---------------|-----------|
| A 1/8 – 1 1/2 | .003      |
| 1 5/8 – 3     | .004      |
| 3 1/4 – 3 1/2 | .005      |

Prices on unlisted sizes and other Boston Gear powder metal parts provided on request.

# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

## Plain Cylindrical Bearings

F



### STANDARD TOLERANCES

| DIMENSIONS      | TOLERANCE      |
|-----------------|----------------|
| A 1/8 – 1 1/2   | +.000, – .001  |
| 1 3/4 – 2 1/2   | +.000, – .0015 |
| B 2 3/4 – 3 1/2 | +.000, – .002  |
| C 1/8 – 1 1/2   | ± .005         |
| 1 3/4 – 3       | ± .0075        |
| 4               | ± .010         |

### CONCENTRICITY

| DIMENSIONS    | TOLERANCE |
|---------------|-----------|
| A 1/8 – 1 1/2 | .003      |
| 1 5/8 – 3     | .004      |
| 3 1/4 – 3 1/2 | .005      |

Prices on unlisted sizes and other Boston Gear powder metal parts provided on request.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A                | B                | C                | Catalog Number    | Item Code       | A                | B              | C                 | Catalog Number  | Item Code |
|------------------|------------------|------------------|-------------------|-----------------|------------------|----------------|-------------------|-----------------|-----------|
| 1<br>1.003       | 1-3/8<br>1.378   | 1                | B1622-8           | 35100           | 1-7/16<br>1.4405 | 1-3/4<br>1.753 | 1                 | B2328-8         | 35252     |
|                  |                  | 1-1/4            | B1622-10          | 35102           |                  |                | 1-1/4             | B2328-10        | 35254     |
|                  |                  | 1-1/2            | B1622-12          | 35104           |                  |                | 1-1/2             | B2328-12        | 35256     |
|                  |                  | 1-3/4            | B1622-14          | 35106           |                  |                | 1-3/4             | B2328-14        | 35258     |
|                  |                  | 2                | B1622-16          | 35108           |                  |                | 2                 | B2328-16        | 35260     |
|                  |                  | 2-1/2            | B1622-20          | 35110           |                  |                | 2-1/2             | B2328-20        | 35262     |
|                  | 3                | B1622-24         | 35112             | 3               | B2328-24         | 35264          |                   |                 |           |
|                  | 1-1/2<br>1.503   | 1                | B1624-8           | 35114           | 1-3/4<br>1.753   | 1              | B2428-8           | 35266           |           |
|                  |                  | 1-1/2            | B1624-12          | 35118           |                  | 1-1/4          | B2428-10          | 35268           |           |
|                  |                  | 2                | B1624-16          | 35120           |                  | 1-1/2          | B2428-12          | 35270           |           |
| 2-1/2            |                  | B1624-20         | 35122             | 2               |                  | B2428-16       | G00602            |                 |           |
| 3                | B1624-24         | 35124            | 3                 | B2428-20        | 35274            |                |                   |                 |           |
| 1-1/16<br>1.0655 | 1-5/16<br>1.3155 | 1                | B1721-8           | 35126           | 1-13/16<br>1.816 | 1-1/2<br>1.878 | 1-1/2             | B2428-24        | 35276     |
|                  |                  | 1-1/2            | B1721-12          | 35128           |                  |                | 1-1/2             | B2429-12        | 35278     |
|                  |                  | 2                | B1721-16          | 35130           |                  |                | 3                 | B2429-24        | 35280     |
|                  |                  | 2-1/2            | B1721-20          | 35132           |                  |                | 1-1/2             | B2430-12        | 35282     |
|                  | 1-1/4<br>1.254   | 1                | B1820-8           | 13605           | 1-7/8<br>1.878   | 2              | B2430-16          | 35284           |           |
|                  |                  | 1-1/4            | B1820-10          | 13639           |                  | 2-1/2          | B2430-20          | 35286           |           |
|                  |                  | 1-1/2            | B1820-12          | 13641           |                  | 3              | B2430-24          | 35288           |           |
|                  |                  | 1                | B1821-8           | 35134           |                  | 1              | B2432-8           | 35290           |           |
|                  | 1-1/8<br>1.129   | 1-5/16<br>1.3155 | 1-1/4             | B1821-10        | 35136            | 2<br>2.004     | 1-1/2             | B2432-12        | 35292     |
|                  |                  |                  | 1-1/2             | B1821-12        | 35138            |                | 2                 | B2432-16        | 35294     |
| 2                |                  |                  | B1821-16          | 35140           | 2-1/2            |                | B2432-20          | 35296           |           |
| 3/4              |                  |                  | B1822-6           | 35142           | 3                |                | B2432-24          | 35298           |           |
| 1-3/8<br>1.378   |                  | 1                | B1822-8           | 35144           | 1-7/8<br>1.878   | 1-1/2          | B2630-10          | 35300           |           |
|                  |                  | 1-1/4            | B1822-10          | 35146           |                  | 1-1/2          | B2630-12          | 35302           |           |
|                  |                  | 1-1/2            | B1822-12          | 35148           |                  | 2              | B2630-16          | 35304           |           |
|                  |                  | 1-3/4            | B1822-14          | 35150           |                  | 2-1/2          | B2630-20          | 35306           |           |
| 1-1/2<br>1.503   |                  | 2                | B1822-16          | 35152           | 3                | B2630-24       | 35308             |                 |           |
|                  |                  | 2-1/2            | B1822-20          | 35154           | 2<br>2.004       | 1              | B2632-8           | 35310           |           |
|                  | 3                | B1822-24         | 35156             | 2               |                  | B2632-16       | 35312             |                 |           |
|                  | 1                | B1824-8          | 35158             | 3               |                  | B2632-24       | 35314             |                 |           |
| 1-1/2            | B1824-12         | 35160            | 1-11/16<br>1.6905 | 2-3/16<br>2.191 |                  | 1-3/4<br>2.191 | B2735-14          | 35316           |           |
| 1-3/16<br>1.1905 | 1-7/16<br>1.441  | 2                | B1923-16          | 35166           | 1-3/4<br>1.753   | 2-1/8<br>2.129 | 2                 | B2735-16        | 35318     |
|                  |                  | 2-1/2            | B1923-20          | 35168           |                  |                | 3                 | B2735-24        | 35320     |
|                  |                  | 3                | B1923-24          | 35170           |                  |                | 4                 | B2735-32        | 35322     |
|                  |                  | 1                | B1924-8           | 35172           |                  |                | 2                 | B2832-16        | 35324     |
|                  | 1-1/2<br>1.503   | 1-1/4            | B1924-10          | 35174           | 2<br>2.004       | 2-1/2<br>3     | 2                 | B2832-20        | 35326     |
|                  |                  | 1-1/2            | B1924-12          | 35176           |                  |                | 3                 | B2832-24        | 35328     |
|                  |                  | 1-3/4            | B1924-14          | 35178           |                  |                | 1-1/2             | B2834-12        | 35330     |
|                  |                  | 2                | B1924-16          | 35180           |                  |                | 2                 | B2834-16        | 35332     |
|                  |                  | 2-1/2            | B1924-20          | 35182           |                  |                | 3                 | B2834-24        | 35334     |
|                  |                  | 3                | B1924-24          | 35184           |                  |                | 1-15/16<br>1.9405 | 2-5/16<br>2.316 | 2         |
| 1-1/4<br>1.254   | 1-1/2<br>1.503   | 1                | B2024-8           | 35186           | 2<br>2.003       | 2-3/8<br>2.379 | 3                 | B3137-24        | 35338     |
|                  |                  | 1-1/8            | B2024-9           | 35188           |                  |                | 4                 | B3137-32        | 35340     |
|                  |                  | 1-1/4            | B2024-10          | 35190           |                  |                | 1-3/4             | B3238-14        | 35342     |
|                  |                  | 1-3/8            | B2024-11          | 35192           |                  |                | 2                 | B3238-16        | 35344     |
|                  |                  | 1-1/2            | B2024-12          | 35194           |                  |                | 2-3/4             | B3238-22        | 35346     |
|                  |                  | 1-5/8            | B2024-13          | 35196           |                  |                | 3                 | B3238-24        | 35348     |
|                  | 1-5/8<br>1.628   | 1-3/4            | B2024-14          | 35198           | 2-1/2<br>2.504   | 2-3/4<br>2.754 | 4                 | B3238-32        | 35350     |
|                  |                  | 2                | B2024-16          | 35200           |                  |                | 1                 | B3240-8         | 35352     |
|                  |                  | 2-1/4            | B2024-18          | 35202           |                  |                | 2                 | B3240-16        | 35354     |
|                  |                  | 2-1/2            | B2024-20          | 35204           |                  |                | 3                 | B3240-24        | 35356     |
| 3                | B2024-24         | 35206            | 2-1/4<br>2.254    | 2-3/4<br>2.754  | 2                | B3644-16       | 35364             |                 |           |
| 1-5/16<br>1.3155 | 1-5/8<br>1.628   | 3                | B2026-24          | 35220           | 2-3/8<br>2.379   | 2-3/4<br>2.754 | 3                 | B3644-24        | 35366     |
|                  |                  | 1-1/4            | B2126-10          | 35222           |                  |                | 2                 | B3844-16        | 35370     |
|                  |                  | 1-1/2            | B2126-12          | 35224           |                  |                | 3                 | B3844-24        | 35372     |
|                  |                  | 2                | B2126-16          | 35226           |                  |                | 4                 | B3844-32        | 35374     |
|                  | 1-3/8<br>1.378   | 2-1/2            | B2126-20          | 35228           | 2-1/2<br>2.504   | 3<br>3.005     | 2                 | B4048-16        | 35382     |
|                  |                  | 3                | B2126-24          | 35230           |                  |                | 3                 | B4048-24        | 35384     |
|                  |                  | 1-1/2            | B2226-12          | 35234           |                  |                | 4                 | B4048-32        | 35386     |
|                  |                  | 2                | B2226-16          | 35236           |                  |                | 2                 | B4452-16        | 35388     |
|                  |                  | 2-1/2            | B2226-20          | 35238           |                  |                | 3                 | B4452-24        | 35390     |
|                  |                  | 3                | B2226-24          | 35240           |                  |                | 4                 | B4452-32        | 35392     |
| 1-3/8<br>1.378   | 1-3/4<br>1.753   | 1                | B2228-8           | 35242           | 3<br>3.004       | 3-1/2<br>3.505 | 2                 | B4856-16        | 35394     |
|                  |                  | 1-1/2            | B2228-12          | 35244           |                  |                | 3                 | B4856-24        | 35396     |
|                  |                  | 2                | B2228-16          | 35246           |                  |                | 4                 | B4856-32        | 35398     |
|                  |                  | 2-1/2            | B2228-20          | 35248           |                  |                |                   |                 |           |
|                  | 3                | B2228-24         | 35250             |                 |                  |                |                   |                 |           |

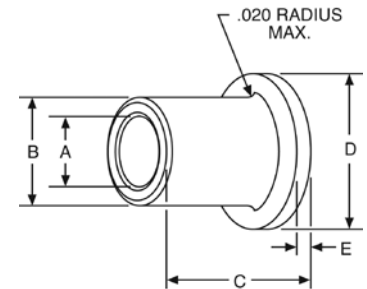
On A and B dimensions, tolerances apply to actual (decimal) dimensions.

# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

## Flanged Type

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A            | B             | C                                                        | D                                                      | E    | Catalog Number                                                                          | Item Code                                                                         |                                                                      |
|--------------|---------------|----------------------------------------------------------|--------------------------------------------------------|------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 1/8<br>.127  | 5/16<br>.315  | 1/4<br>3/8                                               | .375                                                   | 3/64 | FB25-2<br>FB25-3                                                                        | 35516<br>35518                                                                    |                                                                      |
| 3/16<br>.189 | 5/16<br>.3145 | 1/8<br>1/4<br>3/8                                        | .375                                                   | 3/64 | FB35-1<br>FB35-2<br>FB35-3                                                              | 35520<br>35522<br>35524                                                           |                                                                      |
| 1/4<br>.252  | 3/8<br>.377   | 1/4<br>3/8<br>1/2<br>5/8<br>3/4                          | .500                                                   | 3/64 | FB46-2<br>FB46-3<br>FB46-4<br>FB46-5<br>FB46-6                                          | 35526<br>35528<br>35530<br>35532<br>35534                                         |                                                                      |
| 5/16<br>.314 | 3/8<br>.377   | 3/8                                                      | .500                                                   | 3/64 | FB56-3                                                                                  | 35536                                                                             |                                                                      |
|              | 7/16<br>.439  | 3/8<br>1/2<br>5/8<br>3/4<br>7/8<br>1                     | .625                                                   | 3/32 | FB57-3<br>FB57-4<br>FB57-5<br>FB57-6<br>FB57-7<br>FB57-8                                | 35538<br>69191<br>69192<br>35540<br>69193<br>69194                                |                                                                      |
|              |               | 1/2<br>.502                                              | 3/8<br>1/2<br>5/8                                      | .688 | 3/32                                                                                    | FB58-3<br>FB58-4<br>FB58-5                                                        | 35542<br>35544<br>35546                                              |
| 3/8<br>.377  |               | 1/2<br>.502                                              | 3/8<br>13/32<br>1/2<br>5/8<br>3/4<br>7/8<br>1<br>1-1/4 | .688 | 3/32                                                                                    | FB68-3<br>FB68-3 1/4<br>FB68-4<br>FB68-5<br>FB68-6<br>FB68-7<br>FB68-8<br>FB68-10 | 35548<br>35550<br>35552<br>35554<br>35556<br>69195<br>35558<br>35560 |
|              | 9/16<br>.5645 |                                                          | 1/2<br>3/4<br>1-1/4                                    | .750 | 1/8                                                                                     | FB69-4<br>FB69-6<br>FB69-10                                                       | 69196<br>35562<br>35564                                              |
|              | 5/8<br>.627   |                                                          | 3/8<br>1/2<br>5/8<br>3/4<br>1<br>1-1/4                 | .875 | 1/8                                                                                     | FB610-3<br>FB610-4<br>FB610-5<br>FB610-6<br>FB610-8<br>FB610-10                   | 69197<br>35566<br>39198<br>35568<br>69199<br>35570                   |
|              | 3/4<br>.753   | 1/2                                                      | 1.000                                                  | 1/8  | FB612-4                                                                                 | 35572                                                                             |                                                                      |
| 7/16<br>.439 | 9/16<br>.565  | 1/2<br>5/8<br>3/4                                        | .688                                                   | 1/16 | FB79-4<br>FB79-5<br>FB79-6                                                              | 13611<br>13613<br>13615                                                           |                                                                      |
|              | 5/8<br>.628   | 5/8<br>3/4<br>1-1/4                                      | .875                                                   | 1/8  | FB710-5<br>FB710-6<br>FB710-10                                                          | 35574<br>69200<br>35576                                                           |                                                                      |
| 1/2<br>.502  | 5/8<br>.628   | 1/2<br>5/8<br>3/4<br>7/8<br>1<br>1-1/4<br>1-1/2<br>1-3/4 | .875                                                   | 1/8  | FB810-4<br>FB810-5<br>FB810-6<br>FB810-7<br>FB810-8<br>FB810-10<br>FB810-12<br>FB810-14 | 35578<br>35580<br>35582<br>69201<br>35584<br>35586<br>35588<br>35590              |                                                                      |
|              |               | 11/16<br>.690                                            | 1/2<br>5/8<br>3/4                                      | .938 | 1/8                                                                                     | FB811-4<br>FB811-5<br>FB811-6                                                     | 35592<br>69202<br>35594                                              |
|              | 3/4<br>.753   | 1/2<br>5/8<br>3/4<br>7/8<br>1<br>1-1/4<br>1-1/2          | 1.000                                                  | 1/8  | FB812-4<br>FB812-5<br>FB812-6<br>FB812-7<br>FB812-8<br>FB812-10<br>FB812-12             | 35596<br>69203<br>35598<br>35600<br>35602<br>35604<br>35606                       |                                                                      |
| 9/16<br>.565 | 3/4<br>.753   | 1/2<br>3/4<br>1                                          | 1.000                                                  | 1/8  | FB912-4<br>FB912-6<br>FB912-8                                                           | 69204<br>69205<br>35608                                                           |                                                                      |



### STANDARD TOLERANCES

| DIMENSIONS      | TOLERANCE       |
|-----------------|-----------------|
| A 1/8 - 1 1/2   | + .000, - .001  |
| 1 3/4 - 2 1/2   | + .000, - .0015 |
| B 2 3/4 - 3 1/2 | + .000, - .002  |
| C 1/8 - 1 1/2   | ± .005          |
| 1 3/4 - 3       | ± .0075         |
| 4               | ± .010          |
| D 3/8 - 1 1/4   | ± .005          |
| 1 3/8 - 2 1/2   | ± .010          |
| 4               | ± .015          |
| E 3/8 - 1 1/4   | ± .0025         |
| 1 3/8 - 2 1/2   | ± .005          |
| 4               | ± .010          |

### CONCENTRICITY

| DIMENSIONS    | TOLERANCE |
|---------------|-----------|
| A 1/8 - 1 1/2 | .003      |
| 1 5/8 - 3     | .004      |
| 3 1/4 - 3 1/2 | .005      |

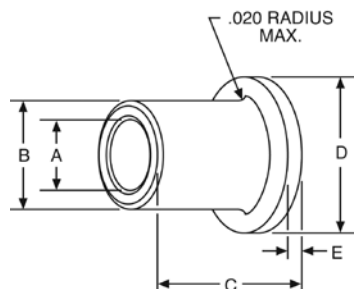
Prices on unlisted sizes and other Boston Gear powder metal parts provided on request.

On A and B dimensions, tolerances apply to actual (decimal) dimensions.

# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

## Flanged Type

F



### STANDARD TOLERANCES

| DIMENSIONS                             | TOLERANCE                         |
|----------------------------------------|-----------------------------------|
| A<br>1/8 - 1 1/2<br>1 3/4 - 2 1/2      | + .000, - .001<br>+ .000, - .0015 |
| B<br>2 3/4 - 3 1/2                     | + .000, - .002                    |
| C<br>1/8 - 1 1/2<br>1 3/4 - 3<br>4     | ± .005<br>± .0075<br>± .010       |
| D<br>3/8 - 1 1/4<br>1 3/8 - 2 1/2<br>4 | ± .005<br>± .010<br>± .015        |
| E<br>3/8 - 1 1/4<br>1 3/8 - 2 1/2<br>4 | ± .0025<br>± .005<br>± .010       |

### CONCENTRICITY

| DIMENSIONS                    | TOLERANCE    |
|-------------------------------|--------------|
| A<br>1/8 - 1 1/2<br>1 5/8 - 3 | .003<br>.004 |
| 3 1/4 - 3 1/2                 | .005         |

Prices on unlisted sizes and other Boston Gear powder metal parts provided on request.

### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A              | B              | C                                                | D     | E    | Catalog Number                                                                           | Item Code                                                   |
|----------------|----------------|--------------------------------------------------|-------|------|------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 5/8<br>.626    | 3/4<br>.753    | 1/2<br>5/8<br>3/4<br>1<br>1-1/4                  | 1.000 | 1/8  | FB1012-4<br>FB1012-5<br>FB1012-6<br>FB1012-8<br>FB1012-10                                | 35610<br>35612<br>35614<br>35616<br>35618                   |
| 5/8<br>.627    | 13/16<br>.815  | 5/8<br>3/4<br>1<br>1-1/4<br>1-7/16<br>1-1/2<br>2 | 1.063 | 5/32 | FB1013-5<br>FB1013-6<br>FB1013-8<br>FB1013-10<br>FB1013-11 1/2<br>FB1013-12<br>FB1013-16 | 69206<br>35620<br>35622<br>35624<br>35626<br>35628<br>35630 |
|                | 7/8<br>.878    | 5/8<br>3/4<br>1<br>1-3/4                         | 1.125 | 5/32 | FB1014-5<br>FB1014-6<br>FB1014-8<br>FB1014-14                                            | 69207<br>35632<br>35634<br>35636                            |
|                | 1<br>1.003     | 3/4<br>1                                         | 1.250 | 5/32 | FB1016-6<br>FB1016-8                                                                     | 69208<br>35638                                              |
| 3/4<br>.752    | 7/8<br>.878    | 3/4<br>1<br>1-1/4                                | 1.125 | 5/32 | FB1214-6<br>FB1214-8<br>FB1214-10                                                        | 35644<br>35646<br>69209                                     |
|                | 15/16<br>.940  | 1<br>1-1/4<br>1-1/2                              | 1.188 | 5/32 | FB1215-8<br>FB1215-10<br>FB1215-12                                                       | 35648<br>69213<br>35650                                     |
|                | 1<br>1.003     | 5/8<br>3/4<br>1<br>1-1/4<br>1-1/2<br>2           | 1.250 | 5/32 | FB1216-5<br>FB1216-6<br>FB1216-8<br>FB1216-10<br>FB1216-12<br>FB1216-16                  | 69214<br>35652<br>35654<br>35656<br>35658<br>35660          |
| 7/8<br>.877    | 1<br>1.003     | 3/4<br>1<br>1-1/4                                | 1.250 | 5/32 | FB1416-6<br>FB1416-8<br>FB1416-10                                                        | 35662<br>69210<br>35664                                     |
|                | 1-1/8<br>1.128 | 1<br>1-1/4<br>1-1/2                              | 1.375 | 5/32 | FB1418-8<br>FB1418-10<br>FB1418-12                                                       | 35666<br>69211<br>35668                                     |
| 1<br>1.002     | 1-1/4<br>1.253 | 3/4<br>1<br>1-1/4<br>1-1/2<br>2                  | 1.500 | 3/16 | FB1620-6<br>FB1620-8<br>FB1620-10<br>FB1620-12<br>FB1620-16                              | 35672<br>35674<br>35676<br>35678<br>35680                   |
|                | 1-3/8<br>1.378 | 1<br>1-1/2<br>1-3/4                              | 1.625 | 3/16 | FB1622-8<br>FB1622-12<br>FB1622-14                                                       | 35682<br>69215<br>35684                                     |
| 1-1/8<br>1.127 | 1-3/8<br>1.377 | 3/4<br>1<br>1-1/4                                | 1.750 | 1/8  | FB1822-6<br>FB1822-8<br>FB1822-10                                                        | 13617<br>13619<br>13621                                     |
| 1-1/4<br>1.252 | 1-1/2<br>1.503 | 1<br>1-1/4<br>1-1/2                              | 1.750 | 3/16 | FB2024-8<br>FB2024-10<br>FB2024-12                                                       | 69216<br>35686<br>69217                                     |
| 1-3/8<br>1.377 | 1-5/8<br>1.628 | 3/4<br>1                                         | 2.000 | 1/8  | FB2226-6<br>FB2226-8                                                                     | 13623<br>13625                                              |
| 1-1/2<br>1.503 | 1-3/4<br>1.754 | 1-1/2                                            | 2.063 | 3/16 | FB2428-12                                                                                | 35688                                                       |
| 2<br>2.003     | 2-1/4<br>2.254 | 3/4<br>1<br>1-1/4                                | 2.500 | 1/8  | FB3236-6<br>FB3236-8<br>FB3236-10                                                        | 13627<br>13629<br>13631                                     |
| 2-3/4<br>2.752 | 3-1/4<br>3.255 | 1-1/2                                            | 4.000 | 3/16 | FB4452-12                                                                                | 13635                                                       |

On A and B dimensions, tolerances apply to actual (decimal) dimensions.

# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A            | B               | C    | Catalog Number | Item Code |
|--------------|-----------------|------|----------------|-----------|
| 1/4<br>.255  | 7/16<br>.4375   | 1/16 | TB47           | 13515     |
|              | 1/2<br>.500     | 1/16 | TB48           | 13517     |
|              | 5/8<br>.625     | 1/16 | TB410          | 35766     |
| 5/16<br>.315 | 5/8<br>.625     | 1/16 | TB510          | 13519     |
|              | 3/4<br>.750     | 1/16 | TB512          | 35768     |
| 3/8<br>.385  | 5/8<br>.625     | 1/16 | TB610          | 13521     |
| 3/8<br>.380  | 3/4<br>.750     | 1/32 | TB612          | 35770     |
|              | 3/4<br>.750     | 1/8  | TB612-2        | 13523     |
| 7/16<br>.440 | 3/4<br>.750     | 1/16 | TB712          | 69218     |
| 1/2<br>.505  | 3/4<br>.750     | 1/16 | TB812          | 35772     |
| 1/2<br>.505  | 7/8<br>.875     | 3/16 | TB814          | 35774     |
| 1/2<br>.510  | 1<br>1.000      | 1/16 | TB816          | 35776     |
| 9/16<br>.565 | 1-1/4<br>1.250  | 1/8  | TB920          | 35778     |
| 5/8<br>.628  | 1<br>1.000      | 1/8  | TB1016         | 35780     |
|              | 1-3/16<br>1.187 | 3/32 | TB1019         | 35782     |
|              | 1-1/4<br>1.250  | 1/8  | TB1020         | 69219     |
| 5/8<br>.6265 | 1-1/2<br>1.500  | 1/8  | TB1024         | 69220     |
| 3/4<br>.753  | 1-1/4<br>1.250  | 1/8  | TB1220         | 69221     |
|              | 1-3/8<br>1.375  | 1/8  | TB1222         | 69222     |

On A and B dimensions, tolerances apply to actual (decimal) dimensions.

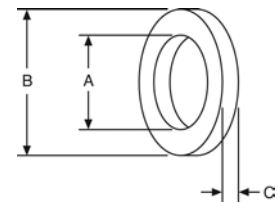
**BOST-BRONZ** is stocked in this convenient Plate form for ease in machining to required bearing size or shape — at your service for all emergencies.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A                             | B | C | Catalog Number | Item Code |
|-------------------------------|---|---|----------------|-----------|
| 1/8<br>3/16<br>1/4<br>5/16    | 5 | 6 | PB5602         | 35692     |
|                               |   |   | PB5603         | 35694     |
|                               |   |   | PB5604         | 35696     |
|                               |   |   | PB5605         | 35698     |
| 3/8<br>1/2<br>5/8<br>3/4<br>1 | 5 | 6 | PB5606         | 35700     |
|                               |   |   | PB5608         | 35702     |
|                               |   |   | PB5610         | 35704     |
|                               |   |   | PB5612         | 35706     |
|                               |   |   | PB5616         | 35708     |
| 3/16<br>1/4                   | 5 | 8 | PB5803         | 35710     |
|                               |   |   | PB5804         | 35712     |

Keep **BOST-BRONZ** plate stock on hand for: Breakdowns — maintenance and repairs — Producing small lots of special sizes — Experimental and development work.

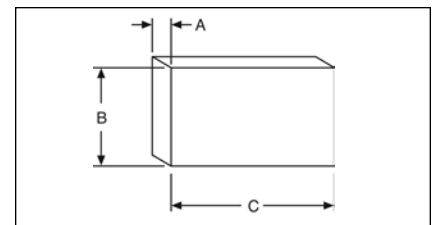
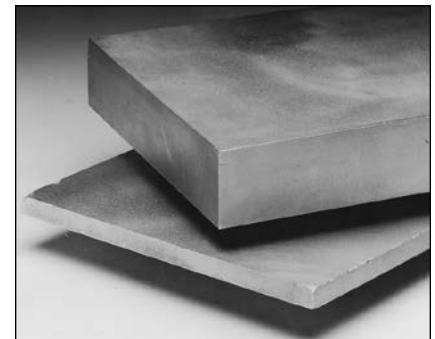
## Thrust Type



### STANDARD TOLERANCES

| DIMENSIONS     | TOLERANCE |
|----------------|-----------|
| A 1/4 – 1 1/4  | ±.010     |
| 1 3/8 – 2 1/2  | ±.015     |
| B 7/16 – 1 1/2 | ±.010     |
| 1 9/16 – 3     | ±.015     |
| 3 1/4 – 4      | ±.020     |
| C All          | ± .0025   |

## Plate Stock



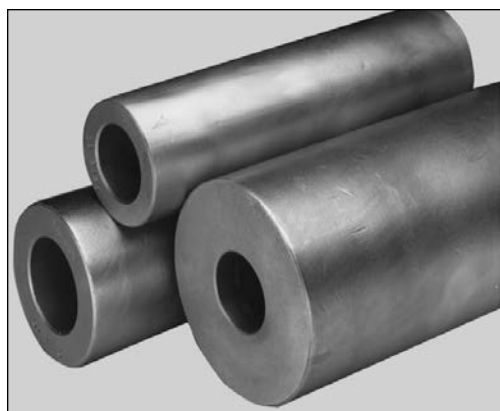
### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE      |
|------------|----------------|
| A All      | ±.010 to -.005 |

# BOST-BRONZ Oil-Impregnated Sintered Bronze Bearings

## Cored Bars

F



### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |
|------------|-----------|
| A          | All       |
| B          | All       |

**BOST-BRONZ** is stocked in these convenient Bar forms for ease in machining to required bearing size or shape — at your service for all emergencies.

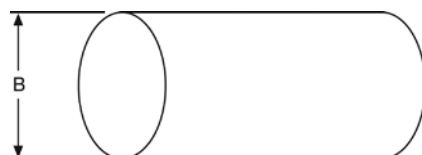
### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A     | B     | Catalog Number | Item Code |
|-------|-------|----------------|-----------|
| 1/2   | 1     | CB816          | 35402     |
|       | 1-1/4 | CB820          | 35404     |
|       | 1-1/2 | CB824          | 35406     |
| 5/8   | 1     | CB1016         | 35408     |
|       | 1-1/4 | CB1020         | 35410     |
|       | 1-3/8 | CB1022         | 35412     |
|       | 1-1/2 | CB1024         | 35414     |
|       | 1-3/4 | CB1028         | 35416     |
| 3/4   | 1-1/4 | CB1220         | 35418     |
|       | 1-1/2 | CB1224         | 35420     |
|       | 1-3/4 | CB1228         | 35422     |
|       | 2     | CB1232         | 35424     |
|       | 2-1/2 | CB1240         | 35426     |
| 7/8   | 1-3/8 | CB1422         | 35428     |
| 1     | 1-1/2 | CB1624         | 35430     |
|       | 1-3/4 | CB1628         | 35432     |
|       | 2     | CB1632         | 35434     |
|       | 2-1/4 | CB1636         | 35436     |
|       | 2-1/2 | CB1640         | 35438     |
|       | 3     | CB1648         | 35440     |
| 1-1/4 | 1-3/4 | CB2028         | 35442     |
|       | 2     | CB2032         | 35444     |
|       | 2-1/4 | CB2036         | 35446     |
|       | 2-1/2 | CB2040         | 35448     |
|       | 3     | CB2048         | 35450     |
| 1-3/8 | 2     | CB2232         | 35452     |
| 1-1/2 | 2     | CB2432         | 35456     |
|       | 2-1/4 | CB2436         | 35458     |
|       | 2-1/2 | CB2440         | 35460     |
|       | 3     | CB2448         | 35462     |
|       | 3-1/2 | CB2456         | 35464     |

| A     | B     | Catalog Number | Item Code |
|-------|-------|----------------|-----------|
| 1-3/4 | 2-1/4 | CB2836         | 35466     |
|       | 2-1/2 | CB2840         | 35468     |
|       | 2-3/4 | CB2844         | 35470     |
|       | 3     | CB2848         | 35472     |
|       | 3-1/2 | CB2856         | 35474     |
| 2     | 2-3/4 | CB3244         | 35476     |
|       | 3     | CB3248         | 35478     |
|       | 3-1/4 | CB3252         | 35480     |
|       | 4     | CB3264         | 35482     |
|       | 4-1/2 | CB3272         | 35484     |
| 2-1/4 | 5     | CB3280         | 35486     |
|       | 3     | CB3648         | 35488     |
|       | 3-1/2 | CB3656         | 35490     |
| 2-3/8 | 3-3/4 | CB3660         | 35492     |
| 2-1/2 | 3     | CB3848         | 35494     |
| 3     | 3-1/2 | CB4056         | 35496     |
|       | 3-3/4 | CB4860         | 35498     |
|       | 4     | CB4864         | 35500     |
|       | 5     | CB4880         | 35502     |
|       | 6     | CB4896         | 35504     |
| 3-1/2 | 4-3/4 | CB5676         | 35506     |
| 4     | 6     | CB6496         | 35512     |
| 5     | 7     | CB80112        | 35514     |

All bars are 6 1/2" long.

## Solid Bars



### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |
|------------|-----------|
| B          | All       |

### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| B     | Length | Catalog Number | Item Code |
|-------|--------|----------------|-----------|
| 1/4   | 2      | SB4            | 35714     |
| 3/8   | 3      | SB6            | 35716     |
| 1/2   | 6-1/2  | SB8            | 35718     |
| 5/8   |        | SB10           | 35720     |
| 3/4   |        | SB12           | 35722     |
| 7/8   |        | SB14           | 35724     |
| 1     | 6-1/2  | SB16           | 35726     |
| 1-1/8 |        | SB18           | 35728     |
| 1-1/4 |        | SB20           | 35730     |
| 1-3/8 |        | SB22           | 35732     |
| 1-1/2 | 6-1/2  | SB24           | 35734     |
| 1-5/8 |        | SB26           | 35736     |
| 1-3/4 |        | SB28           | 35738     |
| 2     | 6-1/2  | SB32           | 35742     |
| 2-1/4 |        | SB36           | 35744     |
| 2-1/2 |        | SB40           | 35746     |
| 3     |        | SB48           | 35748     |
| 3-1/2 | 6-1/2  | SB56           | 35750     |
| 4     |        | SB64           | 35752     |
| 4-1/2 |        | SB72           | 35754     |
| 5     |        | SB80           | 35756     |
| 5-1/2 | 6-1/2  | SB88           | 35758     |
| 6     |        | SB96           | 35760     |
| 7     |        | SB112          | 35762     |

# BEAR-N-BRONZE 660 Cast Bronze Bearings



F

**⚠ California Proposition 65 Warning:** The Bear-N-Bronze 660 contains lead, a chemical known to the state of California to cause cancer, birth defects or other reproductive harm.

BEAR-N-BRONZ is Boston Gear's general purpose cast, solid bronze bearing material. It is a high grade, leaded-tin bronze, having good hardness, strength, wear-resistance, and exceptional anti-friction qualities. It is particularly suited for moderate to heavy loads at normal to relatively high speeds.

## Quality

BEAR-N-BRONZ is chemically and metallurgically tested to assure conformance to specifications. All parts are rigidly inspected to assure freedom from porosity and conformance to dimensional tolerances.

## Adaptability

BEAR-N-BRONZ bearings are completely machined to close tolerances permitting wider housing-bore tolerances. BEAR-N-BRONZ bars are machined all over.

| Composition (%) | Avg. Tensile Strength (Lbs. Per Sq. In.)                                                 | Avg. Yield Strength 0.2% Offset (Lbs. Per Sq. In.) | Elongation in Two Inch (%) | Brinnell Hardness (500 Kg Load) |
|-----------------|------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------|---------------------------------|
| Copper (Cu) 83  | 35,000                                                                                   | 20,000                                             | 15                         | 60                              |
| Tin (Sn) 7      | Bear-N-Bronz conforms to SAE CA932 (660) and ASTM B584-78 (alloy C93200) specifications. |                                                    |                            |                                 |
| Lead (Pb) 7     |                                                                                          |                                                    |                            |                                 |
| Zinc (Zn) 3     |                                                                                          |                                                    |                            |                                 |

## Special Compositions

In addition to our standard BEAR-N-BRONZ (SAE CA 932) material, many special compositions can be furnished on a made-to-order basis.

The Chemical compositions and physical properties of some of the more popular are listed.

| Grade                         | Equivalent S.A.E. Number | Composition (%)                               | Average Yield Strength 0.2% Offset (Lbs. Per Sq. In.) | Average Tensile Strength (Lbs. Per Sq. In.) | Elongation in Two Inch (%) | Brinnell Hardness (500 Kg Load) |
|-------------------------------|--------------------------|-----------------------------------------------|-------------------------------------------------------|---------------------------------------------|----------------------------|---------------------------------|
| 206<br>Leaded<br>Gun Metal    | CA927                    | Copper (Cu) 88<br>Tin (Sn) 10<br>Lead (Pb) 2  | 40,000                                                | 20,000                                      | 25                         | 70                              |
| 210<br>Gun<br>Metal           | CA905                    | Copper (Cu) 88<br>Tin (Sn) 10<br>Zinc (Zn) 2  | 45,000                                                | 22,000                                      | 25                         | 65                              |
| 305<br>Phosphor<br>Bronze     | CA937                    | Copper (Cu) 80<br>Tin (Sn) 10<br>Lead (Pb) 10 | 35,000                                                | 18,000                                      | 20                         | 63                              |
| 319<br>Semi-Plastic<br>Bronze | CA938                    | Copper (Cu) 78<br>Tin (Sn) 7<br>Lead (Pb) 15  | 30,000                                                | 17,000                                      | 15                         | 55                              |

## Selection

In general, sleeve bearings should be selected with a length of one to two times the shaft diameter and an O.D. approximately 25% larger than the shaft diameter.

A general guide to determination of limiting load and velocity values for sleeve bearings has been established by the use of PV calculations. PV represents Pressure x Velocity, for example 100 psi x 20 fpm yields a PV of 2000.

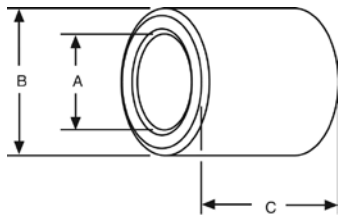
Maximum PV value for BEAR-N-BRONZ bearings: 75,000.

For complete selection and application information, see Engineering Section, Pages 174-182.

# BEAR-N-BRONZE 660 Cast Bronze Bearings

## Plain Cylindrical Bearings

F



### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE      |
|------------|---------------|----------------|
| A          | 3/16 – 3      | ±.001          |
|            | 3-1/4 – 4-1/2 | ±.0015         |
| B          | 5/16 – 3      | +.002 to +.003 |
|            | 3-1/8 – 5     | +.003 to +.005 |
| C          | All           | ±.005          |

### STANDARD CONCENTRICITY

| DIMENSIONS |     | T.I.R. (A TO B) |
|------------|-----|-----------------|
| A          | All | .003            |

For Oil Grooves see Page 179.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A    | B     | C                                                                        | Catalog Number                                                                                         | Item Code                                                                                     | A     | B     | C                                                                             | Catalog Number                                                | Item Code                                                                       |                                                                                 |
|------|-------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------|-------|-------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 3/16 | 5/16  | 1/2<br>3/4<br>1                                                          | M35-4<br>M35-6<br>M35-8                                                                                | 31308<br>31310<br>31312                                                                       | 1/2   | 1     | 1-1/2<br>2<br>2-1/4                                                           | M816-12<br>M816-16<br>M816-18                                 | 31460<br>31462<br>31464                                                         |                                                                                 |
| 1/4  | 3/8   | 3/4<br>1<br>1-1/4                                                        | M46-6<br>M46-8<br>M46-10                                                                               | 31314<br>31316<br>31318                                                                       | 9/16  | 11/16 | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/4                                    | M911-8<br>M911-10<br>M911-12<br>M911-14<br>M911-16<br>M911-18 | 31466<br>31468<br>31470<br>31472<br>31474<br>31476                              |                                                                                 |
|      | 7/16  | 3/4<br>1<br>1-1/4                                                        | M47-6<br>M47-8<br>M47-10                                                                               | 31320<br>31322<br>31324                                                                       |       |       | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/2                                    | M912-8<br>M912-10<br>M912-12<br>M912-14<br>M912-16<br>M912-20 | 31480<br>31482<br>31484<br>31486<br>31488<br>31492                              |                                                                                 |
| 5/16 | 7/16  | 3/4<br>1<br>1-1/4                                                        | M57-6<br>M57-8<br>M57-10                                                                               | 31326<br>31328<br>31330                                                                       |       | 3/4   | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/2                                    | M913-8<br>M913-10<br>M913-12<br>M913-14<br>M913-16            | 31494<br>31496<br>31498<br>31500<br>31502                                       |                                                                                 |
|      | 1/2   | 3/4<br>1<br>1-1/4                                                        | M58-6<br>M58-8<br>M58-10                                                                               | 31332<br>31334<br>31336                                                                       |       |       | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/2                                    | M914-8<br>M914-10<br>M914-12<br>M914-14<br>M914-16            | 31506<br>31508<br>31510                                                         |                                                                                 |
| 3/8  | 1/2   | 3/4<br>1<br>1-1/4<br>1-1/2                                               | M68-6<br>M68-8<br>M68-10<br>M68-12                                                                     | 31338<br>31340<br>31342<br>31344                                                              |       | 13/16 | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2                                             | M915-8<br>M915-10<br>M915-12<br>M915-14<br>M915-16            | 31512<br>31514<br>31516<br>31518<br>31520                                       |                                                                                 |
|      |       | 9/16                                                                     | 3/4<br>1<br>1-1/4                                                                                      | M69-6<br>M69-8<br>M69-10                                                                      |       |       | 31346<br>31348<br>31350                                                       | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2                             | M916-8<br>M916-10<br>M916-12<br>M916-14<br>M916-16                              | 31522<br>31524<br>31526<br>31528<br>31530                                       |
|      | 5/8   | 3/4<br>1<br>1-1/4<br>1-1/2                                               | M610-6<br>M610-8<br>M610-10<br>M610-12                                                                 | 31362<br>31364<br>31366<br>31368                                                              |       | 7/8   | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2                                             | M917-8<br>M917-10<br>M917-12<br>M917-14<br>M917-16            | 31532<br>31534<br>31536<br>31538<br>31540                                       |                                                                                 |
| 7/16 | 9/16  | 1<br>1-1/4<br>1-1/2                                                      | M79-8<br>M79-10<br>M79-12                                                                              | 31352<br>31354<br>31356                                                                       |       | 5/8   | 3/4                                                                           | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/4<br>2-1/2           | M1012-8<br>M1012-10<br>M1012-12<br>M1012-14<br>M1012-16<br>M1012-18<br>M1012-20 | 31512<br>31514<br>31516<br>31518<br>31520<br>31522<br>31524                     |
|      | 5/8   | 1<br>1-1/4<br>1-1/2<br>2                                                 | M710-8<br>M710-10<br>M710-12<br>M710-16                                                                | 31370<br>31372<br>31374<br>31376                                                              |       |       |                                                                               | 13/16                                                         | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/4<br>2-1/2                             | M1013-8<br>M1013-10<br>M1013-12<br>M1013-14<br>M1013-16<br>M1013-18<br>M1013-20 |
|      | 3/4   | 1<br>1-1/4<br>1-1/2                                                      | M712-8<br>M712-10<br>M712-12                                                                           | 31380<br>31382<br>31384                                                                       | 7/8   |       | 3/4<br>1<br>1-1/4<br>1-1/2                                                    |                                                               | M1014-6<br>M1014-8<br>M1014-10<br>M1014-12                                      | 31542<br>31544<br>31546<br>31548                                                |
|      | 13/16 | 1<br>1-1/4<br>1-1/2                                                      | M713-12                                                                                                | 31386                                                                                         |       |       | 1-3/4<br>2<br>2-1/4<br>2-1/2                                                  | M1014-14<br>M1014-16<br>M1014-18<br>M1014-20                  | 31550<br>31552<br>31554<br>31556                                                |                                                                                 |
|      | 5/8   | 5/8<br>3/4<br>7/8<br>1<br>1-1/4<br>1-3/8<br>1-1/2<br>1-3/4<br>2<br>2-1/4 | M810-5<br>M810-6<br>M810-7<br>M810-8<br>M810-10<br>M810-11<br>M810-12<br>M810-14<br>M810-16<br>M810-18 | 31388<br>31390<br>31392<br>31394<br>31396<br>31398<br>31400<br>31402<br>31404<br>31406        |       |       | 15/16                                                                         | 1<br>1-1/2<br>2-1/2                                           | M1015-8<br>M1015-12<br>M1015-20                                                 | 31562<br>31564<br>31568                                                         |
| 1/2  | 11/16 | 3/4<br>1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/4<br>2-1/2               | M811-6<br>M811-8<br>M811-10<br>M811-12<br>M811-14<br>M811-16<br>M811-18<br>M811-20                     | 31408<br>31410<br>31412<br>31414<br>31416<br>31418<br>31420<br>31422                          | 11/16 |       | 1                                                                             | 1<br>1-1/2<br>2<br>2-1/4<br>2-1/2<br>3                        | M1016-8<br>M1016-12<br>M1016-16<br>M1016-18<br>M1016-20<br>M1016-24             | 31570<br>31572<br>31574<br>31576<br>31578<br>31580                              |
|      |       | 1-1/8                                                                    | 1-1/2<br>2<br>2-1/4                                                                                    | M1018-12<br>M1018-16<br>M1018-18                                                              |       |       |                                                                               | 31582<br>31584<br>31586                                       |                                                                                 |                                                                                 |
|      |       | 3/4                                                                      | 3/4<br>1<br>1-1/4<br>1-1/2<br>1-3/4<br>2<br>2-1/4<br>2-1/2<br>2-3/4                                    | M812-6<br>M812-8<br>M812-10<br>M812-12<br>M812-14<br>M812-16<br>M812-18<br>M812-20<br>M812-22 |       |       | 31424<br>31426<br>31428<br>31430<br>31432<br>31434<br>31436<br>31438<br>31440 | 13/16                                                         | 1<br>1-1/2<br>1-3/4<br>2                                                        | M1113-8<br>M1113-12<br>M1113-14<br>M1113-16                                     |
|      | 13/16 |                                                                          | 1<br>1-1/2<br>2-1/4                                                                                    | M813-8<br>M813-12<br>M813-18                                                                  |       |       | 31442<br>31444<br>31446                                                       |                                                               | 7/8                                                                             | 1<br>1-1/4<br>1-1/2<br>2<br>2-1/2                                               |
|      | 7/8   | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2                                        | M814-8<br>M814-10<br>M814-12<br>M814-14<br>M814-16                                                     | 31448<br>31450<br>31452<br>31454<br>31456                                                     |       | 15/16 | 1<br>1-1/4<br>1-1/2<br>2-1/2                                                  | M1115-8<br>M1115-10<br>M1115-12<br>M1115-20                   | 31614<br>31616<br>31618<br>31626                                                |                                                                                 |
|      |       | 1                                                                        | 1<br>1-1/4<br>1-1/2<br>1-3/4<br>2                                                                      | M816-8                                                                                        |       |       | 31458                                                                         | 1<br>1-1/4<br>1-1/2<br>2-1/2                                  | M1116-8<br>M1116-10<br>M1116-12<br>M1116-16                                     | 31628<br>31630<br>31632<br>31636                                                |

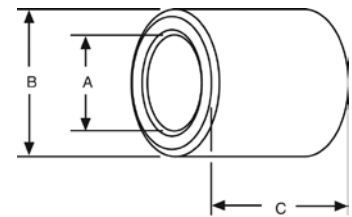
# BEAR-N-BRONZE 660 Cast Bronze Bearings

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

## Plain Cylindrical Bearings

| A     | B      | C     | Catalog Number | Item Code |
|-------|--------|-------|----------------|-----------|
| 3/4   | 7/8    | 3/4   | M1214-6        | 31640     |
|       |        | 1     | M1214-8        | 31642     |
|       |        | 1-1/4 | M1214-10       | 31644     |
|       |        | 1-1/2 | M1214-12       | 31646     |
|       |        | 1-3/4 | M1214-14       | 31648     |
|       |        | 2     | M1214-16       | 31650     |
|       |        | 2-1/4 | M1214-18       | 31652     |
|       |        | 2-1/2 | M1214-20       | 31654     |
|       | 15/16  | 1     | M1215-8        | 31656     |
|       |        | 1-1/4 | M1215-10       | 31658     |
|       |        | 1-1/2 | M1215-12       | 31662     |
|       |        | 1-3/4 | M1215-14       | 31664     |
|       |        | 2     | M1215-16       | 31666     |
|       |        | 2-1/4 | M1215-18       | 31668     |
|       |        | 2-1/2 | M1215-20       | 31670     |
|       |        | 3     | M1215-24       | 31674     |
|       | 1      | 3/4   | M1216-6        | 31676     |
|       |        | 1     | M1216-8        | 31678     |
|       |        | 1-1/8 | M1216-9        | 31680     |
|       |        | 1-1/4 | M1216-10       | 31682     |
|       |        | 1-3/8 | M1216-11       | 31684     |
|       |        | 1-1/2 | M1216-12       | 31686     |
|       |        | 1-3/4 | M1216-14       | 31688     |
|       |        | 2     | M1216-16       | 31690     |
|       |        | 2-1/8 | M1216-17       | 31692     |
|       |        | 2-1/4 | M1216-18       | 31694     |
|       |        | 2-1/2 | M1216-20       | 31696     |
|       |        | 2-3/4 | M1216-22       | 31698     |
|       |        | 3     | M1216-24       | 31700     |
|       |        | 3-1/2 | M1216-28       | 31702     |
|       | 1-1/16 | 1     | M1217-8        | 31704     |
|       |        | 1-1/2 | M1217-12       | 31706     |
|       |        | 2     | M1217-16       | 31708     |
|       |        | 3     | M1217-24       | 31714     |
|       | 1-1/8  | 1     | M1218-8        | 31716     |
|       |        | 1-1/2 | M1218-12       | 31718     |
|       |        | 2     | M1218-16       | 31720     |
|       |        | 2-1/2 | M1218-20       | 31724     |
|       | 1-3/16 | 3     | M1218-24       | 31726     |
|       |        | 1-1/2 | M1219-12       | 31728     |
|       |        | 2     | M1219-16       | 31730     |
|       | 1-1/4  | 1-3/4 | M1220-14       | 31734     |
|       |        | 2     | M1220-16       | 31736     |
|       |        | 2-1/2 | M1220-20       | 31740     |
|       |        | 3     | M1220-24       | 31742     |
| 13/16 | 15/16  | 1     | M1315-8        | 31744     |
|       |        | 1-1/2 | M1315-12       | 31748     |
|       |        | 2     | M1315-16       | 31750     |
|       | 1      | 1-1/2 | M1316-12       | 31752     |
|       |        | 2     | M1316-16       | 31756     |
|       |        | 2-1/2 | M1316-20       | 31758     |
|       | 1-1/16 | 1-1/2 | M1317-12       | 31760     |
|       |        | 2     | M1317-16       | 31762     |
|       |        | 2-3/4 | M1317-22       | 31766     |
|       | 1-1/8  | 1-1/2 | M1318-12       | 31770     |
|       |        | 2     | M1318-16       | 31772     |
|       | 7/8    | 1     | M1416-8        | 31788     |
|       |        | 1-1/4 | M1416-10       | 31790     |
|       |        | 1-3/8 | M1416-11       | 31792     |
|       |        | 1-1/2 | M1416-12       | 31794     |
|       |        | 1-5/8 | M1416-13       | 31796     |
|       |        | 2     | M1416-16       | 31798     |
|       | 1-1/16 | 1     | M1417-8        | 31800     |
|       |        | 1-1/4 | M1417-10       | 31802     |
|       |        | 1-1/2 | M1417-12       | 31804     |
|       |        | 1-3/4 | M1417-14       | 31806     |
|       |        | 2     | M1417-16       | 31808     |
|       |        | 2-1/4 | M1417-18       | 31810     |
|       |        | 2-1/2 | M1417-20       | 31812     |
|       |        | 3     | M1417-24       | 31816     |
| 7/8   | 1-1/8  | 3/4   | M1418-6        | 31818     |
|       |        | 1     | M1418-8        | 31820     |
|       |        | 1-1/4 | M1418-10       | 31822     |
|       |        | 1-3/8 | M1418-11       | 31824     |

| A     | B      | C     | Catalog Number | Item Code |
|-------|--------|-------|----------------|-----------|
| 7/8   | 1-1/8  | 1-1/2 | M1418-12       | 31826     |
|       |        | 1-3/4 | M1418-14       | 31828     |
|       |        | 2     | M1418-16       | 31830     |
|       |        | 2-1/4 | M1418-18       | 31832     |
|       |        | 2-1/2 | M1418-20       | 31834     |
|       |        | 3     | M1418-24       | 31836     |
|       |        | 3-1/4 | M1418-26       | 31838     |
|       |        | 3-1/2 | M1418-28       | 31840     |
|       | 1-3/16 | 1     | M1419-8        | 31842     |
|       |        | 3     | M1419-24       | 31852     |
|       | 1-1/4  | 1-1/2 | M1420-12       | 31854     |
|       |        | 1-3/4 | M1420-14       | 31856     |
|       |        | 2     | M1420-16       | 31858     |
|       |        | 2-1/4 | M1420-18       | 31860     |
|       |        | 2-1/2 | M1420-20       | 31862     |
|       |        | 3     | M1420-24       | 31864     |
|       | 1-3/8  | 3-1/2 | M1420-28       | 31866     |
|       |        | 1-1/2 | M1422-12       | 31868     |
|       |        | 2     | M1422-16       | 31872     |
|       |        | 2-1/2 | M1422-20       | 31874     |
|       | 1-5/16 | 3     | M1422-24       | 31876     |
|       |        | 1-1/2 | M1518-12       | 31878     |
|       |        | 2     | M1518-16       | 31880     |
|       | 1-3/16 | 1-1/4 | M1519-10       | 31884     |
|       |        | 1-1/2 | M1519-12       | 31886     |
|       |        | 2     | M1519-16       | 31888     |
|       |        | 3     | M1519-24       | 31894     |
| 15/16 | 1-1/4  | 1     | M1520-8        | 31896     |
|       |        | 1-1/2 | M1520-12       | 31898     |
|       |        | 2     | M1520-16       | 31900     |
|       |        | 2-1/2 | M1520-20       | 31902     |
|       | 1-5/16 | 2-3/4 | M1520-22       | 31904     |
|       |        | 1-1/2 | M1521-12       | 31906     |
|       |        | 2     | M1521-16       | 31910     |
|       | 1-1/8  | 1-3/8 | M1618-11       | 31916     |
|       |        | 1-1/2 | M1618-12       | 31918     |
|       |        | 1-3/4 | M1618-14       | 31920     |
|       |        | 2     | M1618-16       | 31922     |
|       | 1-3/16 | 2-1/2 | M1618-20       | 31924     |
|       |        | 7/8   | M1619-7        | 31926     |
|       |        | 1-1/4 | M1619-10       | 31928     |
|       |        | 1-1/2 | M1619-12       | 31930     |
|       | 1      | 1-3/4 | M1619-14       | 31932     |
|       |        | 2     | M1619-16       | 31934     |
|       |        | 2-1/2 | M1619-20       | 31936     |
|       | 1-1/4  | 3/4   | M1620-6        | 31938     |
|       |        | 1     | M1620-8        | 31940     |
|       |        | 1-1/8 | M1620-9        | 31942     |
|       |        | 1-1/4 | M1620-10       | 31944     |
|       |        | 1-3/8 | M1620-11       | 31946     |
|       |        | 1-1/2 | M1620-12       | 31948     |
|       |        | 1-5/8 | M1620-13       | 31950     |
|       |        | 1-3/4 | M1620-14       | 31952     |
|       | 1-5/16 | 2     | M1620-16       | 31954     |
|       |        | 2-1/4 | M1620-18       | 31956     |
|       |        | 2-1/2 | M1620-20       | 31958     |
|       |        | 2-3/4 | M1620-22       | 31960     |
|       |        | 3     | M1620-24       | 31962     |
|       |        | 4     | M1620-32       | 31968     |
|       |        | 4-1/2 | M1620-36       | 31970     |
|       | 1-3/8  | 1-1/2 | M1621-12       | 31972     |
|       |        | 2     | M1621-16       | 31974     |
|       |        | 2-1/4 | M1621-18       | 31976     |
|       |        | 2-1/2 | M1621-20       | 31978     |
|       |        | 3     | M1621-24       | 31980     |
|       |        | 3-1/2 | M1621-28       | 31982     |
|       |        | 1-1/4 | M1622-10       | 31988     |
|       |        | 1-1/2 | M1622-12       | 31990     |
| 1     | 1-1/8  | 1-3/4 | M1622-14       | 31992     |
|       |        | 2     | M1622-16       | 31994     |



### STANDARD TOLERANCES

| DIMENSIONS    | TOLERANCE      |
|---------------|----------------|
| A 3/16 – 3    | ±.001          |
| 3-1/4 – 4-1/2 | ±.0015         |
| B 5/16 – 3    | +.002 to +.003 |
| 3-1/8 – 5     | +.003 to +.005 |
| C All         | ±.005          |

### STANDARD CONCENTRICITY

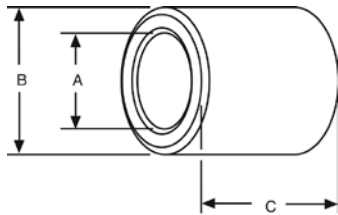
| DIMENSIONS | T.I.R. (A TO B) |
|------------|-----------------|
| A All      | .003            |

For Oil Grooves see Page 179.

# BEAR-N-BRONZE 660 Cast Bronze Bearings

## Plain Cylindrical Bearings

F



### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE      |
|------------|---------------|----------------|
| A          | 3/16 – 3      | ±.001          |
|            | 3-1/4 – 4-1/2 | ±.0015         |
| B          | 5/16 – 3      | +.002 to +.003 |
|            | 3-1/8 – 5     | +.003 to +.005 |
| C          | All           | ±.005          |

### STANDARD CONCENTRICITY

| DIMENSIONS |     | T.I.R. (A TO B) |
|------------|-----|-----------------|
| A          | All | .003            |

For Oil Grooves see Page 179.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

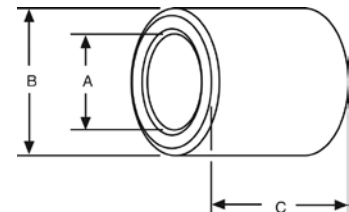
| A | B      | C     | Catalog Number | Item Code | A      | B       | C     | Catalog Number | Item Code |
|---|--------|-------|----------------|-----------|--------|---------|-------|----------------|-----------|
| 1 | 1-3/8  | 2-1/2 | M1622-20       | 31996     | 1-3/16 | 1-11/16 | 2     | M1927-16       | 32172     |
|   |        | 2-3/4 | M1622-22       | 31998     |        |         | 2-1/2 | M1927-20       | 32174     |
|   |        | 3     | M1622-24       | 32000     |        |         | 3     | M1927-24       | 32176     |
|   |        | 3-1/2 | M1622-28       | 32004     |        | 1-7/16  | 2-1/2 | M2023-20       | 32180     |
|   |        | 4     | M1622-32       | 32006     |        |         | 3     | M2023-24       | 32182     |
|   |        | 4-1/2 | M1622-36       | 32008     |        |         | 1     | M2024-8        | 32184     |
|   | 1-1/2  | 1-1/2 | M1624-12       | 32010     |        |         | 1-1/8 | M2024-9        | 32186     |
|   |        | 1-3/4 | M1624-14       | 32012     |        |         | 1-1/4 | M2024-10       | 32188     |
|   |        | 2     | M1624-16       | 32014     |        |         | 1-3/8 | M2024-11       | 32190     |
|   |        | 2-1/2 | M1624-20       | 32016     |        |         | 1-1/2 | M2024-12       | 32192     |
|   |        | 3     | M1624-24       | 32018     |        |         | 1-5/8 | M2024-13       | 32194     |
|   | 1-5/8  | 4     | M1624-32       | 32020     |        |         | 1-3/4 | M2024-14       | 32196     |
|   |        | 2     | M1626-16       | 32022     |        | 1-1/2   | 2     | M2024-16       | 32198     |
|   |        | 2-1/2 | M1626-20       | 32024     |        |         | 2-1/4 | M2024-18       | 32200     |
|   |        | 3     | M1626-24       | 32026     |        |         | 2-1/2 | M2024-20       | 32202     |
|   |        | 3-1/2 | M1626-28       | 32028     |        |         | 2-3/4 | M2024-22       | 32204     |
|   | 1-3/4  | 6-1/2 | M1628-52       | 32030     |        |         | 3     | M2024-24       | 32206     |
|   |        | 3     | M1632-24       | 32032     |        |         | 3-1/4 | M2024-26       | 32208     |
|   | 2      | 6-1/2 | M1632-52       | 32034     |        |         | 3-1/2 | M2024-28       | 32210     |
|   |        | 1-1/2 | M1721-12       | 32036     |        |         | 4     | M2024-32       | 32212     |
|   | 1-1/16 | 2     | M1721-16       | 32038     |        |         | 4-1/4 | M2024-34       | 32214     |
|   |        | 2-1/2 | M1721-20       | 32040     |        |         | 4-1/2 | M2024-36       | 32216     |
|   |        | 2-1/2 | M1723-20       | 32050     |        |         | 5     | M2024-40       | 32218     |
|   | 1-1/4  | 1-1/2 | M1820-12       | 32062     |        | 1-9/16  | 2     | M2025-16       | 32222     |
|   |        | 1-3/4 | M1820-14       | 32064     |        |         | 2-1/2 | M2025-20       | 32224     |
|   |        | 2     | M1820-16       | 32066     |        |         | 3     | M2025-24       | 32226     |
|   |        | 2-1/4 | M1821-18       | 32068     |        |         | 3-1/2 | M2025-28       | 32228     |
|   |        | 2-1/2 | M1821-20       | 32070     |        |         | 3-3/4 | M2025-30       | 32230     |
|   |        | 1     | M1822-8        | 32072     |        | 1-5/8   | 1-3/4 | M2026-14       | 32232     |
|   |        | 1-1/4 | M1822-10       | 32074     |        |         | 2     | M2026-16       | 32234     |
|   |        | 1-1/2 | M1822-12       | 32076     |        |         | 2-1/2 | M2026-20       | 32236     |
|   |        | 1-3/4 | M1822-14       | 32078     |        |         | 3     | M2026-24       | 32238     |
|   |        | 2     | M1822-16       | 32080     |        |         | 3-1/4 | M2026-26       | 32240     |
|   | 1-3/8  | 2-1/4 | M1822-18       | 32082     |        |         | 3-1/2 | M2026-28       | 32242     |
|   |        | 2-1/2 | M1822-20       | 32084     |        |         | 4     | M2026-32       | 32244     |
|   |        | 3     | M1822-24       | 32086     |        |         | 4-1/2 | M2026-36       | 32246     |
|   |        | 3-1/4 | M1822-26       | 32088     |        |         | 4-3/4 | M2026-38       | 32248     |
|   |        | 3-1/2 | M1822-28       | 32090     |        | 1-11/16 | 2     | M2027-16       | 32250     |
|   | 1-1/8  | 4     | M1822-32       | 32092     |        |         | 3-1/4 | M2027-26       | 32254     |
|   |        | 1-1/2 | M1823-12       | 32094     |        | 1-3/4   | 1-3/4 | M2028-14       | 32258     |
|   | 1-7/16 | 3     | M1823-24       | 32098     |        |         | 2     | M2028-16       | 32260     |
|   |        | 1-1/2 | M1824-12       | 32102     |        |         | 2-1/4 | M2028-18       | 32262     |
|   |        | 2     | M1824-16       | 32104     |        |         | 2-1/2 | M2028-20       | 32264     |
|   | 1-1/2  | 2-1/2 | M1824-20       | 32106     |        |         | 2-3/4 | M2028-22       | 32266     |
|   |        | 3     | M1824-24       | 32108     |        |         | 3     | M2028-24       | 32268     |
|   |        | 3-1/2 | M1824-28       | 32110     |        |         | 3-1/2 | M2028-28       | 32270     |
|   | 1-5/8  | 4     | M1824-32       | 32112     |        |         | 3-3/4 | M2028-30       | 32272     |
|   |        | 1-3/4 | M1826-14       | 32114     |        |         | 4     | M2028-32       | 32274     |
|   |        | 2     | M1826-16       | 32116     |        |         | 5     | M2028-40       | 32276     |
|   |        | 2-1/2 | M1826-20       | 32118     |        | 1-7/8   | 2     | M2030-16       | 32278     |
|   |        | 3     | M1826-24       | 32120     |        |         | 2-1/2 | M2030-20       | 32280     |
|   | 1-7/8  | 3-1/2 | M1826-28       | 32122     |        |         | 4     | M2030-32       | 32284     |
|   |        | 4-1/2 | M1826-36       | 32126     |        |         | 3     | M2032-24       | 32286     |
|   |        | 6-1/2 | M1830-52       | 32128     |        | 1-5/16  | 4     | M2032-32       | 32288     |
|   | 2      | 3     | M1832-24       | 32130     |        |         | 6-1/2 | M2032-52       | 32290     |
|   |        | 1-3/4 | M1922-14       | 32134     |        | 1-1/2   | 1-3/4 | M2124-14       | 32296     |
|   | 1-3/8  | 2     | M1922-16       | 32136     |        |         | 3     | M2124-24       | 32298     |
|   |        | 2-1/2 | M1922-20       | 32138     |        |         | 2     | M2126-16       | 32306     |
|   |        | 1-1/4 | M1923-10       | 32140     |        |         | 3     | M2126-24       | 32310     |
|   | 1-7/16 | 1-1/2 | M1923-12       | 32142     |        |         | 4-3/4 | M2126-38       | 32314     |
|   |        | 2     | M1923-16       | 32144     |        | 1-13/16 | 3     | M2129-24       | 32324     |
|   |        | 2-1/2 | M1923-20       | 32146     |        |         | 4     | M2129-32       | 32328     |
|   |        | 3     | M1923-24       | 32148     |        | 1-7/8   | 3-1/2 | M2130-28       | 32330     |
|   |        | 3-1/2 | M1923-28       | 32150     |        |         | 1-3/4 | M2224-14       | 32334     |
|   | 1-1/2  | 2     | M1924-16       | 32152     |        | 1-3/8   | 2     | M2224-16       | 32336     |
|   |        | 3     | M1924-24       | 32154     |        |         | 2-1/2 | M2224-20       | 32338     |
|   |        | 4     | M1924-32       | 32158     |        |         | 2     | M2226-16       | 32340     |
|   | 1-9/16 | 3     | M1925-24       | 32162     |        |         | 3     | M2226-24       | 32342     |
|   |        | 3-1/2 | M1925-28       | 32164     |        |         | 3-1/4 | M2226-26       | 32344     |
|   | 1-5/8  | 2     | M1926-16       | 32166     |        |         | 3-1/2 | M2226-28       | 32346     |
|   |        | 2-1/2 | M1926-20       | 32168     |        |         | 4     | M2226-32       | 32348     |
|   | 1-3/16 | 3     | M1926-24       | 32170     |        |         | 3-1/2 | M2227-28       | 32352     |

# BEAR-N-BRONZE 660 Cast Bronze Bearings

## Plain Cylindrical Bearings

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A       | B        | C        | Catalog Number | Item Code | A        | B        | C        | Catalog Number | Item Code |          |       |
|---------|----------|----------|----------------|-----------|----------|----------|----------|----------------|-----------|----------|-------|
| 1-3/8   | 1-3/4    | 2        | M2228-16       | 32354     | 1-5/8    | 2        | 1-3/4    | M2632-14       | 32526     |          |       |
|         |          | 2-1/4    | M2228-18       | 32356     |          |          | 2-1/2    | M2632-20       | 32528     |          |       |
|         |          | 2-1/2    | M2228-20       | 32358     |          |          | 2        | M2632-24       | 32530     |          |       |
|         |          | 3        | M2228-24       | 32360     |          |          | 4        | M2632-32       | 32534     |          |       |
| 1-7/16  | 1-7/8    | 3-1/2    | M2228-28       | 32362     | 1-11/16  | 2-1/8    | 5        | M2632-40       | 32538     |          |       |
|         |          | 4        | M2228-32       | 32364     |          |          | 5-1/2    | M2632-44       | 32540     |          |       |
|         |          | 3        | M2230-24       | 32366     |          |          | 1-15/16  | 3              | M2634-24  | 32542    |       |
|         |          | 3-1/2    | M2230-28       | 32368     |          |          |          | 4              | M2634-32  | 32544    |       |
|         | 4        | M2230-32 | 32370          | 2         |          | 3-1/2    |          | M2731-24       | 32550     |          |       |
|         | 4-1/2    | M2230-36 | 32372          |           |          | 3-1/2    |          | M2731-28       | 32552     |          |       |
|         | 2        | 3        | M2232-24       |           |          | 32374    | 2        | 3-1/2          | M2732-28  | 32554    |       |
|         |          | 4        | M2232-32       |           |          | 32376    |          | 4-1/2          | M2732-36  | 32556    |       |
|         |          | 2-1/8    | 6-1/2          | M2234-52  |          | 32378    |          | 2-1/16         | 3         | M2733-24 | 32558 |
|         |          | 1-5/8    | 1-3/4          | M2326-14  |          | 32380    |          |                | 4         | M2733-32 | 32562 |
|         | 2-3/4    |          | M2326-22       | 32382     |          | 4-1/2    | M2733-36 |                | 32564     |          |       |
|         | 3        |          | M2326-24       | 32384     |          | 5-1/2    | M2733-44 |                | 32568     |          |       |
| 1-7/16  | 1-11/16  |          | 2-1/2          | M2327-20  | 32386    | 2-3/16   | 2        | M2735-16       | 32570     |          |       |
|         |          | 3        | M2327-24       | 32388     | 3        |          | M2735-24 | 32574          |           |          |       |
|         |          | 3-1/2    | M2327-28       | 32390     | 4        |          | M2735-32 | 32578          |           |          |       |
|         |          | 4        | M2327-32       | 32392     | 2-1/4    |          | 3        | M2736-24       | 32586     |          |       |
|         | 1-3/4    | 2-1/4    | M2328-18       | 32396     |          | 4-1/2    | M2736-36 | 32588          |           |          |       |
|         |          | 3        | M2328-24       | 32398     |          | 2        | 2-1/4    | M2832-18       | 32590     |          |       |
|         |          | 4        | M2328-32       | 32400     |          |          | 2-1/2    | M2832-20       | 32592     |          |       |
|         |          | 1-13/16  | 3              | M2329-24  | 32402    |          | 3        | M2832-24       | 32594     |          |       |
| 4-1/4   | M2329-34 |          | 32410          | 4         | M2832-32 |          | 32596    |                |           |          |       |
| 1-7/8   | 3        |          | M2330-24       | 32414     | 4-1/2    |          | M2832-36 | 32598          |           |          |       |
|         | 4        |          | M2330-32       | 32416     | 5-1/4    |          | M2832-42 | 32600          |           |          |       |
|         | 4-1/2    | M2330-36 | 32420          | 2-1/16    | 3-1/2    |          | M2833-28 | 32602          |           |          |       |
|         | 5        | M2330-40 | 32422          |           | 2-3/4    |          | M2834-22 | 32604          |           |          |       |
| 1-15/16 | 2        | M2331-16 | 32424          |           | 3-1/4    |          | M2834-26 | 32606          |           |          |       |
|         | 3        | M2331-24 | 32426          |           | 3-1/2    |          | M2834-28 | 32608          |           |          |       |
|         | 2        | 4        | M2332-32       | 32438     | 4        |          | M2834-32 | 32610          |           |          |       |
|         |          | 1-5/8    | 2              | M2426-16  | 32440    |          | 4-1/4    | M2834-34       | 32612     |          |       |
| 1-1/2   |          | 1-11/16  | 2-3/4          | M2427-22  | 32442    | 5        | M2834-40 | 32614          |           |          |       |
|         |          | 1-3/4    | 1-3/4          | M2428-14  | 32444    | 1-3/4    | 2-1/4    | 1-3/4          | M2836-14  | 32618    |       |
|         | 2        |          | M2428-16       | 32446     | 2        |          |          | M2836-16       | 32620     |          |       |
|         | 2-1/4    |          | M2428-18       | 32448     | 2-1/2    |          |          | M2836-20       | 32622     |          |       |
|         | 2-1/2    |          | M2428-20       | 32450     | 3        |          |          | M2836-24       | 32624     |          |       |
|         | 3        |          | M2428-24       | 32452     | 3-1/2    |          |          | M2836-28       | 32626     |          |       |
|         | 3-1/2    |          | M2428-28       | 32454     | 4        |          |          | M2836-32       | 32628     |          |       |
|         | 4        |          | M2428-32       | 32456     | 4-1/4    |          |          | M2836-34       | 32630     |          |       |
|         | 4-1/2    |          | M2428-36       | 32458     | 5        |          |          | M2836-40       | 32632     |          |       |
|         | 5        | M2428-40 | 32460          | 2-3/8     | 3-1/2    |          | M2838-28 | 32634          |           |          |       |
|         | 5-1/2    | M2428-44 | 32462          |           | 5        |          | M2838-40 | 32638          |           |          |       |
|         | 1-13/16  | 3        | M2429-24       |           | 32464    |          | 2-1/2    | 6-1/2          | M2840-52  | 32640    |       |
| 1-1/2   | 1-7/8    | 2        | M2430-16       |           | 32466    |          | 1-13/16  | 2-3/16         | 4         | M2935-32 | 32642 |
|         |          | 2-1/2    | M2430-20       | 32468     | 2-5/16   | 4        |          | M2937-32       | 32646     |          |       |
|         |          | 2-3/4    | M2430-22       | 32470     | 5        | M2937-40 |          | 32648          |           |          |       |
|         |          | 3        | M2430-24       | 32472     | 1-7/8    | 2-1/8    |          | 2-1/2          | M3034-20  | 32650    |       |
|         |          | 3-1/2    | M2430-28       | 32474     |          |          | 3        | M3034-24       | 32652     |          |       |
|         |          | 4        | M2430-32       | 32476     |          | 4        | M3034-32 | 32654          |           |          |       |
|         |          | 4-1/2    | M2430-36       | 32478     |          | 2-1/4    | 3        | M3036-24       | 32656     |          |       |
|         |          | 5        | M2430-40       | 32480     | 5        |          | M3036-40 | 32662          |           |          |       |
|         | 5-1/2    | M2430-44 | 32482          | 2-3/8     | 3        | M3038-24 | 32664    |                |           |          |       |
|         | 2        | 2-1/2    | M2432-20       |           | 32484    | 4        | M3038-32 | 32666          |           |          |       |
|         |          | 3        | M2432-24       |           | 32486    | 5-1/4    | M3038-42 | 32668          |           |          |       |
|         |          | 3-1/2    | M2432-28       |           | 32488    | 1-15/16  | 2-3/16   | 2              | M3135-16  | 32670    |       |
| 4       |          | M2432-32 | 32490          | 3         | M3135-24 |          |          | 32672          |           |          |       |
| 4-1/2   |          | M2432-36 | 32492          | 2-1/4     | 3        |          | M3136-24 | 32676          |           |          |       |
| 5       |          | M2432-40 | 32494          |           | 4-1/2    |          | M3136-36 | 32678          |           |          |       |
| 2-1/8   |          | 3        | M2434-24       | 32496     | 2-5/16   |          | 3-1/2    | M3137-28       | 32680     |          |       |
| 4       |          | M2434-32 | 32498          | 4         |          |          | M3137-32 | 32682          |           |          |       |
| 2-1/4   | 3        | M2436-24 | 32500          | 5         |          |          | M3137-40 | 32684          |           |          |       |
|         | 4        | M2436-32 | 32502          | 6-1/4     |          |          | M3137-50 | 32688          |           |          |       |
|         | 5        | M2436-40 | 32504          | 2-3/8     | 4        |          | M3138-32 | 32692          |           |          |       |
|         | 6-1/2    | M2436-52 | 32506          |           | 5-1/2    |          | M3138-44 | 32694          |           |          |       |
| 1-9/16  | 1-13/16  | 3        | M2529-24       | 32508     | 2-7/16   |          | 3        | M3139-24       | 32696     |          |       |
|         | 1-15/16  | 3-1/2    | M2529-28       | 32510     | 2-1/2    |          | 3        | M3140-24       | 32704     |          |       |
| 1-5/8   | 1-7/8    | 2-1/4    | M2630-18       | 32518     |          | 2-1/2    | 5        | M3140-40       | 32706     |          |       |
|         |          | 3        | M2630-24       | 32520     |          |          |          |                |           |          |       |
|         |          | 3-3/4    | M2630-30       | 32522     |          |          |          |                |           |          |       |



### STANDARD TOLERANCES

| DIMENSIONS    | TOLERANCE      |
|---------------|----------------|
| A 3/16 – 3    | ±.001          |
| 3-1/4 – 4-1/2 | ±.0015         |
| B 5/16 – 3    | +.002 to +.003 |
| 3-1/8 – 5     | +.003 to +.005 |
| C All         | ±.005          |

### STANDARD CONCENTRICITY

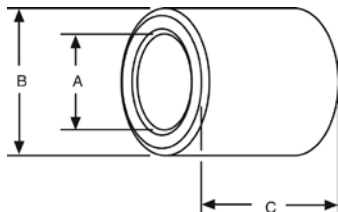
| DIMENSIONS | T.I.R. (A TO B) |
|------------|-----------------|
| A All      | .003            |

For Oil Grooves see Page 179.

# BEAR-N-BRONZE 660 Cast Bronze Bearings

## Plain Cylindrical Bearings

F



### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE      |
|------------|---------------|----------------|
| A          | 3/16 – 3      | ±.001          |
|            | 3-1/4 – 4-1/2 | ±.0015         |
| B          | 5/16 – 3      | +.002 to +.003 |
|            | 3-1/8 – 5     | +.003 to +.005 |
| C          | All           | ±.005          |

### STANDARD CONCENTRICITY

| DIMENSIONS |     | T.I.R. (A TO B) |
|------------|-----|-----------------|
| A          | All | .003            |

For Oil Grooves see Page 179.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A      | B        | C        | Catalog Number | Item Code |
|--------|----------|----------|----------------|-----------|
| 2      | 2-1/4    | 2        | M3236-16       | 32708     |
|        |          | 2-1/2    | M3236-20       | 32710     |
|        |          | 3        | M3236-24       | 32712     |
|        |          | 3-1/2    | M3236-28       | 32714     |
|        |          | 4        | M3236-32       | 32718     |
|        | 4-1/2    | M3236-36 | 32720          |           |
|        | 2-3/8    | 3        | M3238-24       | 32724     |
|        |          | 3-1/2    | M3238-28       | 32726     |
|        |          | 4        | M3238-32       | 32728     |
|        | 4-1/2    | M3238-36 | 32730          |           |
| 2-1/2  | 2-1/2    | M3240-20 | 32732          |           |
|        | 3        | M3240-24 | 32734          |           |
|        | 3-1/2    | M3240-28 | 32736          |           |
|        | 4        | M3240-32 | 32738          |           |
|        | 4-1/2    | M3240-36 | 32740          |           |
| 5      | M3240-40 | 32742    |                |           |
| 6      | M3240-48 | 32746    |                |           |
| 2-5/8  | 4        | M3242-32 | 32748          |           |
| 2-3/4  | 6-1/2    | M3244-52 | 32750          |           |
| 2-1/8  | 2-1/2    | 3        | M3440-24       | 32752     |
|        |          | 4        | M3440-32       | 32754     |
|        | 2-5/8    | 4        | M3442-32       | 32756     |
|        |          | 5        | M3442-40       | 32758     |
| 6      | M3442-48 | 32760    |                |           |
| 2-3/16 | 2-5/8    | 4        | M3542-32       | 32762     |
|        |          | 5        | M3542-40       | 32764     |
|        | 2-11/16  | 3-1/2    | M3543-28       | 32766     |
|        |          | 4-1/2    | M3543-36       | 32770     |
|        |          | 5        | M3543-40       | 32772     |
|        | 2-3/4    | 4-1/2    | M3544-36       | 32774     |
|        |          | 5-1/4    | M3544-42       | 32776     |
| 6      | M3544-48 | 32778    |                |           |
| 2-7/8  | 4-1/2    | M3546-36 | 32780          |           |
| 2-1/4  | 2-1/2    | 3-1/2    | M3640-28       | 32782     |
|        |          | 4        | M3640-32       | 32784     |
|        | 2-5/8    | 3        | M3642-24       | 32786     |
|        |          | 4        | M3642-32       | 32788     |
|        |          | 5        | M3642-40       | 32790     |
|        | 2-11/16  | 4-3/4    | M3643-38       | 32792     |
|        | 2-3/4    | 3-1/2    | M3644-28       | 32794     |
|        |          | 4        | M3644-32       | 32796     |
|        |          | 4-1/2    | M3644-36       | 32798     |
|        | 5        | M3644-40 | 32800          |           |
| 6      | M3644-48 | 32802    |                |           |
| 3      | 3-1/2    | 3-1/2    | M3648-28       | 32806     |
|        |          | 5        | M3648-40       | 32808     |
| 2-3/8  | 2-3/4    | 4        | M3844-32       | 32812     |
|        |          | 6        | M3844-48       | 32816     |
|        | 2-7/8    | 4        | M3846-32       | 32818     |
|        |          | 5        | M3846-40       | 32820     |
| 2-7/16 | 2-3/4    | 4        | M3944-32       | 32824     |
|        |          | 5        | M3944-40       | 32826     |
|        | 2-7/8    | 3        | M3946-24       | 32828     |
|        |          | 5        | M3946-40       | 32830     |
|        | 2-15/16  | 4        | M3947-32       | 32832     |
|        |          | 5        | M3947-40       | 32834     |
|        |          | 6-1/4    | M3947-50       | 32836     |
|        | 3        | 3-3/4    | 3-3/4          | M3948-30  |
| 5      |          |          | M3948-40       | 32840     |
| 6-1/4  | M3948-50 | 32842    |                |           |
| 2-1/2  | 2-3/4    | 4        | M4044-32       | 32844     |
|        |          | 5        | M4044-40       | 32846     |
|        | 2-7/8    | 3-1/4    | M4046-26       | 32848     |
|        |          | 4-1/2    | M4046-36       | 32850     |
|        | 3        | 4        | M4048-32       | 32852     |
|        |          | 5        | M4048-40       | 32854     |
| 6      |          | M4048-48 | 32856          |           |
| 7      |          | M4048-56 | 32858          |           |

| A       | B        | C        | Catalog Number | Item Code |       |
|---------|----------|----------|----------------|-----------|-------|
| 2-1/2   | 3-1/8    | 3-1/2    | M4050-28       | 32860     |       |
|         |          | 4        | M4050-32       | 32862     |       |
|         |          | 4-1/2    | M4050-36       | 32864     |       |
|         |          | 3-1/4    | 4              | M4052-32  | 32868 |
|         |          |          | 5              | M4052-40  | 32870 |
|         | 6        |          | M4052-48       | 32872     |       |
|         | 7-1/4    | M4052-58 | 32874          |           |       |
|         | 3-1/2    | 6-1/2    | M4056-52       | 32876     |       |
|         |          | 3        | 3              | M4248-24  | 32878 |
|         | 5        |          | M4248-40       | 32882     |       |
| 2-5/8   | 3-1/8    | 5        | M4250-40       | 32884     |       |
|         |          | 6        | M4250-48       | 32886     |       |
|         |          | 7-1/4    | M4250-58       | 32888     |       |
|         | 3-1/4    | 7        | M4252-56       | 32890     |       |
|         | 3-3/8    | 6-1/2    | M4254-52       | 32892     |       |
| 2-11/16 | 3-3/16   | 6-1/4    | M4351-50       | 32898     |       |
| 2-3/4   | 3-1/8    | 4        | M4450-32       | 32900     |       |
|         |          | 5        | M4450-40       | 32902     |       |
|         |          | 6        | M4450-48       | 32904     |       |
|         | 3-1/4    | 4        | M4452-32       | 32906     |       |
|         |          | 5        | M4452-40       | 32908     |       |
|         |          | 6        | M4452-48       | 32910     |       |
| 2-7/8   | 3-1/2    | 4-1/2    | M4656-36       | 32926     |       |
|         |          | 6-3/4    | M4656-54       | 32928     |       |
| 2-15/16 | 3-7/16   | 3-1/2    | M4755-28       | 32930     |       |
|         |          | 5        | M4755-40       | 32932     |       |
|         |          | 6-1/2    | M4755-52       | 32934     |       |
|         | 3        | 3-3/8    | 4-1/2          | M4854-36  | 32936 |
|         |          |          | 8              | M4854-64  | 32938 |
| 3       | 3-1/2    | 4-1/2    | M4856-36       | 32940     |       |
|         |          | 6        | M4856-48       | 32942     |       |
|         |          | 9        | M4856-72       | 32944     |       |
|         | 3-5/8    | 5        | M4858-40       | 32946     |       |
|         | 3-3/4    | 6-1/4    | M4860-50       | 32952     |       |
|         | 4        | 6-1/2    | M4864-52       | 32954     |       |
|         | 3-1/4    | 3-1/2    | 4              | M5256-32  | 32956 |
|         |          | 3-3/4    | 5              | M5260-40  | 32958 |
| 3-7/16  | 3-15/16  | 4-1/2    | M5563-36       | 32964     |       |
|         |          | 6-1/2    | M5563-52       | 32966     |       |
| 3-1/2   | 4        | 5-1/2    | M5664-44       | 32968     |       |
|         |          | 7        | M5664-56       | 32970     |       |
|         | 4-1/8    | 6        | M5666-48       | 32972     |       |
|         |          | 4-1/4    | 4-1/2          | M5668-36  | 32974 |
| 7       | M5668-56 |          | 32976          |           |       |
| 9-3/4   | M5668-78 |          | 32978          |           |       |
| 3-3/4   | 4-1/4    | 5        | M6068-40       | 32980     |       |
|         |          | 7        | M6068-56       | 32982     |       |
|         | 4-1/2    | 6-1/2    | M6072-52       | 32984     |       |
| 4       | 4-1/2    | 4        | M6472-32       | 32986     |       |
|         |          | 6        | M6472-48       | 32988     |       |
|         |          | 7        | M6472-56       | 32990     |       |
|         | 5        | 5        | 5              | M6480-40  | 32992 |
| 6       |          |          | M6480-48       | 32994     |       |
| 4-1/4   | 4-3/4    | 5        | M6876-40       | 32998     |       |
|         |          | 6        | M6876-48       | 33000     |       |
|         |          | 7        | M6876-56       | 33002     |       |
|         | 5        | 5        | M6880-40       | 33004     |       |
|         |          | 6        | M6880-48       | 33006     |       |
| 7       | M6880-56 | 33008    |                |           |       |
| 4-1/2   | 5        | 6        | M7280-48       | 33010     |       |
|         |          | 7        | M7280-56       | 33012     |       |
|         |          | 8        | M7280-64       | 33014     |       |

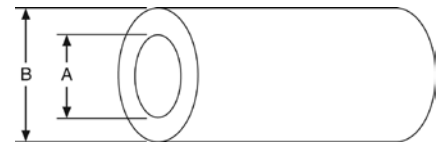
# BEAR-N-BRONZE 660 Cast Bronze Bearings

## Cored Bars

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A   | B     | Aprx. Wgt. (Lbs.) | Catalog Number | Item Code |
|-----|-------|-------------------|----------------|-----------|
| 1/2 | 1     | 2-3/4             | MCB816         | 33016     |
|     | 1-1/8 | 3-3/4             | MCB818         | 33018     |
|     | 1-1/4 | 4-3/4             | MCB820         | 33020     |
|     | 1-1/2 | 7                 | MCB824         | 33024     |
|     | 1-3/4 | 9-3/4             | MCB828         | 33026     |
|     | 2     | 12-3/4            | MCB832         | 33028     |
| 5/8 | 1     | 2                 | MCB1016        | 47640     |
|     | 1-1/8 | 3                 | MCB1018        | 33030     |
|     | 1-1/4 | 4                 | MCB1020        | 33032     |
|     | 1-3/8 | 5                 | MCB1022        | 33034     |
|     | 1-1/2 | 6-1/2             | MCB1024        | 33036     |
|     | 1-3/4 | 9                 | MCB1028        | 33040     |
|     | 1     | 1-1/2             | MCB1216        | 47641     |
|     | 1-1/8 | 2-1/2             | MCB1218        | 47642     |
|     | 1-1/4 | 3-1/2             | MCB1220        | 33046     |
|     | 1-3/8 | 4-1/2             | MCB1222        | 33048     |
| 3/4 | 1-1/2 | 5-1/2             | MCB1224        | 33050     |
|     | 1-3/4 | 8                 | MCB1228        | 33054     |
|     | 2     | 11-1/2            | MCB1232        | 33058     |
|     | 2-1/4 | 15                | MCB1236        | 33062     |
|     | 2-1/2 | 19-1/2            | MCB1240        | 33064     |
|     | 2-3/4 | 24                | MCB1244        | 33066     |
|     | 1-1/8 | 1-7/8             | MCB1418        | 47643     |
|     | 1-1/4 | 2-7/8             | MCB1420        | 47644     |
|     | 1-3/8 | 4                 | MCB1422        | 33068     |
|     | 1-1/2 | 5                 | MCB1424        | 33070     |
| 7/8 | 1-5/8 | 6-1/2             | MCB1426        | 33072     |
|     | 1-3/4 | 7-1/2             | MCB1428        | 33074     |
|     | 2     | 11                | MCB1432        | 33078     |
|     | 1-1/4 | 2                 | MCB1620        | 47645     |
|     | 1-3/8 | 3-1/8             | MCB1622        | 47646     |
|     | 1-1/2 | 4-1/2             | MCB1624        | 33084     |
|     | 1-5/8 | 5-1/2             | MCB1626        | 33086     |
|     | 1-3/4 | 7                 | MCB1628        | 33088     |
|     | 1-7/8 | 8-1/2             | MCB1630        | 33090     |
|     | 2     | 10                | MCB1632        | 33092     |
| 1   | 2-1/4 | 13-1/2            | MCB1636        | 33096     |
|     | 2-1/2 | 17-1/2            | MCB1640        | 33100     |
|     | 2-3/4 | 22                | MCB1644        | 33102     |
|     | 3     | 27                | MCB1648        | 33104     |
|     | 2-1/4 | 32                | MCB1652        | 33106     |
|     | 3-1/2 | 37-1/2            | MCB1656        | 33108     |
|     | 4     | 50                | MCB1664        | 33110     |

| A     | B     | Aprx. Wgt. (Lbs.) | Catalog Number | Item Code |
|-------|-------|-------------------|----------------|-----------|
| 1-1/8 | 1-3/8 | 2-1/4             | MCB1822        | 47647     |
|       | 1-1/2 | 4-1/2             | MCB1824        | 47648     |
|       | 1-5/8 | 5                 | MCB1826        | 33112     |
|       | 2-1/8 | 11-1/2            | MCB1834        | 33120     |
|       | 2-1/2 | 16-1/2            | MCB1840        | 33126     |
|       | 1-1/2 | 2-1/2             | MCB2024        | 47649     |
| 1-1/4 | 1-5/8 | 3-7/8             | MCB2026        | 47650     |
|       | 1-3/4 | 5-1/2             | MCB2028        | 33132     |
|       | 1-7/8 | 7                 | MCB2030        | 33134     |
|       | 2     | 8-1/2             | MCB2032        | 33136     |
|       | 2-1/8 | 10-1/2            | MCB2034        | 33138     |
|       | 2-1/4 | 12                | MCB2036        | 33140     |
|       | 2-1/2 | 16                | MCB2040        | 33144     |
|       | 2-3/4 | 20                | MCB2044        | 33148     |
|       | 3     | 25                | MCB2048        | 33152     |
|       | 3-1/4 | 30                | MCB2052        | 33154     |
| 1-3/8 | 3-1/2 | 35-1/2            | MCB2056        | 33156     |
|       | 1-3/4 | 4-1/4             | MCB2228        | 47652     |
|       | 1-7/8 | 6                 | MCB2230        | 33160     |
|       | 2     | 7-1/2             | MCB2232        | 33162     |
|       | 2-1/8 | 9-1/2             | MCB2234        | 33164     |
|       | 2-1/4 | 11                | MCB2236        | 33166     |
|       | 2-3/8 | 12-1/2            | MCB2238        | 33168     |
|       | 1-3/4 | 3                 | MCB2428        | 47653     |
|       | 1-7/8 | 4-1/2             | MCB2430        | 47654     |
|       | 2     | 6                 | MCB2432        | 33178     |
| 1-1/2 | 2-1/8 | 8                 | MCB2434        | 33180     |
|       | 2-1/4 | 10                | MCB2436        | 33182     |
|       | 2-3/8 | 11-1/2            | MCB2438        | 33184     |
|       | 2-1/2 | 14                | MCB2440        | 33186     |
|       | 2-3/4 | 18                | MCB2444        | 33190     |
|       | 3-1/4 | 27-1/2            | MCB2452        | 33194     |
|       | 3-1/2 | 33                | MCB2456        | 33196     |
|       | 3-3/4 | 40                | MCB2460        | 33198     |
|       | 4     | 45                | MCB2464        | 33200     |
|       | 4-1/2 | 62                | MCB2472        | 33202     |



### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE                               |
|------------|-----------------------------------------|
| A          | 1/2 - 4<br>4-1/4 - 8<br>- 1/16<br>- 1/8 |
| B          | 1 - 4<br>4-1/4 - 9<br>+ 1/16<br>+ 1/8   |

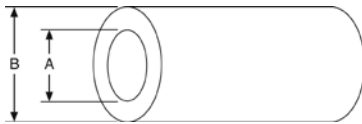
All bars are 13" long.

Contact factory for bars longer than 13". Available in lengths up to 105".

# BEAR-N-BRONZE 660 Cast Bronze Bearings

## Cored Bars

F



### STANDARD TOLERANCES

| DIMENSIONS |           | TOLERANCE |
|------------|-----------|-----------|
| A          | 1/2 – 4   | – 1/16    |
|            | 4-1/4 – 8 | – 1/8     |
| B          | 1 – 4     | + 1/16    |
|            | 4-1/4 – 9 | + 1/8     |

### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A     | B     | Aprx. Wgt. (Lbs.) | Catalog Number | Item Code | A     | B     | Aprx. Wgt. (Lbs.) | Catalog Number | Item Code |
|-------|-------|-------------------|----------------|-----------|-------|-------|-------------------|----------------|-----------|
| 1-5/8 | 2     | 4-7/8             | MCB2632        | 47655     | 2-3/8 | 3     | 12                | MCB3848        | 33314     |
|       | 2-1/8 | 7                 | MCB2634        | 33204     | 2-1/2 | 3     | 9-7/8             | MCB4048        | 47661     |
|       | 2-1/4 | 9                 | MCB2636        | 33206     |       | 3-1/8 | 13                | MCB4050        | 33324     |
|       | 2-3/8 | 10-1/2            | MCB2638        | 33208     |       | 3-1/4 | 15                | MCB4052        | 33326     |
| 1-3/4 | 2     | 3-3/8             | MCB2832        | 47656     |       | 3-1/2 | 21                | MCB4056        | 33328     |
|       | 2-1/8 | 5-1/8             | MCB2834        | 47657     |       | 3-3/4 | 27                | MCB4060        | 33330     |
|       | 2-1/4 | 7-1/2             | MCB2836        | 33218     |       | 4     | 33-1/2            | MCB4064        | 33332     |
|       | 2-3/8 | 9                 | MCB2838        | 33220     |       | 4-1/4 | 40                | MCB4068        | 33334     |
|       | 2-1/2 | 11                | MCB2840        | 33222     |       | 4-1/2 | 46                | MCB4072        | 33336     |
|       | 2-5/8 | 13-1/2            | MCB2842        | 33224     |       | 5     | 61                | MCB4080        | 33340     |
|       | 2-3/4 | 15-1/2            | MCB2844        | 33226     |       | 5-1/2 | 78                | MCB4088        | 33342     |
|       | 3     | 20                | MCB2848        | 33230     | 2-3/4 | 3-1/2 | 19-1/2            | MCB4456        | 47662     |
|       | 3-1/4 | 25                | MCB2852        | 33232     |       | 3-3/4 | 22-1/2            | MCB4460        | 33354     |
|       | 3-1/2 | 31                | MCB2856        | 33234     |       | 4     | 28-1/2            | MCB4464        | 33356     |
|       | 4     | 42-1/2            | MCB2864        | 33238     |       | 4-1/4 | 35                | MCB4468        | 33358     |
| 1-7/8 | 4-1/4 | 50                | MCB2868        | 33240     |       | 4-1/2 | 42                | MCB4472        | 33360     |
|       | 2-1/4 | 5-1/2             | MCB3036        | 47658     | 2-7/8 | 4     | 26-3/4            | MCB4664        | 33364     |
|       | 2-3/8 | 7-1/2             | MCB3038        | 33242     | 3     | 3-1/2 | 11-1/2            | MCB4856        | 47663     |
|       | 2-1/2 | 9-3/4             | MCB3040        | 33244     |       | 3-3/4 | 18-1/4            | MCB4860        | 33366     |
| 2     | 2-5/8 | 12                | MCB3042        | 33246     |       | 4     | 24-1/2            | MCB4864        | 33368     |
|       | 2-1/4 | 3-7/8             | MCB3236        | 47659     |       | 4-1/4 | 31                | MCB4868        | 33370     |
|       | 2-1/2 | 8-1/2             | MCB3240        | 33256     |       | 4-1/2 | 38                | MCB4872        | 33372     |
|       | 2-5/8 | 10                | MCB3242        | 33258     |       | 4-3/4 | 45                | MCB4876        | 33374     |
|       | 2-3/4 | 12-1/4            | MCB3244        | 33260     |       | 5     | 52                | MCB4880        | 33376     |
|       | 3     | 16-1/2            | MCB3248        | 33264     |       | 5-1/2 | 70                | MCB4888        | 33378     |
|       | 3-1/4 | 22                | MCB3252        | 33266     |       | 6     | 89-1/2            | MCB4896        | 33380     |
|       | 3-1/2 | 29                | MCB3256        | 33268     |       | 6-1/2 | 110               | MCB48104       | 33382     |
|       | 3-3/4 | 34                | MCB3260        | 33270     | 3-1/4 | 4     | 19-1/2            | MCB5264        | 47664     |
|       | 4     | 39-1/2            | MCB3264        | 33272     |       | 4-1/4 | 25-1/2            | MCB5268        | 33384     |
|       | 4-1/2 | 54                | MCB3272        | 33274     |       | 4-1/2 | 34                | MCB5272        | 33386     |
|       | 5     | 69                | MCB3280        | 33276     |       | 5     | 48                | MCB5280        | 33390     |
| 2-1/8 | 6     | 105-1/2           | MCB3296        | 33278     | 3-1/2 | 4-1/4 | 20-7/8            | MCB5668        | 47665     |
|       | 2-5/8 | 8-1/2             | MCB3442        | 33280     |       | 4-1/2 | 30                | MCB5672        | 33394     |
| 2-1/4 | 2-7/8 | 13                | MCB3446        | 33284     |       | 4-3/4 | 35-1/2            | MCB5676        | 33396     |
|       | 2-3/4 | 9                 | MCB3644        | 33294     |       | 5     | 44                | MCB5680        | 33398     |
|       | 3-1/4 | 19                | MCB3652        | 33302     |       | 5-1/2 | 61                | MCB5688        | 33400     |
|       | 3-1/2 | 25                | MCB3656        | 33304     |       | 6     | 79                | MCB5696        | 33402     |
|       | 3-3/4 | 30-1/2            | MCB3660        | 33306     |       | 6-1/2 | 107-1/2           | MCB56104       | 47666     |
|       | 4     | 37                | MCB3664        | 33308     | 3-3/4 | 4-1/2 | 22-1/4            | MCB6072        | 47667     |
|       | 4-1/4 | 43                | MCB3668        | 33310     |       | 4-3/4 | 29                | MCB6076        | 33404     |
|       |       |                   |                |           |       | 5     | 38                | MCB6080        | 33406     |
|       |       |                   |                |           |       | 6     | 74                | MCB6096        | 33410     |

All bars are 13" long.  
Contact factory for bars longer than 13".

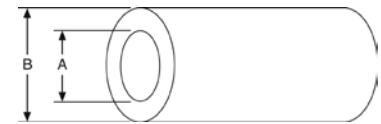
# BEAR-N-BRONZE 660 Cast Bronze Bearings

## Cored Bars

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A     | B     | Aprx. Wgt. (Lb.) | Catalog Number | Item Code |
|-------|-------|------------------|----------------|-----------|
| 4     | 4-3/4 | 22-3/4           | MCB6476        | 47668     |
|       | 5     | 32-1/4           | MCB6480        | 47669     |
|       | 5-1/2 | 49               | MCB6488        | 33412     |
|       | 6     | 67-1/2           | MCB6496        | 33414     |
|       | 6-1/2 | 87               | MCB64104       | 33416     |
|       | 7     | 109              | MCB64112       | 33510     |
|       | 7-1/2 | 134              | MCB64120       | 33512     |
| 4-1/4 | 5-1/2 | 41-1/4           | MCB6888        | 47670     |
|       | 6     | 61               | MCB6896        | 33418     |
|       | 6-1/2 | 82               | MCB68104       | 33514     |
| 4-1/2 | 5-1/2 | 36               | MCB7288        | 47671     |
|       | 6     | 56-1/2           | MCB7296        | 47672     |
|       | 6-1/2 | 75               | MCB72104       | 33420     |
|       | 7     | 97               | MCB72112       | 33422     |
| 4-3/4 | 6     | 67               | MCB7696        | 47673     |
| 5     | 6     | 39               | MCB8096        | 33428     |
|       | 7     | 81               | MCB80112       | 33430     |
|       | 7-1/2 | 104              | MCB80120       | 33516     |
|       | 8     | 130              | MCB80128       | 33518     |

| Aprx. A | B     | Wgt. (Lb.) | Catalog Number | Item Code |
|---------|-------|------------|----------------|-----------|
| 5-1/4   | 7     | 77         | MCB84112       | 47675     |
| 5-1/2   | 6-1/2 | 43         | MCB88104       | 47676     |
|         | 7     | 67-1/4     | MCB88112       | 47677     |
|         | 7-1/2 | 91         | MCB88120       | 33434     |
| 5-3/4   | 8     | 113        | MCB88128       | 33436     |
|         | 7-1/2 | 79         | MCB92120       | 33438     |
| 6       | 7     | 46-1/2     | MCB96112       | 47678     |
|         | 7-1/2 | 72-1/2     | MCB96120       | 47679     |
|         | 8     | 94         | MCB96128       | 33440     |
| 6-1/2   | 9     | 151        | MCB96144       | 33522     |
|         | 7-1/2 | 50-1/4     | MCB104120      | 47681     |
|         | 8     | 84         | MCB104128      | 47682     |
|         | 9     | 130        | MCB104144      | 33442     |
| 8       | 9     | 61         | MCB128144      | 47684     |



All bars are 13" long.  
Contact factory for bars longer than 13".

### STANDARD TOLERANCES

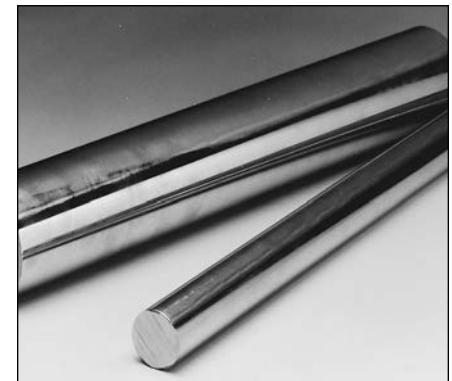
| DIMENSIONS | TOLERANCE            |
|------------|----------------------|
| A          | 1/2 - 4<br>4-1/4 - 8 |
| B          | 1 - 4<br>4-1/4 - 9   |

## Solid Bars

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| B     | Aprx. Wgt. (Lb.) | Catalog Number | Item Code |
|-------|------------------|----------------|-----------|
| 1/2   | 1                | MS8            | 33444     |
| 5/8   | 1-1/2            | MS10           | 33446     |
| 3/4   | 2                | MS12           | 33448     |
| 7/8   | 2-3/4            | MS14           | 33450     |
| 1     | 3-1/2            | MS16           | 33452     |
| 1-1/8 | 4-1/2            | MS18           | 33454     |
| 1-1/4 | 5-1/2            | MS20           | 33456     |
| 1-3/8 | 6-1/2            | MS22           | 33458     |
| 1-1/2 | 7-1/2            | MS24           | 33460     |
| 1-5/8 | 8-1/2            | MS26           | 33462     |
| 1-3/4 | 10-1/4           | MS28           | 33464     |
| 1-7/8 | 11-1/2           | MS30           | 33466     |
| 2     | 14               | MS32           | 33468     |
| 2-1/4 | 17               | MS36           | 33472     |
| 2-1/2 | 21-1/2           | MS40           | 33476     |
| 2-5/8 | 23-1/2           | MS42           | 33478     |
| 2-3/4 | 25-1/2           | MS44           | 33480     |

| B     | Aprx. Wgt. (Lb.) | Catalog Number | Item Code |
|-------|------------------|----------------|-----------|
| 3     | 30               | MS48           | 33484     |
| 3-1/4 | 35-1/2           | MS52           | 33486     |
| 3-1/2 | 41               | MS56           | 33488     |
| 4     | 53               | MS64           | 33492     |
| 4-1/4 | 59               | MS68           | 33494     |
| 4-1/2 | 67               | MS72           | 33496     |
| 4-3/4 | 73               | MS76           | 33536     |
| 5     | 82               | MS80           | 33498     |
| 5-1/2 | 98               | MS88           | 33500     |
| 6     | 118              | MS96           | 33502     |
| 6-1/2 | 139              | MS104          | 33538     |
| 7     | 161              | MS112          | 33504     |
| 7-1/2 | 186              | MS120          | 33506     |
| 8     | 210-1/2          | MS128          | 33508     |
| 9     | 273              | MS144          | 33544     |



All Bars are 13" long.  
Contact Factory for Bars longer than 13".

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE            |
|------------|----------------------|
| B          | 1/2 - 4<br>4-1/4 - 9 |

# Bronze Bearing Emergency Banks

F



Actual Size of Bank 10-1/2 x 13-1/2"

**SAVES MONEY** — Reduce time lost when breakdowns occur due to bearing failures. You own stock — any time — day or night.

**COMPACT** — Handy metal kit keeps bearings together in conveniently labeled compartments. Bearings where you want them — when you need them.

**REFILLS AVAILABLE** — Both kit and replacement bearings are available from stock.

See your Boston Gear Distributors, in all major cities — from coast to coast.

## BOST-BRONZ Emergency Bank

Order by Catalog Number-34500 BBB-1

*There are two each of the 47 bearing sizes below in the bank.*

|         |                      |          |                      |          |                         |
|---------|----------------------|----------|----------------------|----------|-------------------------|
| B46-8   | 1/4 x 3/8 x 1        | B913-12  | 9/16 x 13/16 x 1-1/2 | B1618-16 | 1 x 1-1/8 x 2           |
| B47-8   | 1/4 x 7/16 x 1       | B1012-12 | 5/8 x 3/4 x 1-1/2    | B1620-20 | 1 x 1-1/4 x 3           |
| B48-8   | 1/4 x 1/2 x 1        | B1013-16 | 5/8 x 13/16 x 2      | B1622-24 | 1 x 1-3/8 x 3           |
| B56-8   | 5/16 x 3/8 x 1       | B1014-16 | 5/8 x 7/8 x 2        | B1624-16 | 1 x 1-1/2 x 2           |
| B58-8   | 5/16 x 1/2 x 1       | B1016-16 | 5/8 x 1 x 2          | B1721-20 | 1-1/16 x 1-5/16 x 2-1/2 |
| B68-10  | 3/8 x 1/2 x 1-1/4    | B1114-16 | 11/16 x 7/8 x 2      | B1822-24 | 1-1/8 x 1-3/8 x 3       |
| B69-10  | 3/8 x 9/16 x 1-1/4   | B1214-12 | 3/4 x 7/8 x 1-1/2    | B1824-16 | 1-1/8 x 1-1/2 x 2       |
| B610-10 | 3/8 x 5/8 x 1-1/4    | B1215-16 | 3/4 x 15/16 x 2      | B1923-24 | 1-3/16 x 1-7/16 x 3     |
| B79-10  | 7/16 x 9/16 x 1-1/4  | B1216-20 | 3/4 x 1 x 2-1/2      | B1924-24 | 1-3/16 x 1-1/2 x 3      |
| B710-10 | 7/16 x 5/8 x 1-1/4   | B1218-16 | 3/4 x 1-1/8 x 2      | B2024-24 | 1-1/4 x 1-1/2 x 3       |
| B711-12 | 7/16 x 11/16 x 1-1/2 | B1316-16 | 13/16 x 1 x 2        | B2026-16 | 1-1/4 x 1-5/8 x 2       |
| B810-12 | 1/2 x 5/8 x 1-1/2    | B1416-12 | 7/8 x 1 x 1-1/2      | B2126-24 | 1-5/16 x 1-5/8 x 3      |
| B812-16 | 1/2 x 3/4 x 2        | B1418-20 | 7/8 x 1-1/8 x 2-1/2  | B2228-16 | 1-3/8 x 1-3/4 x 2       |
| B813-12 | 1/2 x 13/16 x 1-1/2  | B1420-16 | 7/8 x 1-1/4 x 2      | B2328-24 | 1-7/16 x 1-3/4 x 3      |
| B814-12 | 1/2 x 7/8 x 1-1/2    | B1519-16 | 15/16 x 1-3/16 x 2   | B2430-16 | 1-1/2 x 1-7/8 x 2       |
| B912-12 | 9/16 x 3/4 x 1-1/2   | B1520-16 | 15/16 x 1-1/4 x 3    |          |                         |

## BEAR-N-BRONZ Emergency Bearing Bank

Order by Item Code

Bank #1 Item Code — 31300

Bank #2 Item Code — 31304

| Bank #1                                                              |                         | Bank #2                                                              |                       |
|----------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------|-----------------------|
| <i>There are two each of the 30 bearing sizes below in the bank.</i> |                         | <i>There are two each of the 20 bearing sizes below in the bank.</i> |                       |
| M46-10                                                               | 1/4 x 3/8 x 1-1/4       | M1824-16                                                             | 1-1/8 x 1-1/2 x 2     |
| M58-10                                                               | 5/16 x 1/2 x 1-1/4      | M1923-16                                                             | 1-3/16 x 1-7/16 x 2   |
| M69-10                                                               | 3/8 x 9/16 x 1-1/4      | M1926-16                                                             | 1-3/16 x 1-5/8 x 2    |
| M710-10                                                              | 7/16 x 5/8 x 1-1/4      | M2026-20                                                             | 1-1/4 x 1-5/8 x 2-1/2 |
| M812-12                                                              | 1/2 x 3/4 x 1-1/2       | M2228-18                                                             | 1-3/8 x 1-3/4 x 2-1/4 |
| M816-16                                                              | 1/2 x 1 x 2             | M2230-24                                                             | 1-3/8 x 1-7/8 x 3     |
| M912-12                                                              | 9/16 x 3/4 x 1-1/2      | M2328-24                                                             | 1-7/16 x 1-3/4 x 3    |
| M1014-12                                                             | 5/8 x 7/8 x 1-1/2       | M2330-32                                                             | 1-7/16 x 1-7/8 x 4    |
| M1115-12                                                             | 11/16 x 15/16 x 1-1/2   | M2428-18                                                             | 1-1/2 x 1-3/4 x 2-1/4 |
| M1216-12                                                             | 3/4 x 1 x 1-1/2         | M2430-20                                                             | 1-1/2 x 1-7/8 x 2-1/2 |
| M1316-12                                                             | 13/16 x 1 x 1-1/2       | M2432-28                                                             | 1-1/2 x 2 x 3-1/2     |
| M1420-14                                                             | 7/8 x 1-1/4 x 1-3/4     | M2630-30                                                             | 1-5/8 x 1-7/8 x 3-3/4 |
| M1520-20                                                             | 15/16 x 1-1/4 x 2-1/2   | M2632-24                                                             | 1-5/8 x 2 x 2         |
| M1620-16                                                             | 1 x 1-1/4 x 2           | M2832-32                                                             | 1-3/4 x 2 x 4         |
| M1624-16                                                             | 1 x 1-1/2 x 2           |                                                                      |                       |
| M1723-20                                                             | 1-1/16 x 1-7/16 x 2-1/2 |                                                                      |                       |
|                                                                      |                         | M1219-12                                                             | 3/4 x 1-3/16 x 1-1/2  |
|                                                                      |                         | M1318-12                                                             | 13/16 x 1-1/8 x 1-1/2 |
|                                                                      |                         | M1419-8                                                              | 7/8 x 1-3/16 x 1      |
|                                                                      |                         | M1420-12                                                             | 7/8 x 1-1/4 x 1-1/2   |
|                                                                      |                         | M1620-16                                                             | 1 x 1-1/4 x 2         |
|                                                                      |                         | M1624-16                                                             | 1 x 1-1/2 x 2         |
|                                                                      |                         | M1824-16                                                             | 1-1/8 x 1-1/2 x 2     |
|                                                                      |                         | M1923-16                                                             | 1-3/16 x 1-7/16 x 2   |
|                                                                      |                         | M2028-16                                                             | 1-1/4 x 1-3/4 x 2     |
|                                                                      |                         | M2126-16                                                             | 1-5/16 x 1-5/8 x 2    |
|                                                                      |                         | M2228-16                                                             | 1-3/8 x 1-3/4 x 2     |
|                                                                      |                         | M2330-24                                                             | 1-7/16 x 1-7/8 x 3    |
|                                                                      |                         | M2428-18                                                             | 1-1/2 x 1-3/4 x 2-1/4 |
|                                                                      |                         | M2430-20                                                             | 1-1/2 x 1-7/8 x 2-1/2 |
|                                                                      |                         | M2432-20                                                             | 1-1/2 x 2 x 2-1/2     |
|                                                                      |                         | M2630-18                                                             | 1-5/8 x 1-7/8 x 2-1/4 |
|                                                                      |                         | M2632-24                                                             | 1-5/8 x 2 x 3         |
|                                                                      |                         | M2832-24                                                             | 1-3/4 x 2 x 3         |
|                                                                      |                         | M3238-32                                                             | 2 x 2-3/8 x 4         |
|                                                                      |                         | M3644-32                                                             | 2-1/4 x 2-3/4 x 4     |



BOSTonE F-1 glass filled material is completely self-lubricating with outstanding wear and corrosion resistance properties, machined from extruded rods to close tolerances. BOSTonE F-1 material has a wide temperature capability and an excellent PV value. **BOSTonE F-1 bearings may be green, white or any other color.**

Lubrication of these bearings is not required. Teflon®, the major ingredient of BOSTonE F-1 material (75% to 80%), has excellent self-lubricating characteristics and a low coefficient of friction. The remaining 20% to 25% is glass.

BOSTonE F-1 bearing material has excellent strength and wearability and was developed to withstand high loads at moderate speeds. The allowable operating temperature range is -400° to +550°F.

Typical applications for BOSTonE F-1 bearings are textile machinery, farm implements, food processing equipment, pulp and paper machinery, business machinery, aircraft, home appliances, automotive and machine tools as well as many others, in both the electrical and chemical fields.

Cylindrical, Flanged and Thrust Bearings and Solid Bars are stocked in BOSTonE F-1 material.

## Selection

In general, sleeve bearings should be selected with a length of one to two times the shaft diameter and an O.D. approximately 25% larger than the shaft diameter.

A general guide to determination of limiting load and velocity values for sleeve bearings has been established by the use of PV calculations. PV represents Pressure x Velocity, for example 100 psi x 20 fpm yields a PV of 2000.

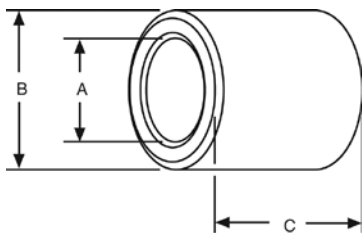
Maximum PV value for BOSTonE F-1 bearings: 20,000 (50,000 for intermittent service).

For complete selection and application information, see Engineering Section, Pages 174-182.

# BOSonE F-1 Glass Filled Teflon Bearings

## Plain Cylindrical Bearings

F



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A             | B             | C                 | Catalog Number                | Item Code               |
|---------------|---------------|-------------------|-------------------------------|-------------------------|
| 3/16<br>.191  | 5/16<br>.313  | 1/4<br>3/8<br>1/2 | P35-2<br>P35-3<br>P35-4       | 56821<br>56822<br>56823 |
| 1/4<br>.254   | 3/8<br>.376   | 1/4<br>3/8<br>1/2 | P46-2<br>P46-3<br>P46-4       | 56824<br>56825<br>56826 |
| 5/16<br>.316  | 1/2<br>.501   | 3/8<br>1/2        | P58-3<br>P58-4                | 56827<br>56828          |
| 3/8<br>.379   | 9/16<br>.563  | 3/8<br>1/2<br>3/4 | P69-3<br>P69-4<br>P69-6       | 56829<br>56830<br>56831 |
| 7/16<br>.441  | 5/8<br>.626   | 3/8<br>1/2<br>3/4 | P710-3<br>P710-4<br>P710-6    | 56832<br>56833<br>56834 |
| 1/2<br>.504   | 3/4<br>.751   | 1/2<br>3/4<br>1   | P812-4<br>P812-6<br>P812-8    | 56835<br>56836<br>56837 |
| 5/8<br>.630   | 7/8<br>.876   | 5/8<br>3/4<br>1   | P1014-5<br>P1014-6<br>P1014-8 | 56841<br>56842<br>56843 |
| 11/16<br>.693 | 15/16<br>.938 | 3/4               | P1115-6                       | 56844                   |

On A and B dimensions, tolerances apply to actual (decimal) dimensions

| A              | B              | C                 | Catalog Number                  | Item Code               |
|----------------|----------------|-------------------|---------------------------------|-------------------------|
| 3/4<br>.755    | 1<br>1.001     | 1/2<br>3/4<br>1   | P1216-4<br>P1216-6<br>P1216-8   | 56845<br>56846<br>56847 |
| 7/8<br>.880    | 1-1/8<br>1.126 | 3/4<br>1          | P1418-6<br>P1418-8              | 56848<br>56849          |
| 1<br>1.005     | 1-1/4<br>1.251 | 3/4<br>1<br>1-1/2 | P1620-6<br>P1620-8<br>P1620-12  | 56850<br>56851<br>56852 |
| 1-1/8<br>1.130 | 1-3/8<br>1.376 | 3/4<br>1<br>1-1/2 | P1822-6<br>P1822-8<br>P1822-12  | 56853<br>56854<br>56855 |
| 1-1/4<br>1.255 | 1-1/2<br>1.501 | 3/4<br>1<br>1-1/2 | P2024-6<br>P2024-8<br>P2024-12  | 56856<br>56857<br>56858 |
| 1.380          | 1.626          | 1-1/2             | P2226-12                        | 56860                   |
| 1-1/2<br>1.506 | 1-3/4<br>1.751 | 1<br>1-1/2<br>2   | P2428-8<br>P2428-12<br>P2428-16 | 56861<br>56862<br>56863 |
| 1-5/8<br>1.631 | 1-7/8<br>1.876 | 1-3/4             | P2630-14                        | 56864                   |
| 1-3/4<br>1.756 | 2<br>2.001     | 1-3/4             | P2832-14                        | 56865                   |
| 1-7/8<br>1.881 | 2-1/8<br>2.126 | 2                 | P3034-16                        | 56866                   |
| 2<br>2.006     | 2-1/4<br>2.251 | 2                 | P3236-16                        | 56867                   |

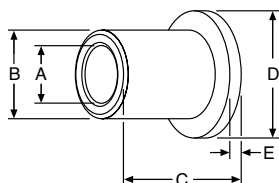
### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE             |
|------------|-----------------------|
| A<br>B     | All<br>+.002 to -.000 |
| C          | All<br>±.005          |

### STANDARD CONCENTRICITY

| DIMENSIONS        | T.I.R. (A TO B) |
|-------------------|-----------------|
| A<br>.129 – 1.005 | .003            |
| 1.130 – 2.006     | .004            |

## Flanged Bearings



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A            | B            | C               | D     | E    | Catalog Number                | Item Code               |
|--------------|--------------|-----------------|-------|------|-------------------------------|-------------------------|
| 3/16<br>.191 | 5/16<br>.313 | 1/4<br>1/2      | .437  | 1/16 | FP35-2<br>FP35-4              | 56868<br>56869          |
| 1/4<br>.254  | 3/8<br>.376  | 3/8<br>1/2      | .500  | 1/16 | FP46-3<br>FP46-4              | 56870<br>56871          |
| 3/8<br>.379  | 5/8<br>.626  | 1/2<br>3/4      | .875  | 1/8  | FP610-4<br>FP610-6            | 56872<br>56873          |
| 1/2<br>.504  | 3/4<br>.751  | 1/2<br>3/4<br>1 | 1.000 | 1/8  | FP812-4<br>FP812-6<br>FP812-8 | 56874<br>56875<br>56876 |
| 5/8<br>.630  | 7/8<br>.876  | 3/4<br>1        | 1.000 | 1/8  | FP1014-6<br>FP1014-8          | 56877<br>56878          |
| 3/4<br>.755  | 1<br>1.001   | 1               | 1.250 | 1/8  | FP1216-8                      | 56879                   |

On A and B dimensions, tolerances apply to actual (decimal) dimensions

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE             |
|------------|-----------------------|
| A<br>B     | All<br>+.002 to -.000 |
| C          | All<br>±.005          |
| D          | All<br>±.005          |
| E          | All<br>±.003          |

### STANDARD CONCENTRICITY

| DIMENSIONS | T.I.R. (A TO B) |
|------------|-----------------|
| A<br>All   | .003            |

# BOSStonE F-1 Glass Filled Teflon Bearings

## Thrust Type

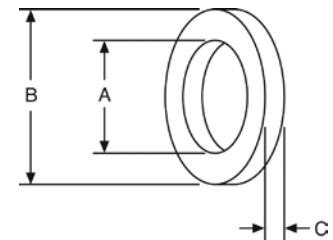
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A           | B           | C    | Catalog Number | Item Code |
|-------------|-------------|------|----------------|-----------|
| 1/4<br>.254 | 5/8<br>.625 | .060 | TP410          | 56880     |
| 3/8<br>.379 | 3/4<br>.750 | .060 | TP612          | 56881     |
| 1/2<br>.504 | 1<br>1.000  | .060 | TP816          | 56882     |

On A and B dimensions, tolerances apply to actual (decimal) dimensions.

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE     |
|------------|---------------|
| A All      | +.010 / -.000 |
| B All      | +.000 / -.010 |
| C All      | +.004 / -.000 |
| E All      | +.004 / -.000 |



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

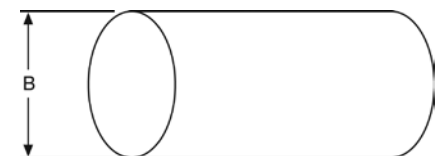
| B     | Approx. Weight (In Lbs.) | Catalog Number | Item Code |
|-------|--------------------------|----------------|-----------|
| 1/4   | .065                     | SP4            | 50958     |
| 3/8   | .135                     | SP6            | 50959     |
| 1/2   | .233                     | SP8            | 50960     |
| 1     | .878                     | SP16           | 50962     |
| 1-1/4 | 1.355                    | SP20           | 50963     |
| 1-1/2 | 1.937                    | SP24           | 50964     |
| 2     | 3.250                    | SP32           | 50965     |

All Bars are 13" long.  
Other Diameters and longer Lengths are available on special order.

### STANDARD TOLERANCES

| DIMENSIONS  | TOLERANCE      |
|-------------|----------------|
| B 1/4 - 1/2 | -.000 to +.015 |
| 3/4 - 1     | -.000 to +.020 |
| 1-1/4       | -.000 to +.030 |
| 1-1/2 - 2   | -.000 to +.040 |

## Solid Bars (Extruded)



## Other BOSStonE F-1 SHAPES AVAILABLE ON SPECIAL ORDER



CORED BARS



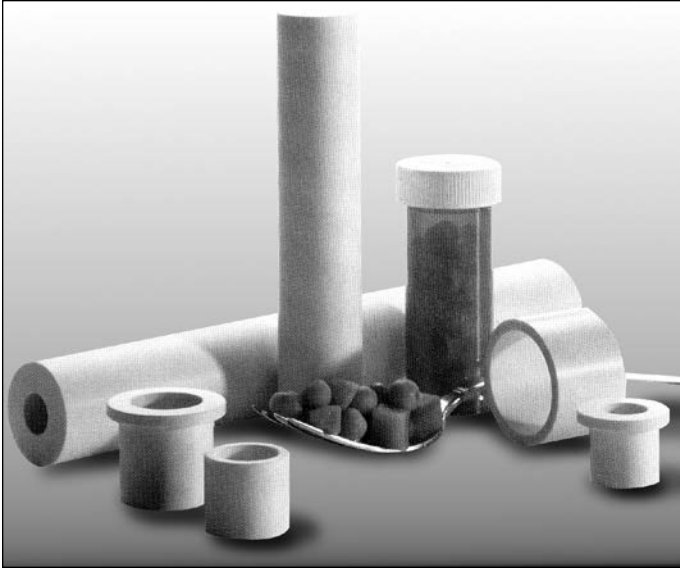
CIRCULAR DISCS



TUBING



PLATES



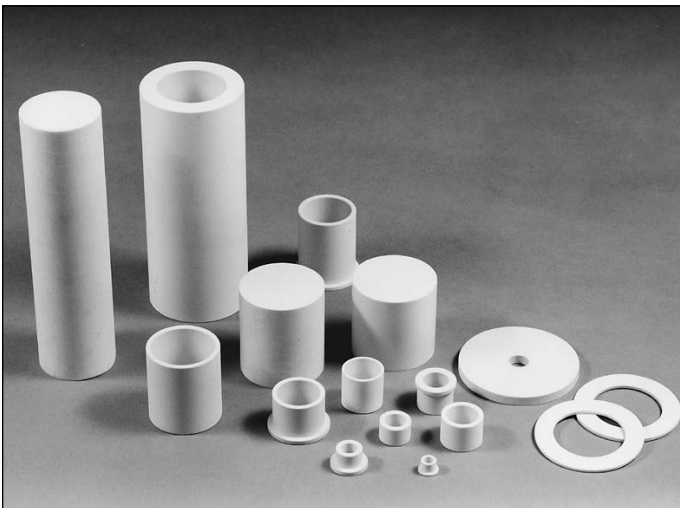
Boston Gear's RULON 641 Bearings are designed to overcome the chronic problems that plague bearings used in food and pharmaceutical applications.

## Features

- FDA cleared, USDA accepted non-toxic materials
- RULON 641 compound of virgin PTFE and fillers designed to meet poultry and meat industry specs
- FDA drug master file numbered to allow for incidental contact with body fluids
- Excellent load and wear characteristics for continuous non-lubricated service
- Compatible with food and drug industries standard stainless steels 303 and 316 as well as 1018 mild steel
- Designed for performance at extremely high temperatures. PV value of 10,000 with 316 stainless steel
- Capable of speeds up to 400 ft/minute under dry, low-load operation
- Stick-slip is virtually nonexistent due to low friction at start-up and slow speeds. Ideal for oscillating or start/stop applications
- Corrosion resistant, unaffected by all common acids, bases, and solvents
- Shatter proof design to eliminate sudden breakdowns

## Why RULON 641 for Food and Pharmaceutical Applications

- White natural color and lower friction than when using carbon bearings
- No metallic debris to drop into a process such as when using bronze bearings
- No leaky lubricants or lubricants damaged by high or low temperatures or cleaning solutions such as when using bronze bearings
- RULON 641 has a wider temperature tolerance and better load carrying capabilities than UHMWPE materials
- RULON 641 has better wear properties and better high temperature load carrying capabilities than virgin PTFE alone
- Reduced downtime
- No lubrication required



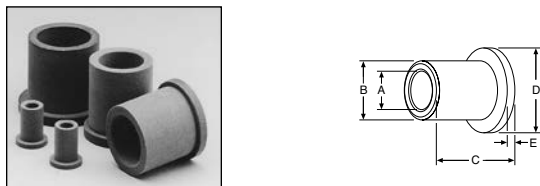
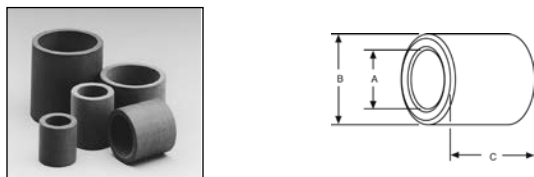
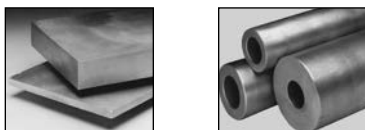
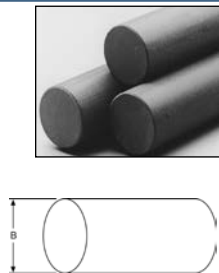
## Applications

RULON 641 bearings are perfect for use in machinery and equipment in the following areas:

- Prepared meat products
- Frozen foods
- Cookies and crackers
- Candy
- Animal and marine fats and oils
- Malt beverages
- Medicinal chemicals
- Pharmaceutical preparations
- Soaps and detergents
- Perfumes and cosmetics
- Food-related packing and sealing devices
- Food and drug conveyors
- Coffee
- Food preparations
- Biological products
- Food process machinery
- Vending machines
- Household cooking equipment and appliances

| Recommended Operating Limits   | RULON 641            | Engineering Information                   | RULON 641                           |
|--------------------------------|----------------------|-------------------------------------------|-------------------------------------|
| Temperature — Typical Range °F | – 400/+500           | Friction—Static & Dynamic                 | .10–.30                             |
| Maximum PV (continuous)        | 10,000               | Water Absorption ASTM D570                | 0%                                  |
| Maximum P — PSI (static)       | 1,000                | Flammability ASTM D635                    | Non-Flammable                       |
| Maximum V — SFM (no load)      | 400                  | Chemical Resistance                       | Inert                               |
| Shaft Hardness — Minimum       | RB25                 | Thermal Conductivity BTU/hr/sq. ft/°F/in. | 2.60                                |
| Shaft Finish Recommended RMS   | 8 – 16               | Linear Coefficient of 78°F–200°F          | <sup>B</sup> 3.9 x 10 <sup>-5</sup> |
|                                | Mild Steel, 303      | Thermal Expansion                         | <sup>C</sup> 4.9 x 10 <sup>-5</sup> |
|                                | +316 Stainless Steel | (-78°F)–(350°F)                           | <sup>B</sup> 4.2 x 10 <sup>-5</sup> |
|                                |                      |                                           | <sup>C</sup> 5.7 x 10 <sup>-5</sup> |

Note: B = Bearing Diameter C = Bearing Length

| SLEEVE BEARINGS                                                                                                                                                                   |                           |                                 |                              |                |                       |                | FLANGED BEARINGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------|------------------------------|----------------|-----------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------|------------------------------|---------------------|--------|------|-------------------|--------------|------------|--|--|--|--|-------------|------------------------|---------------------|-------------------|--------------|-------------|--------------|------|-------|-------|-------------|--------------|------|--------|-------|------------|--------------|------|--------|-------|
| A<br>–.000<br>+.002<br>ID                                                                                                                                                         | B<br>–.000<br>+.002<br>OD | Recommended<br>Housing<br>Bore* | Recommended<br>Shaft<br>Size | C<br>±.005     | Catalog<br>Number     | Item<br>Code   | A<br>–.000<br>+.002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B<br>–.000<br>+.002 | Recommended<br>Housing<br>Bore* | Recommended<br>Shaft<br>Size | C<br>Lgth.<br>±.005 | Flange |      | Catalog<br>Number | Item<br>Code |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 1/4<br>.254                                                                                                                                                                       | 3/8<br>.376               | .375/.374                       | .2500/.2490                  | .250<br>.375   | RP46-2<br>RP46-3      | 56790<br>56791 | 1/4<br>.254                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3/8<br>.376         | .375/.374                       | .2500/.2490                  | .500                | .500   | .062 | RFP46-4           | 56802        |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 3/8<br>.379                                                                                                                                                                       | 9/16<br>.563              | .562/.561                       | .3750/.3740                  | .375           | RP69-3                | 56792          | 3/8<br>.379                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5/8<br>.626         | .625/.624                       | .3750/.3740                  | .500                | .875   | .125 | RFP610-4          | 56803        |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 1/2<br>.504                                                                                                                                                                       | 3/4<br>.751               | .750/.749                       | .5000/.4990                  | .500           | RP812-4               | 56793          | 1/2<br>.504                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3/4<br>.751         | .750/.749                       | .5000/.4990                  | 1.000               | 1.000  | .125 | RFP812-8          | 56804        |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 5/8<br>.630                                                                                                                                                                       | 7/8<br>.876               | .875/.874                       | .6250/.6240                  | .625           | RP1014-5<br>RP1014-8  | 56794<br>56795 | 5/8<br>.630                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7/8<br>.876         | .875/.874                       | .6250/.6240                  | 1.000               | 1.000  | .125 | RFP1014-8         | 56805        |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 3/4<br>.755                                                                                                                                                                       | 1<br>1.001                | 1.000/.999                      | .7500/.7490                  | .750<br>1.500  | RP1216-6<br>RP1216-12 | 56796<br>56797 | 3/4<br>.755                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1<br>1.001          | 1.000/.999                      | .7500/.7490                  | 1.000               | 1.250  | .125 | RFP1216-8         | 56817        |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 1<br>1.005                                                                                                                                                                        | 1-1/4<br>1.251            | 1.250/1.249                     | 1.000/.9990                  | 1.000<br>1.500 | RP1620-8<br>RP1620-12 | 56798<br>56799 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 1-1/4<br>1.255                                                                                                                                                                    | 1-1/2<br>1.501            | 1.500/1.499                     | 1.250/1.249                  | 2.000          | RP2024-16             | 56800          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 1-1/2<br>1.506                                                                                                                                                                    | 1-3/4<br>1.751            | 1.750/1.749                     | 1.500/1.499                  | 2.000          | RP2428-16             | 56801          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
|                                                                                                |                           |                                 |                              |                |                       |                | <table><tr><th colspan="5">SOLID BARS</th></tr><tr><th>B<br/>(Dia.)</th><th>Standard<br/>Tolerances</th><th>Approx.<br/>Wt. Lbs.</th><th>Catalog<br/>Number</th><th>Item<br/>Code</th></tr><tr><td>1/2<br/>.504</td><td>–.000/+-.015</td><td>.233</td><td>RSP-8</td><td>56786</td></tr><tr><td>3/4<br/>.755</td><td>–.000/+-.015</td><td>.503</td><td>RSP-12</td><td>56787</td></tr><tr><td>1<br/>1.005</td><td>–.000/+-.020</td><td>.878</td><td>RSP-16</td><td>56788</td></tr></table> <p>All Bars are 13" long<br/>Other Diameters and longer lengths are available<br/>on special order.</p> |                     |                                 |                              |                     |        |      |                   |              | SOLID BARS |  |  |  |  | B<br>(Dia.) | Standard<br>Tolerances | Approx.<br>Wt. Lbs. | Catalog<br>Number | Item<br>Code | 1/2<br>.504 | –.000/+-.015 | .233 | RSP-8 | 56786 | 3/4<br>.755 | –.000/+-.015 | .503 | RSP-12 | 56787 | 1<br>1.005 | –.000/+-.020 | .878 | RSP-16 | 56788 |
| SOLID BARS                                                                                                                                                                        |                           |                                 |                              |                |                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| B<br>(Dia.)                                                                                                                                                                       | Standard<br>Tolerances    | Approx.<br>Wt. Lbs.             | Catalog<br>Number            | Item<br>Code   |                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 1/2<br>.504                                                                                                                                                                       | –.000/+-.015              | .233                            | RSP-8                        | 56786          |                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 3/4<br>.755                                                                                                                                                                       | –.000/+-.015              | .503                            | RSP-12                       | 56787          |                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| 1<br>1.005                                                                                                                                                                        | –.000/+-.020              | .878                            | RSP-16                       | 56788          |                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |
| <p>Other Shapes<br/>Available On<br/>Special Order</p>  <p><b>PLATES</b> <b>CORED BARS</b></p> |                           |                                 |                              |                |                       |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                     |                                 |                              |                     |        |      |                   |              |            |  |  |  |  |             |                        |                     |                   |              |             |              |      |       |       |             |              |      |        |       |            |              |      |        |       |

\*Press fit. .004/.001 Note: On A and B dimensions, tolerances apply to actual (decimal) dimensions.

# BOSStonE Molded Plastic Bearings

F



Boston stocks Cylindrical, Flanged and Roll End Bearings in five materials —

1. Nylon (N) exhibits good chemical and corrosion resistance. Excellent abrasion resistance and low surface friction provide long wear without lubrication. These nylon bearings are black. Good up to 225°F maximum.
2. Delrin® and Celcon® (D) are trademarks for equivalent Acetal Resins produced by Du Pont and Celanese respectively. Acetals possess excellent moisture resistance characteristics. These materials are white. Good up to 225°F maximum.
3. Nylatron® GS (GS) is a trademark for molybdenum disulfide filled nylon produced by the Polymer Corp. Nylatron® GS exhibits excellent abrasion resistance. Nylatron® GS is dark gray in color. Good up to 225°F maximum.
4. Teflon filled Acetal (AF) — Teflon.® This material has excellent abrasion and corrosion resistance and high lubricity against steel. Good up to 225°F maximum.
5. Teflon filled Nylon (TN) used for Hanger Bearings only, is light gray in color.

## Roll End Bearings

These bearings are available in almost every conceivable size directly from stock — no costly waiting, tooling or set-up charges.

Sizes are interchangeable with existing wood and ball bearings. Several objectives can be met with Roll End Bearings made of our selected plastic resins.

1. No lubricant required
2. Clean — Neat appearance
3. Non-contamination
4. Resistant to moisture & chemicals
5. Quiet operation
6. Excellent load & wear ratings

Size variation is easily accomplished by rebores or remachine operations, simply state size desired. Bores can be reduced with bushing inserts. Adaptors are available for hex shafts.

(AF) Roll End Bearings, 3" and up, are Delrin or Celcon with a Teflon filled Acetal bushing. This combination provides a low cost unit with the superior properties of a Teflon filled bearing. However, one piece Teflon filled Acetal bearings can be offered upon request.

For bearings not shown — write for prices stating quantity desired.

## Blind Bore Bearings

Blind Bore Bearings are available on special order. Minimum quantities will apply. They are available for roll end bearing sizes 818 through 2216 and 8P40 through 20P40. Depth of blind bores is 1/8" less than total bearing length. When ordering, add "B" to Catalog Number.

## Selection

A general guide to determination of limiting load and velocity values for sleeve bearings has been established by the use of PV calculations. PV represents Pressure x Velocity, for example: 100 psi x 20 fpm yields a PV of 2000.

Maximum PV values for BostonE Molded Plastic Bearings are:

- Nylon (N) — 3,000
- Delrin or Celcon (D) — 3,000
- Nylatron GS (GS) — 4,000
- Teflon filled Acetal (AF) — 8,000
- Teflon filled nylon (TN) — 10,000

For complete selection and application information, see Engineering Section, Pages 174-181.

Teflon® is a registered trademark of Dupont.

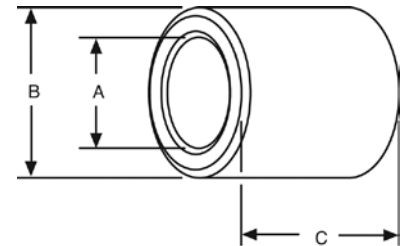
# BOSStonE Molded Plastic Bearings

## Plain Cylindrical Bearings

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A*   | B*    | C     | Catalog Number | Item† Code |
|------|-------|-------|----------------|------------|
| 1/4  | 1/2   | 7/8   | GS48-7         | 57551      |
| 5/16 | 1/2   | 7/8   | GS58-7         | 57552      |
| 3/8  | 1/2   | 7/8   | GS68-7         | 57553      |
| 1/2  | 5/8   | 1     | AF810-8        | 57555      |
| 5/8  | 3/4   | 3/4   | GS1012-6       | 57557      |
|      |       |       | AF1012-6       | 57558      |
| 5/8  | 3/4   | 1-1/2 | GS1012-12      | 57559      |
|      |       |       | AF1012-12      | 57560      |
| 3/4  | 1     | 1-1/2 | GS1216-12      | 57561      |
|      |       |       | AF1216-12      | 57562      |
| 1    | 1-1/4 | 2     | GS1620-16      | 57565      |

†Any item listed WITHOUT an item Code Number is available on a SPECIAL ORDER BASIS and minimum quantities may apply.



### Material

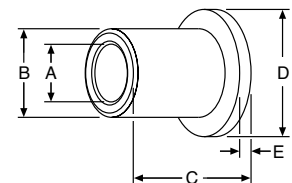
Delrin or Celcon (Acetals) — D  
Nylatron GS (Molybdenum disulfide filled nylon) — GS  
Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A*    | B*         | C                   | D        | E            | Catalog Number                                 | Item Code                        |
|-------|------------|---------------------|----------|--------------|------------------------------------------------|----------------------------------|
| 3/8   | 5/8<br>3/4 | 1<br>1-1/2          | 7/8<br>1 | 1/16<br>1/16 | FGS610-8<br>FAF610-8<br>FAF612-12              | 57577<br>57578<br>57585          |
| 7/16  | 3/4        | 1-1/2               | 1        | 1/16         | FAF712-12                                      | 57586                            |
| 1/2   | 5/8<br>3/4 | 1<br>1-1/2<br>2     | 7/8<br>1 | 1/16<br>1/16 | FGS810-8<br>FAF810-8<br>FAF812-12<br>FGS812-16 | 57579<br>57580<br>57587<br>57582 |
| 9/16  | 3/4        | 1-1/2<br>2          | 1        | 1/16         | FAF912-12<br>FGS912-16                         | 57588<br>57583                   |
| 5/8   | 3/4        | 1-1/2<br>2<br>1-1/2 | 1        | 1/16         | FGS1012-12<br>FGS1012-16<br>FAF1012-12         | 57589<br>57584<br>57590          |
| 3/4   | 1          | 1-1/2               | 1-1/4    | 1/8          | FGS1216-12<br>FAF1216-12                       | 57591<br>57592                   |
| 1     | 1-1/4      | 2                   | 1-1/2    | 1/8          | FGS1620-16<br>FAF1620-16                       | 57593<br>57594                   |
| 1-1/2 | 1-3/4      | 1-1/2               | 2        | 1/8          | FAF2428-12                                     | 57606                            |

\*Approx. dimensions. Actual size related to molding variations, however, wall thickness will be quite uniform making it practical to use these bearings for many applications.

## Flanged Type



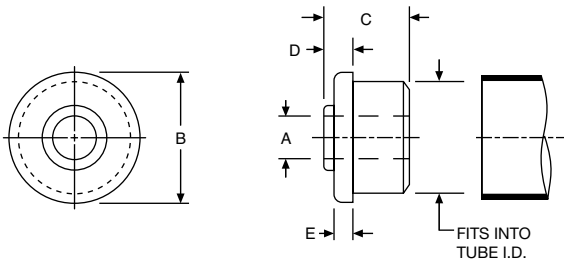
### Material

Nylatron GS (Molybdenum disulfide filled nylon) — GS  
Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

# BOSonE Molded Plastic Bearings

## Roll End Bearings for Steel Tubing

F



### Material

Delrin or Celcon (Acetals) — D  
 Nylatron GS (Molybdenum disulfide filled nylon) — GS  
 Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

\*These dimensions are approximately 1/64" larger than listed.

†Any item listed WITHOUT an Item Code Number is available on a SPECIAL ORDER BASIS and minimum quantities may apply.

BLIND BORE Bearings are available on special order — minimum quantities will apply.

ALL DIMENSIONS IN INCHES  
 ORDER BY CATALOG NUMBER OR ITEM CODE †

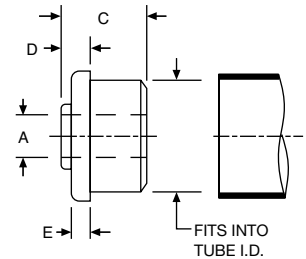
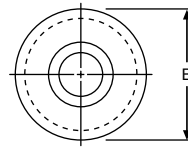
| B<br>(Tube Size)                                | A*   | C    | D    | E    | Catalog<br>Number | Item †<br>Code |
|-------------------------------------------------|------|------|------|------|-------------------|----------------|
| 3/4<br>22 ga.<br>.750 O.D.<br>.694 I.D.         | 1/8  | 9/16 | 5/32 | 3/32 | 622D-1/8          | 56920          |
|                                                 |      |      |      |      | 622GS-1/8         | 56923          |
|                                                 |      |      |      |      | 622AF-1/8         | 56926          |
|                                                 | 3/16 |      |      |      | 622D-3/16         | 56921          |
|                                                 |      |      |      |      | 622GS-3/16        | 56924          |
|                                                 |      |      |      |      | 622AF-3/16        | 56927          |
| 7/8<br>20 ga.<br>—<br>.875 O.D.<br>.805 I.D.    | 1/4  | 9/16 | 5/32 | 3/32 | 622D-1/4          | 56922          |
|                                                 |      |      |      |      | 622GS-1/4         | 56925          |
|                                                 |      |      |      |      | 622AF-1/4         | 56928          |
|                                                 | 3/16 |      |      |      | 720D-3/16         | 56929          |
|                                                 |      |      |      |      | 720AF-3/16        |                |
|                                                 | 1/4  |      |      |      | 720AF-1/4         |                |
| 1<br>18 ga.<br>1.000 O.D.<br>.902 I.D.          | 3/8  | 9/16 | 3/16 | 1/8  | 720D-3/8          | 56931          |
|                                                 |      |      |      |      | 720AF-3/8         | —              |
|                                                 | 1/2  |      |      |      | 818D-1/4          | 56938          |
|                                                 |      |      |      |      | 818GS-1/4         | 56941          |
|                                                 |      |      |      |      | 818AF-1/4         | 56944          |
|                                                 |      |      |      |      | 818GS-3/8         | 56942          |
| 1-1/4<br>16 ga.<br>1.250 O.D.<br>1.120 I.D.     |      | 5/8  | 3/16 | 1/8  | 818AF-3/8         | 56945          |
|                                                 | 1/4  |      |      |      | 818D-1/2          | 56940          |
|                                                 |      |      |      |      | 818GS-1/2         | 56943          |
|                                                 |      |      |      |      | 818AF-1/2         | 56946          |
|                                                 | 3/8  |      |      |      | 1016D-1/4         | 56947          |
|                                                 |      |      |      |      | 1016GS-1/4        | 56950          |
| 1-3/8<br>18 ga.<br>1.375 O.D.<br>1.277 I.D.     |      | 3/4  | 1/4  | 1/8  | 1016AF-1/4        | 56953          |
|                                                 | 1/2  |      |      |      | 1016D-3/8         | 56948          |
|                                                 |      |      |      |      | 1016GS-3/8        | 56951          |
|                                                 |      |      |      |      | 1016AF-3/8        | 56954          |
|                                                 |      |      |      |      | 1016D-1/2         | 56949          |
|                                                 |      |      |      |      | 1016GS-1/2        | 56952          |
| 1-1/2<br>16 ga.<br>1.500 O.D.<br>1.370 I.D.     |      | 7/8  | 5/16 | 3/16 | 1016AF-1/2        | 56955          |
|                                                 | 1/4  |      |      |      | 1118D-1/4         | 56956          |
|                                                 |      |      |      |      | 1118GS-1/4        | 56960          |
|                                                 |      |      |      |      | 1118AF-1/4        | —              |
|                                                 | 5/16 |      |      |      | 1118D-5/16        | 56957          |
|                                                 |      |      |      |      | 1118GS-5/16       | 56961          |
| 3/8<br>1-1/2<br>EMT<br>1.740 O.D.<br>1.610 I.D. |      | 1    | 5/16 | 3/16 | 1118AF-5/16       | —              |
|                                                 | 3/8  |      |      |      | 1118D-3/8         | 56958          |
|                                                 |      |      |      |      | 1118GS-3/8        | 56962          |
|                                                 |      |      |      |      | 1118AF-3/8        | —              |
|                                                 | 1/2  |      |      |      | 1118D-1/2         | 56959          |
|                                                 |      |      |      |      | 1118GS-1/2        | 56963          |
| 1-3/4<br>16 ga.<br>1.750 O.D.<br>1.610 I.D.     |      | 1    | 5/16 | 3/16 | 1118AF-1/2        | —              |
|                                                 | 1/4  |      |      |      | 1216D-1/4         | 56968          |
|                                                 |      |      |      |      | 1216GS-1/4        | 56972          |
|                                                 |      |      |      |      | 1216AF-1/4        | 56976          |
|                                                 | 3/8  |      |      |      | 1216D-3/8         | 56969          |
|                                                 |      |      |      |      | 1216AF-3/8        | 56977          |
| 2<br>16 ga.<br>2.000 O.D.<br>1.870 I.D.         | 1/2  | 1    | 5/16 | 3/16 | 1216GS-1/2        | 56974          |
|                                                 |      |      |      |      | 1216AF-1/2        | 56978          |
|                                                 | 5/8  |      |      |      | 1216D-5/8         | 56971          |
|                                                 |      |      |      |      | 1216GS-5/8        | 56975          |
|                                                 |      |      |      |      | 1216AF-5/8        | 56979          |
|                                                 | 1    |      |      |      | 12EMD-1/4         | —              |
| 2-1/2<br>16 ga.<br>2.250 O.D.<br>2.120 I.D.     |      | 1    | 5/16 | 3/16 | 12EMGS-1/4        | —              |
|                                                 | 1/4  |      |      |      | 12EMAF-1/4        | —              |
|                                                 |      |      |      |      | 12EMD-3/8         | 56981          |
|                                                 |      |      |      |      | 12EMGS-3/8        | —              |
|                                                 |      |      |      |      | 12EMAF-3/8        | —              |
|                                                 | 1/2  |      |      |      | 12EMD-1/2         | 56982          |
| 3<br>16 ga.<br>3.000 O.D.<br>2.870 I.D.         |      | 1    | 5/16 | 3/16 | 12EMGS-1/2        | 56986          |
|                                                 |      |      |      |      | 12EMAF-1/2        | —              |
|                                                 | 5/8  |      |      |      | 12EMD-5/8         | 56983          |
|                                                 |      |      |      |      | 12EMGS-5/8        | 56987          |
|                                                 |      |      |      |      | 12EMAF-5/8        | —              |
|                                                 | 1    |      |      |      |                   |                |

# BOSStonE Molded Plastic Bearings

## Roll End Bearings for Steel Tubing

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE †

| B<br>(Tube Size)                                | A*  | C | D    | E          | Catalog<br>Number | Item †<br>Code |
|-------------------------------------------------|-----|---|------|------------|-------------------|----------------|
| 1-5/8<br>16 ga.<br><br>1.625 O.D.<br>1.495 I.D. | 1/4 | 1 | 5/16 | 3/16       | 1316D-1/4         | —              |
|                                                 |     |   |      |            | 1316GS-1/4        | 56996          |
|                                                 |     |   |      |            | 1316AF-1/4        | —              |
|                                                 | 3/8 |   |      |            | 1316D-3/8         | 56993          |
|                                                 |     |   |      |            | 1316GS-3/8        | 56997          |
|                                                 |     |   |      |            | 1316AF-3/8        | —              |
|                                                 | 1/2 |   |      |            | 1316D-1/2         | 56994          |
|                                                 |     |   |      |            | 1316GS-1/2        | 56998          |
|                                                 |     |   |      |            | 1316AF-1/2        | —              |
|                                                 | 5/8 |   |      |            | 1316D-5/8         | 56995          |
|                                                 |     |   |      |            | 1316GS-5/8        | 56999          |
|                                                 |     |   |      |            | 1316AF-5/8        | —              |
| 1-3/4<br>16 ga.<br><br>1.750 O.D.<br>1.620 I.D. | 1/4 | 1 | 5/16 | 3/16       | 1416D-1/4         | 57070          |
|                                                 |     |   |      |            | 1416GS-1/4        | 57075          |
|                                                 |     |   |      |            | 1416AF-1/4        | —              |
|                                                 | 3/8 |   |      |            | 1416D-3/8         | 57071          |
|                                                 |     |   |      |            | 1416GS-3/8        | 57076          |
|                                                 |     |   |      |            | 1416AF-3/8        | —              |
|                                                 | 1/2 |   |      |            | 1416D-1/2         | 57072          |
|                                                 |     |   |      |            | 1416GS-1/2        | 57077          |
|                                                 |     |   |      |            | 1416AF-1/2        | —              |
|                                                 | 5/8 |   |      |            | 1416D-5/8         | 57073          |
|                                                 |     |   |      |            | 1416GS-5/8        | 57078          |
|                                                 |     |   |      |            | 1416AF-5/8        | 57083          |
| 1-7/8<br>16 ga.<br><br>1.875 O.D.<br>1.745 I.D. | 3/4 |   |      |            | 1416D-3/4         | 57074          |
|                                                 |     |   |      |            | 1416GS-3/4        | 57079          |
|                                                 |     |   |      |            | 1416AF-3/4        | 57084          |
|                                                 | 1/4 | 1 | 5/16 | 3/16       | 1516D-1/4         | 57085          |
|                                                 |     |   |      |            | 1516GS-1/4        | 57090          |
|                                                 |     |   |      |            | 1516AF-1/4        | —              |
|                                                 | 3/8 |   |      |            | 1516D-3/8         | 57086          |
|                                                 |     |   |      |            | 1516GS-3/8        | 57091          |
|                                                 |     |   |      |            | 1516AF-3/8        | —              |
|                                                 | 1/2 |   |      |            | 1516D-1/2         | 57087          |
|                                                 |     |   |      |            | 1516GS-1/2        | 57092          |
|                                                 |     |   |      |            | 1516AF-1/2        | —              |
| 5/8                                             |     |   |      | 1516D-5/8  | 57088             |                |
|                                                 |     |   |      | 1516GS-5/8 | 57093             |                |
|                                                 |     |   |      | 1516AF-5/8 | —                 |                |
| 2<br>18 ga.<br><br>2.000 O.D.<br>1.902 I.D.     | 3/4 |   |      |            | 1516D-3/4         | —              |
|                                                 |     |   |      |            | 1516GS-3/4        | 57094          |
|                                                 |     |   |      |            | 1516AF-3/4        | —              |
|                                                 | 1/4 | 1 | 5/16 | 3/16       | 1618D-1/4         | 57872          |
|                                                 |     |   |      |            | 1618GS-1/4        | 57877          |
|                                                 |     |   |      |            | 1618AF-1/4        | —              |
|                                                 | 3/8 |   |      |            | 1618D-3/8         | —              |
|                                                 |     |   |      |            | 1618GS-3/8        | —              |
|                                                 |     |   |      |            | 1618AF-3/8        | —              |
|                                                 | 1/2 |   |      |            | 1618D-1/2         | 57874          |
|                                                 |     |   |      |            | 1618GS-1/2        | 57879          |
|                                                 |     |   |      |            | 1618AF-1/2        | —              |
| 5/8                                             |     |   |      | 1618D-5/8  | 57875             |                |
|                                                 |     |   |      | 1618GS-5/8 | 57880             |                |
|                                                 |     |   |      | 1618AF-5/8 | —                 |                |
| 2<br>16 ga.<br><br>2.000 O.D.<br>1.8701 I.D.    | 3/4 |   |      |            | 1618D-3/4         | 57876          |
|                                                 |     |   |      |            | 1618GS-3/4        | 57881          |
|                                                 |     |   |      |            | 1618AF-3/4        | —              |
|                                                 | 1/4 | 1 | 5/16 | 3/16       | 1616D-1/4         | 57100          |
|                                                 |     |   |      |            | 1616GS-1/4        | 57105          |
|                                                 |     |   |      |            | 1616AF-1/4        | —              |
|                                                 | 3/8 |   |      |            | 1616D-3/8         | 57101          |
|                                                 |     |   |      |            | 1616GS-3/8        | 57106          |
|                                                 |     |   |      |            | 1616AF-3/8        | —              |
|                                                 | 1/2 |   |      |            | 1616D-1/2         | 57102          |
|                                                 |     |   |      |            | 1616GS-1/2        | 57107          |
|                                                 |     |   |      |            | 1616AF-1/2        | 57112          |
| 5/8                                             |     |   |      | 1616D-5/8  | 57103             |                |
|                                                 |     |   |      | 1616GS-5/8 | 57108             |                |
|                                                 |     |   |      | 1616AF-5/8 | —                 |                |
| 2.000 O.D.<br>1.8701 I.D.                       | 3/4 |   |      |            | 1616D-3/4         | 57104          |
|                                                 |     |   |      |            | 1616GS-3/4        | —              |
|                                                 |     |   |      |            | 1616AF-3/4        | —              |



### Material

Delrin or Celcon (Acetals) — D  
Nylatron GS (Molybdenum disulfide filled nylon) — GS  
Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

\*These dimensions are approximately 1/64" larger than listed.

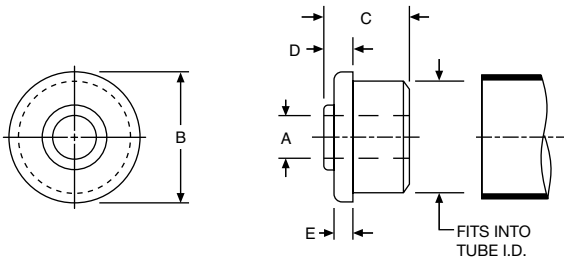
†Any item listed WITHOUT an Item Code Number is available on a SPECIAL ORDER BASIS and minimum quantities may apply.

BLIND BORE Bearings are available on special order — minimum quantities will apply.

# BOSStonE Molded Plastic Bearings

## Roll End Bearings for Steel Tubing

F



### Material

Delrin or Celcon (Acetals) — D  
 Nylatron GS (Molybdenum disulfide filled nylon) — GS  
 Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

\*These dimensions are approximately 1/64" larger than listed.

†Any item listed WITHOUT an Item Code Number is available on a SPECIAL ORDER BASIS and minimum quantities may apply.

BLIND BORE Bearings are available on special order — minimum quantities will apply.

ALL DIMENSIONS IN INCHES  
 ORDER BY CATALOG NUMBER OR ITEM CODE †

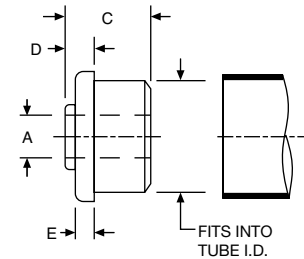
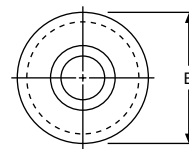
| B<br>(Tube Size)                                | A*  | C | D    | E    | Catalog<br>Number | Item †<br>Code |
|-------------------------------------------------|-----|---|------|------|-------------------|----------------|
| 2<br>EMT<br><br>2.190 O.D.<br>2.067 I.D.        | 1/4 | 1 | 5/16 | 3/16 | 16EMD-1/4         | —              |
|                                                 | 3/8 |   |      |      | 16EMGS-1/4        | —              |
|                                                 |     |   |      |      | 16EMAF-1/4        | —              |
|                                                 | 1/2 |   |      |      | 16EMD-3/8         | —              |
|                                                 |     |   |      |      | 16EMGS-3/8        | —              |
|                                                 |     |   |      |      | 16EMAF-3/8        | —              |
| 2-1/4<br>18 ga.<br><br>2.250 O.D.<br>2.152 I.D. | 1/2 | 1 | 5/16 | 3/16 | 16EMD-1/2         | 57117          |
|                                                 |     |   |      |      | 16EMGS-1/2        | —              |
|                                                 |     |   |      |      | 16EMAF-1/2        | —              |
|                                                 | 5/8 |   |      |      | 16EMD-5/8         | 57118          |
|                                                 |     |   |      |      | 16EMGS-5/8        | —              |
|                                                 |     |   |      |      | 16EMAF-5/8        | —              |
| 2-1/4<br>16 ga.<br><br>2.250 O.D.<br>2.120 I.D. | 3/4 | 1 | 5/16 | 3/16 | 16EMD-3/4         | 57119          |
|                                                 |     |   |      |      | 16EMGS-3/4        | —              |
|                                                 |     |   |      |      | 16EMAF-3/4        | —              |
|                                                 | 1/4 |   |      |      | 1818D-1/4         | —              |
|                                                 |     |   |      |      | 1818GS-1/4        | 57862          |
|                                                 |     |   |      |      | 1818AF-1/4        | —              |
| 2-1/2<br>18 ga.<br><br>2.500 O.D.<br>2.402 I.D. | 3/8 | 1 | 5/16 | 3/16 | 1818D-3/8         | —              |
|                                                 |     |   |      |      | 1818GS-3/8        | —              |
|                                                 |     |   |      |      | 1818AF-3/8        | —              |
|                                                 | 1/2 |   |      |      | 1818D-1/2         | —              |
|                                                 |     |   |      |      | 1818GS-1/2        | —              |
|                                                 |     |   |      |      | 1818AF-1/2        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 5/8 | 1 | 5/16 | 3/16 | 1818D-5/8         | —              |
|                                                 |     |   |      |      | 1818GS-5/8        | —              |
|                                                 |     |   |      |      | 1818AF-5/8        | —              |
|                                                 | 3/4 |   |      |      | 1818D-3/4         | —              |
|                                                 |     |   |      |      | 1818GS-3/4        | —              |
|                                                 |     |   |      |      | 1818AF-3/4        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 1/4 | 1 | 5/16 | 3/16 | 1816D-1/4         | 57130          |
|                                                 |     |   |      |      | 1816GS-1/4        | —              |
|                                                 |     |   |      |      | 1816AF-1/4        | —              |
|                                                 | 3/8 |   |      |      | 1816D-3/8         | 57131          |
|                                                 |     |   |      |      | 1816GS-3/8        | 57136          |
|                                                 |     |   |      |      | 1816AF-3/8        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 1/2 | 1 | 5/16 | 3/16 | 1816D-1/2         | 57132          |
|                                                 |     |   |      |      | 1816GS-1/2        | 57137          |
|                                                 |     |   |      |      | 1816AF-1/2        | —              |
|                                                 | 5/8 |   |      |      | 1816D-5/8         | 57133          |
|                                                 |     |   |      |      | 1816GS-5/8        | —              |
|                                                 |     |   |      |      | 1816AF-5/8        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 3/4 | 1 | 5/16 | 3/16 | 1816D-3/4         | 57134          |
|                                                 |     |   |      |      | 1816GS-3/4        | —              |
|                                                 |     |   |      |      | 1816AF-3/4        | —              |
|                                                 | 1/4 |   |      |      | 2018D-1/4         | —              |
|                                                 |     |   |      |      | 2018GS-1/4        | —              |
|                                                 |     |   |      |      | 2018AF-1/4        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 3/8 | 1 | 5/16 | 3/16 | 2018D-3/8         | —              |
|                                                 |     |   |      |      | 2018GS-3/8        | —              |
|                                                 |     |   |      |      | 2018AF-3/8        | —              |
|                                                 | 1/2 |   |      |      | 2018D-1/2         | —              |
|                                                 |     |   |      |      | 2018GS-1/2        | —              |
|                                                 |     |   |      |      | 2018AF-1/2        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 5/8 | 1 | 5/16 | 3/16 | 2018D-5/8         | —              |
|                                                 |     |   |      |      | 2018GS-5/8        | —              |
|                                                 |     |   |      |      | 2018AF-5/8        | —              |
|                                                 | 3/4 |   |      |      | 2018D-3/4         | —              |
|                                                 |     |   |      |      | 2018GS-3/4        | —              |
|                                                 |     |   |      |      | 2018AF-3/4        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 1/4 | 1 | 5/16 | 3/16 | 2016D-1/4         | 57145          |
|                                                 |     |   |      |      | 2016GS-1/4        | —              |
|                                                 |     |   |      |      | 2016AF-1/4        | —              |
|                                                 | 3/8 |   |      |      | 2016D-3/8         | —              |
|                                                 |     |   |      |      | 2016GS-3/8        | —              |
|                                                 |     |   |      |      | 2016AF-3/8        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 1/2 | 1 | 5/16 | 3/16 | 2016D-1/2         | 57147          |
|                                                 |     |   |      |      | 2016GS-1/2        | 57152          |
|                                                 |     |   |      |      | 2016AF-1/2        | —              |
|                                                 | 5/8 |   |      |      | 2016D-5/8         | 57148          |
|                                                 |     |   |      |      | 2016GS-5/8        | 57153          |
|                                                 |     |   |      |      | 2016AF-5/8        | —              |
| 2-1/2<br>16 ga.<br><br>2.500 O.D.<br>2.370 I.D. | 3/4 | 1 | 5/16 | 3/16 | 2016D-3/4         | 57149          |
|                                                 |     |   |      |      | 2016GS-3/4        | 57154          |
|                                                 |     |   |      |      | 2016AF-3/4        | —              |

# BOSStonE Molded Plastic Bearings

## Roll End Bearings for Steel Tubing

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE †

| B<br>(Tube Size)                                | A*                                              | C          | D                                               | E                                               | Catalog<br>Number | Item †<br>Code |              |            |              |
|-------------------------------------------------|-------------------------------------------------|------------|-------------------------------------------------|-------------------------------------------------|-------------------|----------------|--------------|------------|--------------|
| 2-3/4<br>16 ga.<br><br>2.750 O.D.<br>2.620 I.D. | 1/4                                             | 1          | 5/16                                            | 3/16                                            | 2216D-1/4         | 57160          |              |            |              |
|                                                 | 3/8                                             |            |                                                 |                                                 | 2216GS-1/4        | —              |              |            |              |
|                                                 |                                                 |            |                                                 |                                                 | 2216AF-1/4        | —              |              |            |              |
|                                                 |                                                 |            |                                                 |                                                 | 2216D-3/8         | 57161          |              |            |              |
|                                                 | 1/2                                             |            |                                                 |                                                 | 2216GS-3/8        | —              |              |            |              |
|                                                 |                                                 |            |                                                 |                                                 | 2216AF-3/8        | —              |              |            |              |
|                                                 |                                                 | 2216D-1/2  | 57162                                           |                                                 |                   |                |              |            |              |
|                                                 | 5/8                                             | 2216GS-1/2 | —                                               |                                                 |                   |                |              |            |              |
|                                                 |                                                 | 2216AF-1/2 | —                                               |                                                 |                   |                |              |            |              |
|                                                 |                                                 | 2216D-5/8  | 57163                                           |                                                 |                   |                |              |            |              |
|                                                 | 3/4                                             | 2216GS-5/8 | —                                               |                                                 |                   |                |              |            |              |
|                                                 |                                                 | 2216AF-5/8 | —                                               |                                                 |                   |                |              |            |              |
| 2216D-3/4                                       |                                                 | —          |                                                 |                                                 |                   |                |              |            |              |
| 3<br>16 ga.<br><br>3.000 O.D.<br>2.870 I.D.     | 3/8                                             | 1-1/2      | 3/8                                             | 3/16                                            | 2416D-3/8         | 57607          |              |            |              |
|                                                 | 1/2                                             | 1-1/2      | 3/8                                             |                                                 | 2416GS-3/8        | 57611          |              |            |              |
|                                                 |                                                 | 1-5/8      | 1/2                                             |                                                 | 2416AF-3/8        | 57615          |              |            |              |
|                                                 |                                                 | 5/8        | 1-1/2                                           | 3/8                                             | 3/16              | 2416D-1/2      | 57608        |            |              |
|                                                 | 1-1/2                                           |            | 3/8                                             | 2416GS-1/2                                      |                   | 57612          |              |            |              |
|                                                 | 1-5/8                                           |            | 1/2                                             | 2416AF-1/2                                      |                   | 57616          |              |            |              |
|                                                 | 3<br>11 ga.<br><br>3.000 O.D.<br>2.760 I.D.     | 3/8        | 1-1/2                                           | 3/8                                             | 3/16              | 2416D-5/8      | 57609        |            |              |
|                                                 |                                                 | 1/2        | 1-1/2                                           | 3/8                                             |                   | 2416GS-5/8     | 57613        |            |              |
|                                                 |                                                 |            | 1-5/8                                           | 1/2                                             |                   | 2416D-3/4      | 57610        |            |              |
|                                                 |                                                 |            | 5/8                                             | 1-1/2                                           | 3/8               | 3/16           | 2416GS-3/4   | 57614      |              |
|                                                 |                                                 | 1-1/2      |                                                 | 3/8                                             | 2416AF-3/4        |                | 57618        |            |              |
|                                                 |                                                 | 1-5/8      |                                                 | 1/2                                             | 2416D-3/8         |                | 57175        |            |              |
| 4<br>11 ga.<br><br>4.000 O.D.<br>3.760 I.D.     |                                                 | 3/8        | 1-1/2                                           | 3/8                                             | 3/16              | 2411GS-3/8     | 57179        |            |              |
|                                                 |                                                 | 1/2        | 1-1/2                                           | 3/8                                             |                   | 2411AF-3/8     | 57183        |            |              |
|                                                 |                                                 |            | 1-5/8                                           | 1/2                                             |                   | 2411D-1/2      | 57176        |            |              |
|                                                 |                                                 |            | 5/8                                             | 1-1/2                                           | 3/8               | 3/16           | 2411GS-1/2   | 57180      |              |
|                                                 |                                                 | 1-1/2      |                                                 | 3/8                                             | 2411AF-1/2        |                | 57184        |            |              |
|                                                 |                                                 | 1-5/8      |                                                 | 1/2                                             | 2411D-5/8         |                | 57177        |            |              |
|                                                 | 4<br>11 ga.<br><br>4.000 O.D.<br>3.760 I.D.     | 3/4        | 1-1/2                                           | 3/8                                             | 3/16              | 2411GS-5/8     | 57181        |            |              |
|                                                 |                                                 | 1          | 1-1/2                                           | 3/8                                             |                   | 2411AF-5/8     | 57185        |            |              |
|                                                 |                                                 |            | 1-5/8                                           | 1/2                                             |                   | 2411D-3/4      | 57178        |            |              |
|                                                 |                                                 |            | 4<br>11 ga.<br><br>4.000 O.D.<br>3.760 I.D.     | 1/2                                             | 2                 | 3/8            | 3/16         | 2411GS-3/4 | 57182        |
|                                                 |                                                 | 5/8        |                                                 | 2                                               | 3/8               | 2411AF-3/4     |              | 57186      |              |
|                                                 |                                                 |            |                                                 | 2-1/8                                           | 1/2               | 3211D-1/2      |              | 57187      |              |
| 4<br>11 ga.<br><br>4.000 O.D.<br>3.760 I.D.     |                                                 |            |                                                 | 3/4                                             | 2                 | 3/8            | 3/16         | 3211GS-1/2 | 57192        |
|                                                 |                                                 | 1          |                                                 | 2                                               | 3/8               | 3211AF-1/2     |              | 57197      |              |
|                                                 |                                                 |            |                                                 | 2-1/8                                           | 1/2               | 3211D-5/8      |              | 57188      |              |
|                                                 |                                                 |            |                                                 | 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. | 5/8               | 2              | 3/8          | 3/16       | 3211GS-5/8   |
|                                                 |                                                 | 3/4        |                                                 |                                                 | 2                 | 3/8            | 3211AF-5/8   |            | 57198        |
|                                                 |                                                 |            |                                                 |                                                 | 2-1/8             | 1/2            | 3211D-3/4    |            | 57189        |
|                                                 | 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. |            |                                                 |                                                 | 1                 | 2              | 3/8          | 3/16       | 3211GS-3/4   |
|                                                 |                                                 | 1-1/4      |                                                 |                                                 | 2                 | 3/8            | 3211AF-3/4   |            | 57199        |
|                                                 |                                                 |            |                                                 |                                                 | 2-1/8             | 1/2            | 3211D-1      |            | 57190        |
|                                                 |                                                 |            | 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. |                                                 | 3/8               | 2              | 3/8          | 3/16       | 3211GS-1     |
|                                                 |                                                 | 5/8        |                                                 |                                                 | 2                 | 3/8            | 3211AF-1     |            | 57200        |
|                                                 |                                                 |            |                                                 |                                                 | 2-1/8             | 1/2            | 3211D-1-1/4  |            | 57191        |
| 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. |                                                 |            |                                                 |                                                 | 1-1/4             | 2              | 3/8          | 3/16       | 3211GS-1-1/4 |
|                                                 |                                                 | 3/4        |                                                 |                                                 | 2                 | 3/8            | 3211AF-1-1/4 |            | —            |
|                                                 |                                                 |            |                                                 |                                                 | 2-1/8             | 1/2            | 3611D-1/2    |            | —            |
|                                                 |                                                 |            |                                                 | 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. | 1/2               | 1-3/4          | 3/8          | 3/16       | 3611GS-1/2   |
|                                                 |                                                 | 5/8        |                                                 |                                                 | 1-3/4             | 3/8            | 3611AF-1/2   |            | —            |
|                                                 |                                                 |            |                                                 |                                                 | 1-7/8             | 1/2            | 3611D-5/8    |            | —            |
|                                                 | 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. |            |                                                 |                                                 | 3/4               | 1-3/4          | 3/8          | 3/16       | 3611GS-5/8   |
|                                                 |                                                 | 1          |                                                 |                                                 | 1-3/4             | 3/8            | 3611AF-5/8   |            | —            |
|                                                 |                                                 |            |                                                 |                                                 | 1-7/8             | 1/2            | 3611D-3/4    |            | —            |
|                                                 |                                                 |            | 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. |                                                 | 1-1/4             | 1-3/4          | 3/8          | 3/16       | 3611GS-3/4   |
|                                                 |                                                 | 3/4        |                                                 |                                                 | 1-3/4             | 3/8            | 3611AF-3/4   |            | —            |
|                                                 |                                                 |            |                                                 |                                                 | 1-7/8             | 1/2            | 3611GS-1     |            | —            |
| 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. |                                                 |            |                                                 |                                                 | 1-1/4             | 1-7/8          | 1/2          | 3/16       | 3611AF-1     |
|                                                 |                                                 | 3/4        |                                                 |                                                 | 1-3/4             | 3/8            | 3611D-1-1/4  |            | —            |
|                                                 |                                                 |            |                                                 |                                                 | 1-7/8             | 1/2            | 3611GS-1-1/4 |            | —            |
|                                                 |                                                 |            |                                                 | 4-1/2<br>11 ga.<br><br>4.500 O.D.<br>4.260 I.D. | 1-1/4             | 1-7/8          | 1/2          | 3/16       | 3611AF-1-1/4 |
|                                                 |                                                 | 3/4        |                                                 |                                                 | 1-3/4             | 3/8            | 3611D-1-1/4  |            | —            |
|                                                 |                                                 |            |                                                 |                                                 | 1-7/8             | 1/2            | 3611GS-1-1/4 |            | —            |



### Material

Delrin or Celcon (Acetals) — D  
Nylatron GS (Molybdenum disulfide filled nylon) — GS  
Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

\*These dimensions are approximately 1/64" larger than listed.

†Any item listed WITHOUT an Item Code Number is available on a SPECIAL ORDER BASIS and minimum quantities may apply.

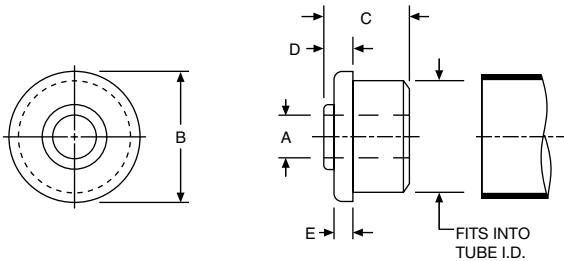
AF Bearings with 3" or larger O.D. will be supplied with an AF Flanged bushing inserted into a D or GS Roll End Bearing. For these AF Bearings it is recommended to reduce the shaft diameter or increase bushing I.D. to obtain proper clearance.

BLIND BORE Bearings are available on special order.  
Minimum quantities will apply.

# BOSStonE Molded Plastic Bearings

## Roll End Bearings for Steel Tubing and Standard Pipe

F



### Material

Delrin or Celcon (Acetals) — D  
 Nylatron GS (Molybdenum disulfide filled nylon) — GS  
 Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

\*These dimensions are approximately 1/64" larger than listed.

†Any item listed WITHOUT an Item Code Number is available on a SPECIAL ORDER BASIS and minimum quantities may apply.

BLIND BORE Bearings are available on special order.  
 Minimum quantities will apply.

ALL DIMENSIONS IN INCHES  
 ORDER BY CATALOG NUMBER OR ITEM CODE †

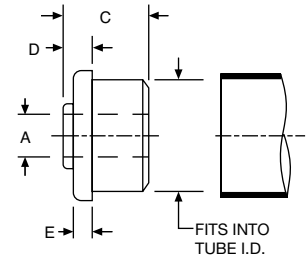
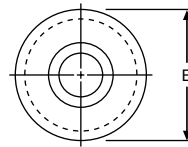
| B<br>(Pipe Size)                                 | A*  | C   | D    | E    | Catalog<br>Number | Item †<br>Code |
|--------------------------------------------------|-----|-----|------|------|-------------------|----------------|
| 1<br>Sch. 40<br><br>1.315 O.D.<br>1.049 I.D.     | 1/4 | 5/8 | 3/16 | 1/8  | 8P40D-1/4         | 57334          |
|                                                  |     |     |      |      | 8P40GS-1/4        | 57337          |
|                                                  |     |     |      |      | 8P40AF-1/4        | —              |
|                                                  | 3/8 |     |      |      | 8P40D-3/8         | 57335          |
|                                                  |     |     |      |      | 8P40GS-3/8        | 57338          |
|                                                  |     |     |      |      | 8P40AF-3/8        | —              |
| 1-1/2<br>Sch. 40<br><br>1.900 O.D.<br>1.610 I.D. | 1/2 |     |      |      | 8P40D-1/2         | 57336          |
|                                                  |     |     |      |      | 8P40GS-1/2        | 57339          |
|                                                  |     |     |      |      | 8P40AF-1/2        | —              |
|                                                  | 1/4 | 1   | 5/16 | 3/16 | 12P40D-1/4        | 57343          |
|                                                  |     |     |      |      | 12P40GS-1/4       | 57347          |
|                                                  |     |     |      |      | 12P40AF-1/4       | 57351          |
|                                                  | 3/8 |     |      |      | 12P40D-3/8        | 57344          |
|                                                  |     |     |      |      | 12P40GS-3/8       | 57348          |
|                                                  |     |     |      |      | 12P40AF-3/8       | 57352          |
| 1-1/2<br>Sch. 80<br><br>1.900 O.D.<br>1.500 I.D. | 1/2 |     |      |      | 12P40D-1/2        | 57345          |
|                                                  |     |     |      |      | 12P40GS-1/2       | 57349          |
|                                                  |     |     |      |      | 12P40AF-1/2       | —              |
|                                                  | 5/8 |     |      |      | 12P40D-5/8        | 57346          |
|                                                  |     |     |      |      | 12P40GS-5/8       | 57350          |
|                                                  |     |     |      |      | 12P40AF-5/8       | 57354          |
| 2<br>Sch.40<br><br>2.375 O.D.<br>2.067 I.D.      | 1/4 | 1   | 5/16 | 3/16 | 12P80D-1/4        | —              |
|                                                  |     |     |      |      | 12P80GS-1/4       | —              |
|                                                  |     |     |      |      | 12P80AF-1/4       | —              |
|                                                  | 3/8 |     |      |      | 12P80D-3/8        | —              |
|                                                  |     |     |      |      | 12P80GS-3/8       | —              |
|                                                  |     |     |      |      | 12P80AF-3/8       | —              |
| 2<br>Sch.40<br><br>2.375 O.D.<br>2.067 I.D.      | 1/2 |     |      |      | 12P80D-1/2        | 57663          |
|                                                  |     |     |      |      | 12P80GS-1/2       | —              |
|                                                  |     |     |      |      | 12P80AF-1/2       | —              |
|                                                  | 5/8 |     |      |      | 12P80D-5/8        | 57664          |
|                                                  |     |     |      |      | 12P80GS-5/8       | —              |
|                                                  |     |     |      |      | 12P80AF-5/8       | —              |
| 2<br>Sch.40<br><br>2.375 O.D.<br>2.067 I.D.      | 3/4 |     |      |      | 16P40D-1/4        | 57355          |
|                                                  |     |     |      |      | 16P40GS-1/4       | —              |
|                                                  |     |     |      |      | 16P40AF-1/4       | —              |
|                                                  | 3/8 |     |      |      | 16P40D-3/8        | 57356          |
|                                                  |     |     |      |      | 16P40GS-3/8       | —              |
|                                                  |     |     |      |      | 16P40AF-3/8       | —              |
| 2<br>Sch.40<br><br>2.375 O.D.<br>2.067 I.D.      | 1/2 |     |      |      | 16P40D-1/2        | 57357          |
|                                                  |     |     |      |      | 16P40GS-1/2       | 57362          |
|                                                  |     |     |      |      | 16P40AF-1/2       | —              |
|                                                  | 5/8 |     |      |      | 16P40D-5/8        | 57358          |
|                                                  |     |     |      |      | 16P40GS-5/8       | 57363          |
|                                                  |     |     |      |      | 16P40AF-5/8       | —              |
| 2<br>Sch.40<br><br>2.375 O.D.<br>2.067 I.D.      | 3/4 |     |      |      | 16P40D-3/4        | 57359          |
|                                                  |     |     |      |      | 16P40GS-3/4       | 57364          |
|                                                  |     |     |      |      | 16P40AF-3/4       | —              |

# BOSStonE Molded Plastic Bearings

## Roll End Bearings for Standard Steel Pipe

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE †

| B<br>(Pipe Size)                                | A*          | C     | D         | E     | Catalog<br>Number | Item<br>Code † |
|-------------------------------------------------|-------------|-------|-----------|-------|-------------------|----------------|
| 2<br>Sch.10<br><br>2.375 O.D.<br>2.152 I.D.     | 1/4         | 1     | 5/16      | 3/16  | 16P10D-1/4        | —              |
|                                                 |             |       |           |       | 16P10GS-1/4       | —              |
|                                                 |             |       |           |       | 16P10AF-1/4       | —              |
|                                                 | 3/8         |       |           |       | 16P10D-3/8        | —              |
|                                                 |             |       |           |       | 16P10GS-3/8       | —              |
|                                                 |             |       |           |       | 16P10AF-3/8       | —              |
|                                                 | 1/2         |       |           |       | 16P10D-1/2        | —              |
|                                                 |             |       |           |       | 16P10GS-1/2       | —              |
|                                                 |             |       |           |       | 16P10AF-1/2       | —              |
|                                                 | 5/8         |       |           |       | 16P10D-5/8        | —              |
|                                                 |             |       |           |       | 16P10GS-5/8       | —              |
|                                                 |             |       |           |       | 16P10AF-5/8       | —              |
| 3/4                                             | 16P10D-3/4  | —     |           |       |                   |                |
|                                                 | 16P10GS-3/4 | —     |           |       |                   |                |
|                                                 | 16P10AF-3/4 | —     |           |       |                   |                |
| 2<br>Sch.80<br><br>2.375 O.D.<br>1.939 I.D.     | 1/4         | 1     | 5/16      | 3/16  | 16P80D-1/4        | —              |
|                                                 |             |       |           |       | 16P80GS-1/4       | —              |
|                                                 |             |       |           |       | 16P80AF-1/4       | —              |
|                                                 | 3/8         |       |           |       | 16P80D-3/8        | —              |
|                                                 |             |       |           |       | 16P80GS-3/8       | —              |
|                                                 |             |       |           |       | 16P80AF-3/8       | —              |
|                                                 | 1/2         |       |           |       | 16P80D-1/2        | 57690          |
|                                                 |             |       |           |       | 16P80GS-1/2       | 57695          |
|                                                 |             |       |           |       | 16P80AF-1/2       | —              |
|                                                 | 5/8         |       |           |       | 16P80D-5/8        | 57691          |
|                                                 |             |       |           |       | 16P80GS-5/8       | —              |
|                                                 |             |       |           |       | 16P80AF-5/8       | —              |
| 3/4                                             | 16P80D-3/4  | 57692 |           |       |                   |                |
|                                                 | 16P80GS-3/4 | —     |           |       |                   |                |
|                                                 | 16P80AF-3/4 | —     |           |       |                   |                |
| 2-1/2<br>Sch.40<br><br>2.875 O.D.<br>2.469 I.D. | 1/4         | 1     | 5/16      | 3/16  | 20P40D-1/4        | 57370          |
|                                                 |             |       |           |       | 20P40GS-1/4       | —              |
|                                                 |             |       |           |       | 20P40AF-1/4       | —              |
|                                                 | 3/8         |       |           |       | 20P40D-3/8        | 57371          |
|                                                 |             |       |           |       | 20P40GS-3/8       | —              |
|                                                 |             |       |           |       | 20P40AF-3/8       | —              |
|                                                 | 1/2         |       |           |       | 20P40D-1/2        | 57372          |
|                                                 |             |       |           |       | 20P40GS-1/2       | —              |
|                                                 |             |       |           |       | 20P40AF-1/2       | —              |
|                                                 | 5/8         |       |           |       | 20P40D-5/8        | 57373          |
|                                                 |             |       |           |       | 20P40GS-5/8       | —              |
|                                                 |             |       |           |       | 20P40AF-5/8       | —              |
| 3/4                                             | 20P40D-3/4  | 57374 |           |       |                   |                |
|                                                 | 20P40GS-3/4 | —     |           |       |                   |                |
|                                                 | 20P40AF-3/4 | —     |           |       |                   |                |
| 3<br>Sch.40<br><br>3.500 O.D.<br>3.068 I.D.     | 3/8         | 1-1/4 | 3/8       | 3/16  | 24P40D-3/8        | 57385          |
|                                                 |             | 1-1/4 | 3/8       |       | 24P40GS-3/8       | 57390          |
|                                                 |             | 1-3/8 | 1/2       |       | 24P40AF-3/8       | 57395          |
|                                                 | 1/2         | 1-1/4 | 3/8       |       | 24P40D-1/2        | 57386          |
|                                                 |             | 1-1/4 | 3/8       |       | 24P40GS-1/2       | 57391          |
|                                                 |             | 1-3/8 | 1/2       |       | 24P40AF-1/2       | 57396          |
|                                                 | 5/8         | 1-1/4 | 3/8       |       | 24P40D-5/8        | 57387          |
|                                                 |             | 1-1/4 | 3/8       |       | 24P40GS-5/8       | 57392          |
|                                                 |             | 1-3/8 | 1/2       |       | 24P40AF-5/8       | 57397          |
|                                                 | 3/4         | 1-1/4 | 3/8       |       | 24P40D-3/4        | 57388          |
|                                                 |             | 1-1/4 | 3/8       |       | 24P40GS-3/4       | 57393          |
|                                                 |             | 1-3/8 | 1/2       |       | 24P40AF-3/4       | 57398          |
| 1                                               | 1-1/4       | 3/8   | 24P40D-1  | 57389 |                   |                |
|                                                 | 1-1/4       | 3/8   | 24P40GS-1 | 57394 |                   |                |
|                                                 | 1-3/8       | 1/2   | 24P40AF-1 | 57399 |                   |                |



### Material

Delrin or Celcon (Acetals) — D  
Nylatron GS (Molybdenum disulfide filled nylon) — GS  
Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

\*These dimensions are approximately 1/64" larger than listed.

†Any item listed WITHOUT an Item Code Number is available on a SPECIAL ORDER BASIS and minimum quantities may apply.

AF Bearings with 3" or larger O.D. will be supplied with an AF Flanged bushing inserted into a D or GS Roll End Bearing. For these AF Bearings it is recommended to reduce the shaft diameter or increase bushing I.D. to obtain proper clearance.

BLIND BORE bearings are available on special order.  
Minimum quantities will apply.

# BOSStonE Molded Plastic Bearings

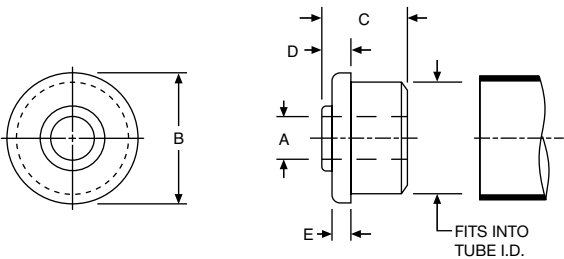
## Roll End Bearings for Standard Steel Pipe

F



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE †

| B<br>(Pipe Size)         | A*    | C     | D   | E    | Catalog<br>Number            | Item †<br>Code |
|--------------------------|-------|-------|-----|------|------------------------------|----------------|
| 4<br>Sch. 40             | 1/2   | 1-3/4 | 3/8 | 3/16 | 32P40D-1/2                   | 57400          |
|                          |       | 1-3/4 | 3/8 |      | 32P40GS-1/2                  | 57405          |
|                          |       | 1-7/8 | 1/2 |      | 32P40AF-1/2                  | 57410          |
|                          | 5/8   | 1-3/4 | 3/8 | 3/16 | 32P40D-5/8                   | 57401          |
|                          |       | 1-3/4 | 3/8 |      | 32P40GS-5/8                  | 57406          |
|                          |       | 1-7/8 | 1/2 |      | 32P40AF-5/8                  | 57411          |
|                          | 3/4   | 1-3/4 | 3/8 | 3/16 | 32P40D-3/4                   | 57402          |
|                          |       | 1-3/4 | 3/8 |      | 32P40GS-3/4                  | 57407          |
|                          |       | 1-7/8 | 1/2 |      | 32P40AF-3/4                  | 57412          |
|                          | 1     | 1-3/4 | 3/8 | 3/16 | 32P40D-1                     | 57403          |
|                          |       | 1-3/4 | 3/8 |      | 32P40GS-1                    | 57408          |
|                          |       | 1-7/8 | 1/2 |      | 32P40AF-1                    | 57411          |
| 4.500 O.D.<br>4.026 I.D. | 1-1/4 | 1-3/4 | 3/8 | 3/16 | 32P40D-1-1/4<br>32P40GS1-1/4 | 57404<br>57409 |



AF bearings with 3" or larger O.D. will be supplied with an AF Flanged bushing inserted into a D or GS Roll End Bearing. For these AF Bearings it is recommended to reduce the shaft diameter or increase bushing I.D. to obtain proper clearance.

BLIND BORE bearings are available on special order — minimum quantities will apply.

### Material

Delrin or Celcon (Acetals) — D  
Nylatron GS (Molybdenum disulfide filled nylon) — GS  
Teflon filled Acetal (Teflon added to Delrin or Celcon) — AF

\*These dimensions are approximately 1/64" larger than listed.

†Any item listed WITHOUT an Item Code Number is available on a SPECIAL ORDER BASIS — minimum quantities may apply.

# BOSStonE Molded Plastic Bearings

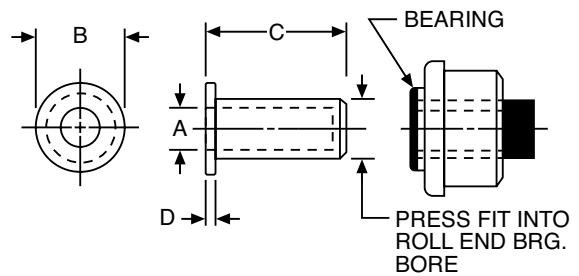
## Extra Length – Blind Bore Bearing Inserts

Extra length Blind Bore inserts are available for Roll End Bearings from 1-3/4" to 6" outside diameter. All Blind Bore Bearing inserts listed below are made from Nylatron GS and are designed to press fit into 3/4" I.D. Roll End Bearings.

**ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE**

| Roll End Brg. Bore | A*                         | B | C     | Max. Depth | D    | Catalog Number                        | Item Code                        |
|--------------------|----------------------------|---|-------|------------|------|---------------------------------------|----------------------------------|
| 3/4                | 7/16<br>1/2<br>9/16<br>5/8 | 1 | 1-1/2 | 1-3/8      | 1/16 | F7612B<br>F8612B<br>F9612B<br>F10612B | 57482<br>57483<br>57484<br>-     |
| 3/4                | 7/16<br>1/2<br>9/16<br>5/8 | 1 | 2     | 1-7/8      | 1/16 | F7616B<br>F8616B<br>F9616B<br>F10616B | 57486<br>57487<br>57488<br>57489 |

\* These dimensions are approximately 1/64" larger than listed.



## Roll End Adapter for Hex Shaft

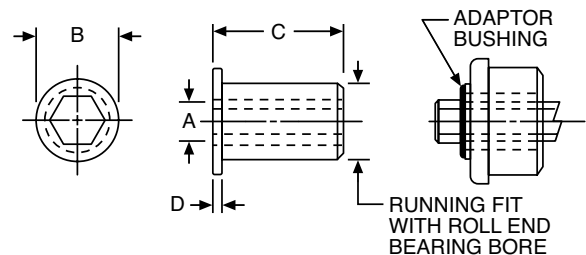
Hex shaft adapter bushings are available for Roll End Bearings from 1" to 6" outside diameter. All hex shaft adapter bushings are made from Nylatron GS and are designed to provide a running fit with the Roll End Bearing bores listed below.

**ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE**

| A Hex Shaft Size | Roll End Brg. Bore + | B     | C     | D    | Catalog Number | Item Code |
|------------------|----------------------|-------|-------|------|----------------|-----------|
| 5/16             | 1/2                  | 3/4   | 7/8   | 1/16 | FH547          | 57479     |
| 7/16             | 5/8                  | 7/8   | 1     | 1/16 | FH758          | 57481     |
| 5/8              | 7/8*                 | 1-1/8 | 1-1/4 | 3/32 | FH10710        | 57707     |
| 11/16            | 7/8*                 | 1-1/8 | 1-1/4 | 3/32 | FH11710        | 57708     |

\*7/8" I.D. Roll End Bearings are not available from stock. They may be machined from any 3/4" bore size. Prices on application.

+I.D. of "AF" Roll End bearings may have to be enlarged approximately 1/64" to obtain proper clearance.



# BOSStonE Molded Plastic Bearings

## Guide Roll Bearings



Nylatron GS Roll End Bearing has an oversized flange. Designed for use as a belt guide on conveyor rollers, or on light duty trolley conveyors. Using 2" 16 Gage Tubing.

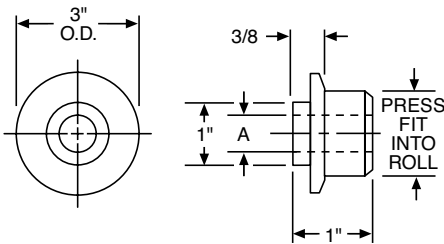
### Material

Nylatron GS (Molybdenum disulfide filled nylon) — GS

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER  
OR ITEM CODE

| A   | Catalog Number | Item Code |
|-----|----------------|-----------|
| 1/2 | G1616GS-1/2    | 57704     |
| 5/8 | G1616GS-5/8    | 57706     |

Also suitable to take 5/16, 3/8 and 7/16" hex shaft bushing.



## Rollers



These rollers are made from roll end bearings shown on pages 162 through 168. (Ribbed Construction)

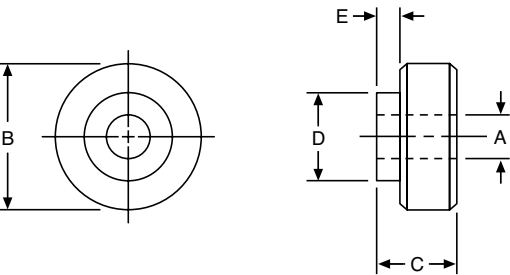
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| B     | A*   | C     | D     | E    | Made From Cat. No.        | Catalog Number    | Item Code      |
|-------|------|-------|-------|------|---------------------------|-------------------|----------------|
| .700  | 1/8  | 9/16  | 1/2   | 1/16 | 622D-1/8<br>622GS-1/8     | R700D<br>R700GS   | 57492<br>57493 |
| .800  | 3/16 | 9/16  | 5/8   | 1/16 | 720D-3/16<br>720GS-3/16   | R800D<br>R800GS   | 57494<br>57495 |
| .900  | 1/4  | 9/16  | 5/8   | 1/16 | 818D-1/4<br>818GS-1/4     | R900D<br>R900GS   | 57496<br>57497 |
| 1.120 | 3/8  | 5/8   | 5/8   | 1/16 | 1016D-3/8<br>1016GS-3/8   | R1120D<br>R1120GS | 57498<br>57499 |
| 1.370 | 1/2  | 7/8   | 7/8   | 1/8  | 1216D-1/2<br>1216GS-1/2   | R1370D<br>R1370GS | 57500<br>57501 |
| 1.500 | 1/2  | 1     | 1     | 1/8  | 1316D-1/2<br>1316GS-1/2   | R1500D<br>R1500GS | 57502<br>57503 |
| 1.620 | 1/2  | 1     | 1     | 1/8  | 1416D-1/2<br>1416GS-1/2   | R1620D<br>R1620GS | 57504<br>57505 |
| 1.870 | 1/2  | 1     | 1     | 1/8  | 1616D-1/2<br>1616GS-1/2   | R1870D<br>R1870GS | 57506<br>57507 |
| 2.120 | 1/2  | 1     | 1     | 1/8  | 1816D-1/2<br>1816GS-1/2   | R2120D<br>R2120GS | 57508<br>57509 |
| 2.370 | 1/2  | 1     | 1     | 1/8  | 2016D-1/2<br>2016GS-1/2   | R2370D<br>R2370GS | 57510<br>57511 |
| 2.750 | 3/4  | 1-1/2 | 1-1/2 | 3/16 | 2411D-3/4<br>2411GS-3/4   | R2750D<br>R2750GS | 57512<br>57513 |
| 3.000 | 3/4  | 1-1/4 | 2     | 3/16 | 24P40D-3/4<br>24P40GS-3/4 | R3000D<br>R3000GS | 57514<br>57515 |
| 3.750 | 1    | 2     | 2     | 3/16 | 3211D-1                   | R3750D            | 57516          |
| 4.250 | 1    | 1-3/4 | 2     | 3/16 | 3611D-1                   | R4250D            | 57518          |

### Material

Delrin or Celcon (Acetals) — D  
Nylatron GS (Molybdenum disulfide filled nylon) — GS

\*These dimensions are approximately 1/64" larger than listed.



# BOSStonE Molded Plastic Bearings

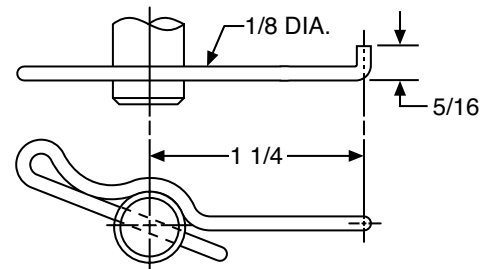
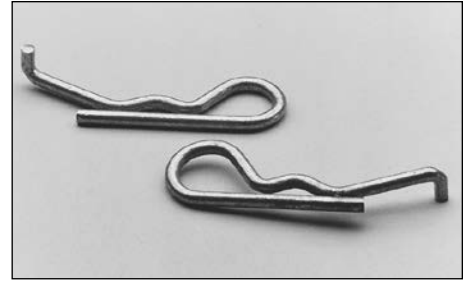
## Shaft Clip

Secures round shaft to conveyor frame. Shaft can't turn or slide out. Clip required on one end only, conventional cotter pin can be used on other end.

Available from stock for 1/2" dia. shaft.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Catalog Number | Item Code |
|----------------|-----------|
| SC-4           | 57490     |



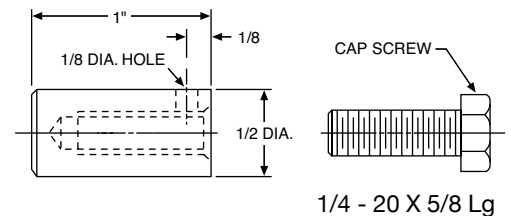
F

## Stub Shaft for Rollers

This stainless steel screw and stub assembly fits Blind Bore Roll End Bearings.

### ORDER BY CATALOG NUMBER OR ITEM CODE

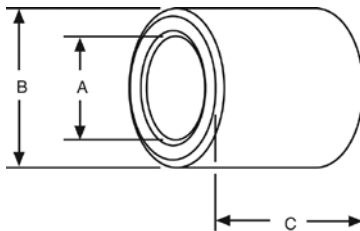
| Catalog Number | Item Code |
|----------------|-----------|
| SS-4           | 57491     |



# BOSonE Molded Nylon Bearings

## Plain Cylindrical Bearings

F



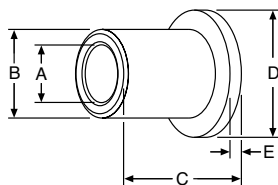
### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE  |
|------------|-----|------------|
| A          | All | $\pm .015$ |
| B          |     |            |
| C          | All | $\pm .015$ |

### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A     | B      | C      | Catalog Number | Item Code |
|-------|--------|--------|----------------|-----------|
| 3/16  | 5/16   | 5/16   | NS35-2-1/2     | 56883     |
| 1/4   | 3/8    | 3/8    | NS46-3         | 56884     |
| 5/16  | 7/16   | 7/16   | NS57-3-1/2     | 56885     |
| 3/8   | 1/2    | 1/2    | NS68-4         | 56886     |
| 7/16  | 9/16   | 9/16   | NS79-4-1/2     | 56887     |
| 1/2   | 5/8    | 5/8    | NS810-5        | 56888     |
| 9/16  | 11/16  | 11/16  | NS911-5-1/2    | 56889     |
| 5/8   | 3/4    | 3/4    | NS1012-6       | 56890     |
| 11/16 | 13/16  | 13/16  | NS1113-6-1/2   | 56891     |
| 3/4   | 7/8    | 7/8    | NS1214-7       | 56892     |
| 7/8   | 1      | 1      | NS1416-8       | 56894     |
| 15/16 | 1-1/16 | 1-1/16 | NS1517-8-1/2   | 56895     |
| 1     | 1-1/8  | 1-1/8  | NS1618-9       | 56896     |

## Flanged Type



### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A     | B      | C      | D      | E    | Catalog Number | Item Code |
|-------|--------|--------|--------|------|----------------|-----------|
| 3/16  | 5/16   | 5/16   | 7/16   | 1/16 | NF35-2-1/2     | 56897     |
| 1/4   | 3/8    | 3/8    | 1/2    | 1/16 | NF46-3         | 56898     |
| 5/16  | 7/16   | 7/16   | 9/16   | 1/16 | NF57-3-1/2     | 56899     |
| 3/8   | 1/2    | 1/2    | 5/8    | 1/16 | NF68-4         | 56900     |
| 1/2   | 5/8    | 5/8    | 3/4    | 1/16 | NF810-5        | 56902     |
| 9/16  | 11/16  | 11/16  | 15/16  | 1/16 | NF911-5-1/2    | 56903     |
| 5/8   | 3/4    | 3/4    | 7/8    | 1/16 | NF1012-6       | 56904     |
| 11/16 | 13/16  | 13/16  | 1      | 1/16 | NF1113-6-1/2   | 56905     |
| 3/4   | 7/8    | 7/8    | 1-1/16 | 1/16 | NF1214-7       | 56906     |
| 7/8   | 1      | 1      | 1-3/16 | 1/16 | NF1416-8       | 56908     |
| 15/16 | 1-1/16 | 1-1/16 | 1-1/4  | 1/16 | NF1517-8-1/2   | 56909     |
| 1     | 1-1/8  | 1-1/8  | 1-5/16 | 1/16 | NF1618-9       | 56910     |

### STANDARD TOLERANCES

| DIMENSIONS       |     | TOLERANCE  |
|------------------|-----|------------|
| A<br>B<br>D<br>E | All | $\pm .015$ |
| C                | All | $\pm .015$ |

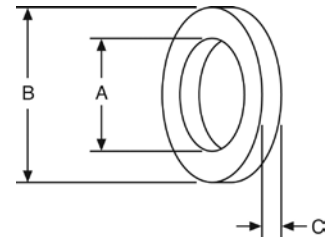
# BOSStonE Molded Nylon Bearings

## Thrust Type

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A              | B               | C            | Catalog Number | Item Code |
|----------------|-----------------|--------------|----------------|-----------|
| 3/16<br>.189   | 3/4<br>.750     | 1/16<br>.070 | NT312          | 56911     |
| 1/4<br>.255    | 5/8<br>.620     | 3/32<br>.097 | NT410          | 56912     |
| 1/2<br>.503    | 13/16<br>.820   | 3/32<br>.095 | NT813          | 56913     |
| 9/16<br>.565   | 13/16<br>.812   | 3/32<br>.095 | NT913          | 56914     |
| 5/8<br>.630    | 1<br>1.000      | 3/32<br>.094 | NT1016         | 56915     |
| 3/4<br>.760    | 1-1/16<br>1.063 | 3/32<br>.094 | NT1217         | 56916     |
| 7/8<br>.890    | 1-1/8<br>1.125  | 3/32<br>.094 | NT1418         | 56917     |
| 1-1/4<br>1.290 | 2-1/8<br>2.140  | 3/32<br>.098 | NT2034         | 56918     |
| 1-1/2<br>1.555 | 2-1/16<br>2.058 | 1/8<br>.120  | NT2533         | 56919     |

Tolerances apply to actual (decimal) dimensions.



### STANDARD TOLERANCES

| DIMENSIONS  | TOLERANCE     |
|-------------|---------------|
| A<br>B<br>C | All<br>± .015 |

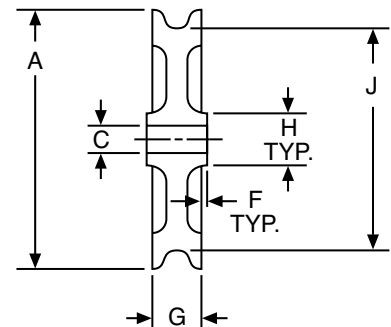
ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A     | C   | G    | F    | H   | J     | Cable Size | Catalog Number | Item Code |
|-------|-----|------|------|-----|-------|------------|----------------|-----------|
| 1-1/4 | 1/4 | .400 |      | 1/2 | 31/32 | 1/4        | P1250-2        | 57522     |
| 2-5/8 | 3/8 | .500 | .017 | 3/4 | 2-1/8 | 1/4        | P2625-3        | 57525     |
| 2-5/8 | 1/2 | .500 | —    | 3/4 | 2-1/8 | 1/4        | P2625-4        | 57526     |

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE               |
|------------|-------------------------|
| C          | All<br>+ .005 to + .010 |

## Cable Pulleys



## Sleeve Bearing Selection

F

The performance of a bearing is influenced by the conditions of speed, mating materials, clearances, temperature, lubrication, type of loading, etc. Of primary importance, is the maintenance of an oil film between the bearing surfaces to reduce friction, dissipate heat and retard wear by minimizing metal to metal contact. The most critical periods of operation are during starting and stopping, when the load may cause the bearing surfaces to come into contact with each other. For these reasons it is not practical to predict the wear rate of bronze bearings.

The selection of the best bearing for an application can be a very complicated problem because the combined influence of the many factors affecting the operation is difficult to predict.

The following information may be used as a guide for selecting a Bronze sleeve bearing which should satisfy the requirements.

For practical reasons, the length of the bearing should normally be between one and two times the shaft diameter and the O.D. approximately 25% larger than the shaft diameter.

### Starting and Stopping/

**Oscillatory Motion/Cyclical Overload** conditions mean a full film of oil cannot be maintained. When this happens, metal-to-metal contact occurs and causes bearing wear. Because of the continual interruption of the oil film, a larger safety factor is required when designing bearings for applications of this type. A lower permissible PV factor must be considered.

**Speed/Oil Viscosity** must also be considered. The proper viscosity oil must be selected for each particular speed application, to achieve optimum bearing operation.

For high speed applications, a light oil (150 SUS at 100°F) is required to keep internal oil friction at a minimum and assure proper metering of the oil to the bearing/shaft surface.

For moderate speeds, a medium-viscosity oil (400 SUS at 100°F) is required.

For very low shaft speeds under moderate or heavy loads, a heavier oil with an extreme pressure additive may be required to prevent complete oil film rupture and give sufficient lubrication for proper operation.

**Shaft Consideration** is extremely important in bearing applications. For optimum operation the shaft must be of proper material, hardness, surface finish, roundness and dimensions. Experience indicates that carbon steels, and preferably C1137, offer the best operating results. If stainless steel shafts are to be used, 400 Series is recommended. Austenitic 300 Series stainless steel tends to gall, which results in extreme wear and shortened life. If 300 Series stainless is required for its non-magnetic qualities, it is strongly recommended that shafts be work-hardened or chrome-plated for satisfactory operation.

For best results, a shaft surface finish of 4 to 12 RMS is recommended. Nicks, gouges, and burrs should be avoided because they rupture the oil film and cause metal-to-metal contact.

Shaft roundness and dimensions also contribute greatly to bearing life. The more round the shaft, the less the bearing and shaft wear, with longer life resulting. Dimensions also play an important role in operation and should always be in accord with the recommended bearing clearance charts.

As stated, for practical reasons the bearing length should normally be between one and two times the shaft diameter. However, the recommended practice is by using the PV factor. PV is a means of measuring the performance capabilities of bearings. P is expressed as pressure or pounds per square inch on the projected area of the bearing. V is velocity in feet per minute of the wear surface (surface feet per minute).

“PV” is expressed by the following:

$$PV = \frac{W}{Ld} \times \frac{\pi dn}{12} = \frac{\pi Wn}{12L} = \frac{.262Wn}{L}$$

$$P = \frac{W}{A \text{ (Brg. I.D. x Length)}}$$

$$V = \text{Surface velocity of the shaft, ft./min.} \\ (.262 \times \text{RPM} \times \text{Shaft Dia.})$$

$$W = \text{Bearing load in pounds}$$

$$L = \text{Bearing length in inches}$$

$$d = \text{I.D. of bearing in inches} \\ (\text{cancels out of formula})$$

$$n = \text{Shaft speed, RPM}$$

## Sleeve Bearing Selection (Continued)

F

Each material has a specific maximum PV rating, as shown in the following Table. In addition, it also has a maximum pressure (P) and velocity (V) limitation. These values should not be exceeded. At no time can all maximum values be utilized.

| Material                            | Max. PV | Max. P | Max. V |
|-------------------------------------|---------|--------|--------|
| BEAR-N-BRONZ                        | 75,000  | 3,000  | 750    |
| BOST-BRONZ                          | 50,000  | 2,000  | 1,200  |
| BOST-BRONZ<br>(Thrust Washers)      | 10,000  | 2,000  | 1,200  |
| F1                                  | 20,000  | 1,000  | 400    |
| TN                                  | 10,000  | 800    | 300    |
| AF                                  | 8,000   | 750    | 300    |
| GS                                  | 4,000   | 500    | 300    |
| D                                   | 3,000   | 480    | 300    |
| N                                   | 3,000   | 480    | 300    |
| UHMW-PE                             | 2,300   | 1,400  | 100    |
| Nyloil                              | 16,000  | 2,000  | 400    |
| UHMW-PE with<br>Internal Wear Strip | 4,000   | 1,400  | 100    |
| Nyloil with<br>Internal Wear Strip  | 16,000  | 2,000  | 400    |

All values based on 72°F ambient temperature and standard lubricant, when required.

NOTE: Above figures should be considered maximum and not to be exceeded.

### EXAMPLE

Select a BOST-BRONZ (oil impregnated) bearing to satisfy the following conditions.

Known—

5/8" Shaft Diameter

$n = 500$  RPM

$W_1 = \text{Load Bearing I} = L_1 = 52.5$  Lbs.

$W_2 = \text{Load Bearing II} = L_{II} = 157.5$  Lbs.

$L = \text{Length of Bearing}$

For Bearing I—

$$\begin{aligned}
 PV &= \frac{.262 \times W_1 \times n}{L (\text{In. of Lgth})} \\
 &= \frac{.262 \times 52.5 \times 500}{1} \\
 &= 6877
 \end{aligned}$$

For Bearing II—

$$\begin{aligned}
 PV &= \frac{.262 \times W_2 \times n}{L (\text{In. of Lgth.})} \\
 &= \frac{.262 \times 157.5 \times 500}{1} \\
 &= 20632
 \end{aligned}$$

With the calculated PV of 6877, Bearing I, and 20,632, Bearing II, it can be seen from the Table, that a BOST-BRONZ bearing, one inch long, will not exceed Maximum PV.

NOTE: An increase in L will decrease the value of PV; conversely, a shortening of L increases the value of PV.

A check of PV calculations should now be performed to assure that Max. "P" and Max. "V" is not exceeded.

$PV \text{ Max.} = P \text{ Max.} \times V \text{ Max.}$

$$\begin{aligned}
 V &= .262 \times \text{Shaft Dia.} \times n \\
 &= .262 \times .625 \times 500 = 81.9
 \end{aligned}$$

$$\text{Bearing I} \quad P = \frac{PV}{V} = \frac{6877}{81.9} = 83.9$$

$$\text{Bearing II} \quad P = \frac{PV}{V} = \frac{20632}{81.9} = 251.9$$

As can be seen, we have not exceeded any maximum values. We can now select an actual Bost-Bronz bearing.

Knowing:

Shaft Dia. 5/8" = Bearing I.D. 5/8"

Bearing O.D. should be approximately 25% larger than I.D.

Bearing O.D. =  $.625 \times 1.25 = .781$ "

Referring to Bost-Bronz listings, Page 12, we find 5/8" I.D. bearings listed with O.D.'s from 3/4 to 1" and lengths from 1/2 to 2".

From this selection of bearings, we may choose a bearing to fit the requirements.

Since Bearing I is lightly loaded, for practical reasons, we select a bearing length of one times bearing I.D. We select a B1013-5 (5/8" I.D. x 13/16 O.D. x 5/8" long).

## Sleeve Bearing Selection (Continued)

### EXAMPLE (Continued):

For Bearing II we will select a length of two times bearing I.D. — B1013-10. (In actual practice, it may be more suitable to select one common size — B1013-10.)

For a double-check of PV, we should use actual bearing selected:

$$PV \text{ Actual} = \frac{PV}{L \text{ (Actual Bearing)}}$$

$$\text{Bearing I PVA} = \frac{6877}{.625} = 10043$$

$$\text{Bearing II PVA} = \frac{20632}{1.25} = 16505$$

Actual PV values are below Maximum PV values shown in Table.

### Sleeve Bearing Wear Life

Wear life cannot be applied to BOST-BRONZ (oil-impregnated) or BEAR-N-BRONZ (SAE CA932/660) bearings. Under ideal conditions the shaft rides on a film of oil, and will give almost infinite life. If this film of oil is disrupted, intimate metal-to-metal contact results leading to eventual failure.

### Non-Metallic and Non-Lubricated Bearings

Wear rate is generally defined as the volumetric loss of material over a unit of time. Several mechanisms operate simultaneously to remove material from the wear interface, however, the primary mechanism is adhesive wear which is characterized by fine particles of polymer being removed from the surface. The presence of this powder is a good indication that the rubbing surfaces are wearing properly. The presence of melted polymer or large gouges or grooves at the interface is normally an indication that the materials are abrading and wearing and/or the pressure velocity limits of the materials are being exceeded.

Once a Wear Rate factor (K) has been established it can be used by the engineer to calculate wear rates of bearings, gears, etc. However, because wear rates is affected by material types, finishes and hardness as well as environmental temperature and part design, large errors may result as end use variables begin to differ from those selected for the test procedure.

As a relative measure of the performance of one composite vs. another at the same operating conditions, the K factors have proven to be highly reliable.

$$t = K (PVT)$$

t = Wear in inches

$$P = \frac{W \text{ (Total Load)}}{A \text{ (Brg. I.D. x Lgth.)}}$$

V = Velocity in ft. per minute  
(.262 x RPM x Shaft Dia.)

$$T = \frac{t}{KPV}$$

T = Running time in hours

K = Wear rate factor

|                           | K                    |
|---------------------------|----------------------|
| Delrin or Celcon (D)      | $50 \times 10^{-10}$ |
| Nylatron GS . . . (GS)    | $35 \times 10^{-10}$ |
| Teflon filled Acetal (AF) | $17 \times 10^{-10}$ |
| Teflon filled Nylon (TN)  | $13 \times 10^{-10}$ |
| Glass Filled Teflon (F-1) | $12 \times 10^{-10}$ |
| Nylon                     | $12 \times 10^{-10}$ |

Values for plastic resins assume no trace of lubricant present.

A simple calculation could be made as follows:

- Assumptions:
1. 1616D-1/2 Delrin Roll End Bearing
  2. .020 inch allowable wear limit
  3. 50 lbs. load on roll (25 lbs. per bearing)
  4. 100 RPM
  5. Normal environment with no lubrication

Problem: Find estimated wear life

Solution:

$$PV = \frac{\pi W n}{12 L} = \frac{\pi \times 25 \times 100}{12 \times 1} = 655$$

$$t = K (PVT)$$

$$T = \frac{t}{KPV} \text{ or } \frac{.020}{50 \times 10^{-10}} \times 655$$

$$T = 6100 \text{ hrs.}$$

The use of low viscosity lubricant applied initially and/or periodically during operation of the bearing would extend the life several times.

BostonE F-1 material is generally limited to a bearing maximum of 1,000 p.s.i. For more detailed design calculations Fig. 2 shows actual deformation values as a function of temperature and load.

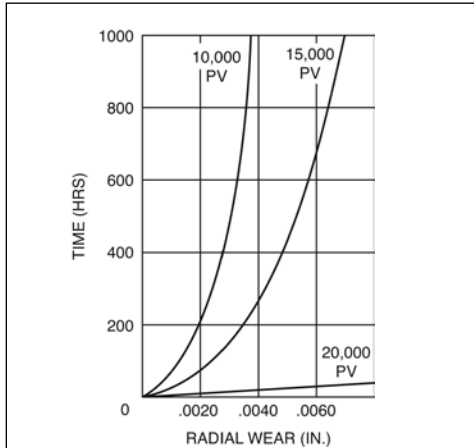
The coefficient of friction of BostonE F-1 varies with changes in load and speed when operated dry. Figure 3 shows the variation with load and Figure 4 shows the variation with speed.

## Sleeve Bearing Wear Life (Continued)

For optimum performance of BostonE F-1 bearings, the mating surface should be as hard as possible. Mild steel, however, will give satisfactory results.

A surface finish range of 8-16 micro-inches is preferred; however, good results will be obtained with finishes to 32 micro-inches.

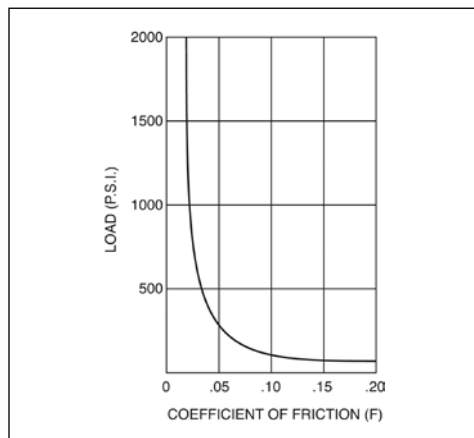
Figures 1 through 6 apply to BostonE F-1 material only.



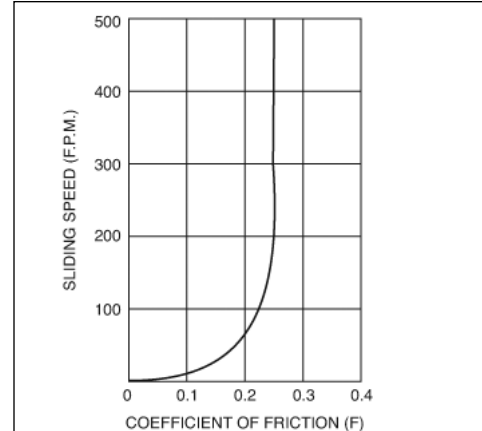
**FIGURE 1 — TIME VS. RADIAL WEAR (UNLUBRICATED)**

| Load (psi) | Deformation (%) |       |
|------------|-----------------|-------|
|            | 78°F            | 300°F |
| 250        | .1              | .4    |
| 500        | .3              | 1.4   |
| 750        | .5              | 2.9   |
| 1000       | .8              | —     |
| 1250       | 1.1             | —     |
| 1500       | 1.6             | —     |

**FIGURE 2 — DEFORMATION UNDER LOAD**



**FIGURE 3 — LOAD VS. FRICTION**



**FIGURE 4 — SPEED VS. FRICTION**

### Coefficient of Friction

| Shaft Material         |      |
|------------------------|------|
| Hardened Steel         | 0.15 |
| Stainless Steel        | 0.15 |
| Chromium Plated Steel  | 0.16 |
| Cast Iron              | 0.19 |
| Hard Anodized Aluminum | 0.20 |
| Monel                  | 0.23 |
| Cold Rolled Steel      | 0.25 |
| *Brass                 | 0.33 |
| *Aluminum              | 0.35 |

\*High rate of shaft wear

**FIGURE 5 — EFFECT OF MATING SURFACES WITH BOSTONE F-1**

### Coefficient of Expansion

| Temperature Range  | C.D.<br>(all values are $\times 10^{-5}$ ) | M.D. |
|--------------------|--------------------------------------------|------|
| +68°F. to -400°    | -1.8                                       | -3.5 |
| +68°F. to -300°    | -2.3                                       | -4.0 |
| +68°F. to -200°    | -2.9                                       | -4.3 |
| +68°F. to -100°    | -3.5                                       | -4.8 |
| +68°F. to 0°       | -4.4                                       | -5.9 |
| +68°F. to +78°     | 12                                         | 25   |
| (approximate data) |                                            |      |
| +78°F. to +100°    | 3.5                                        | 6.0  |
| +78°F. to +200°    | 3.5                                        | 6.2  |
| +78°F. to +300°    | 3.6                                        | 7.0  |
| +78°F. to +400°    | 4.2                                        | 7.8  |
| +78°F. to +500°    | 5.0                                        | 8.5  |

M.D. = Molded Direction (parallel to length of molded or extruded rod or tube)

C.D. = Cross Direction (perpendicular to length of molded or extruded rod or tube)

All tubes are approximately  $\pm 5\%$ .

**FIGURE 6 — COEFFICIENT OF LINEAR THERMAL EXPANSION**

# Engineering Information

## Lubrication – BOST-BRONZ

F

All standard BOST-BRONZ bearings, bars and plates are impregnated with a high grade, oxidation-resistant mineral oil of SAE30 (ISO 100) viscosity. If properly stored, BOST-BRONZ parts retain their oil supply indefinitely. To prevent loss of lubricant, BOST-BRONZ should be stored in non-absorbent materials (metal, plastic, or suitably lined containers, etc.) The bearings should be covered to keep out dirt and dust.

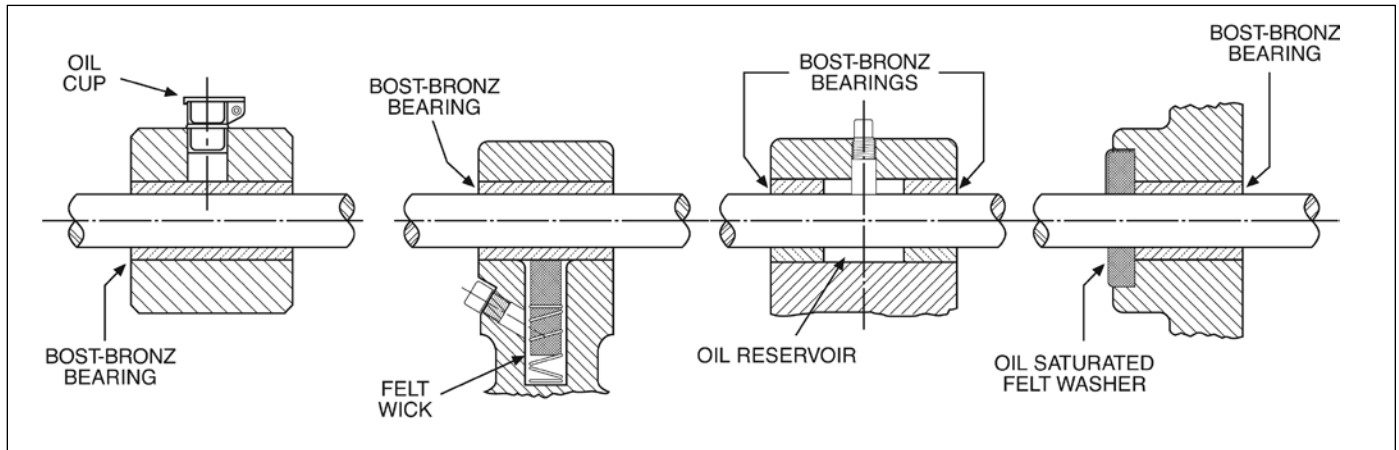
**REMOVING LUBRICANT:** If it becomes necessary to remove the oil from BOST-BRONZ, for example to replace with another type or viscosity of lubricant, the following procedure may be used:

Immerse parts in a good grade of oil solvent, such as lead-free gasoline, naphtha, carbon tetrachloride or alcohol. Change solvent often, until solvent appears clear. Agitation will hasten the process.

**RE-OILING:** BOST-BRONZ parts may be re-impregnated by submerging in oil (pre-heated to about 150°F) for approximately 30 minutes. More time should be allowed for larger parts.

### Supplementary Lubrication

The following designs illustrate simple, effective arrangements for providing supplementary lubrication.

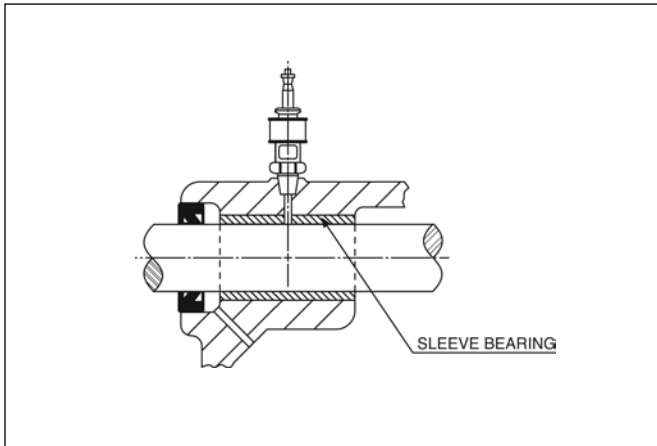


## Lubrication – BEAR-N-BRONZ

The maintenance of an oil film between the shaft and bearing surfaces is extremely important, serving to reduce friction, dissipate heat, and retard wear by minimizing any metal to metal contact.

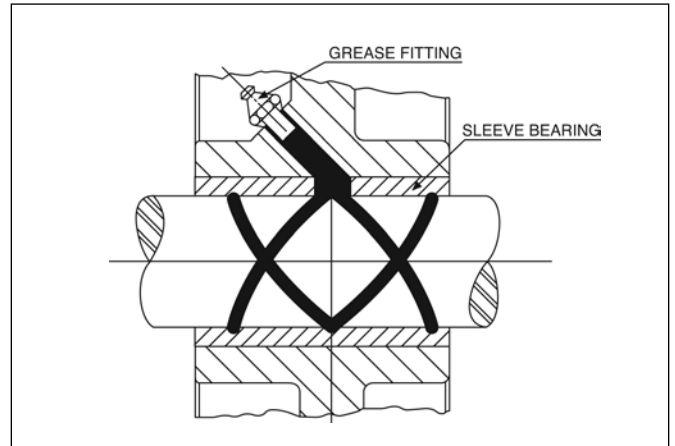
Lubricant is usually supplied into the bearing from an oil cup or fitting through an oil hole.

The drawings below illustrate two typical methods.



**A. Oil Cup**

Oil is fed from the oil cup to the bearing by gravity.



**B. Oil or Grease Fitting**

Lubricant is fed through the fitting under pressure and distributed through grooves by the rotation of the shaft.

## Lubrication – BEAR-N-BRONZ (Continued)

### Grooving

1. An oil feeder hole is normally sufficient for small bearings under light loads.

The oil hole should be in a position to introduce the lubricant to the non-loaded area of the bearing. The lubricant will then normally be carried to the loaded area by the rotation of the shaft.

For larger bearings under heavy loads, it may be desirable to facilitate the flow of lubricant to the pressure area by means of grooves machined into the bearing surface.

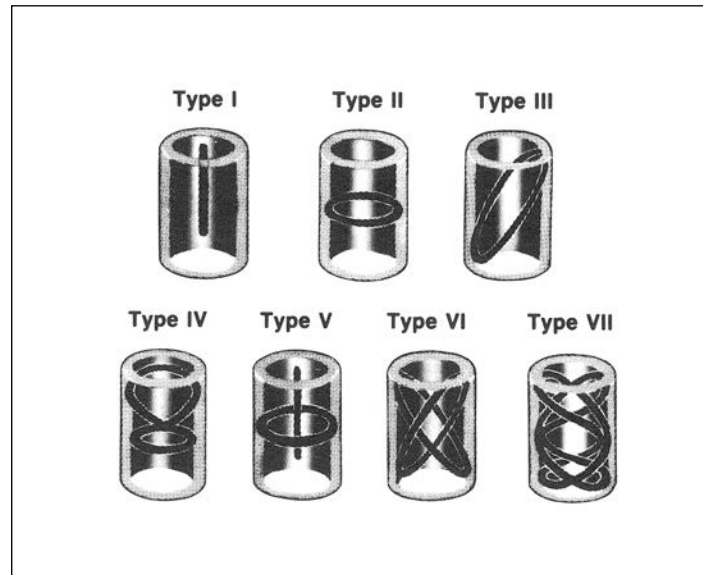
2. Type I or Type II grooves have proven adequate for most applications requiring an oil groove. In either case, the oil feed hole introducing the lubricant should always be located in the unloaded bearing area.

3. Very long bearings may require two feeder holes connected by one straight (axial) groove.

4. Oil grooves should stop short of the bearing ends to minimize oil leakage.

5. Grease lubricants are normally restricted to applications subjected to heavy loads at low speeds. Grease should be distributed under pressure along oil grooves to the loaded area. Type VI or Type VII grooves may be used for grease lubrication.

Below are illustrations of some popular styles of oil grooves:



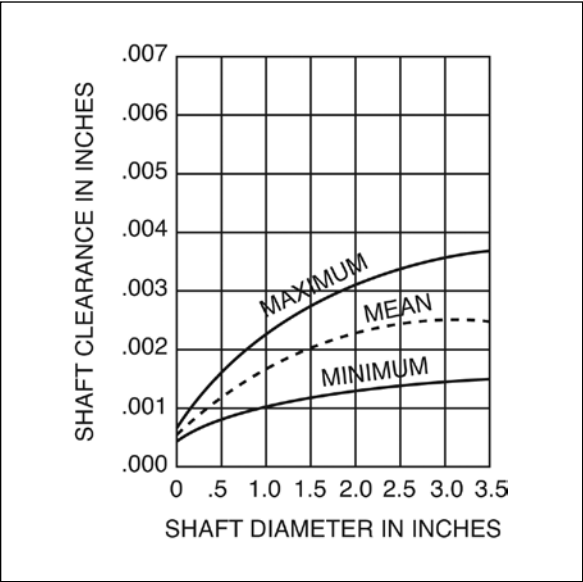
Depth of oil groove is 1/8" max. if wall permits. On thin wall bearings depth of groove is normally less than 1/2" wall thickness. When applicable groove is located 1/8" from ends.

Shaft Clearances

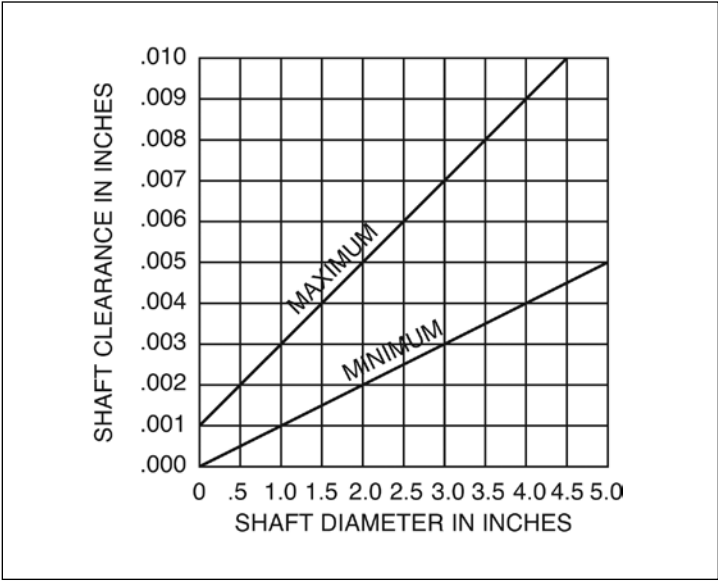
The following graphs may be used as a guide to determine shaft clearance for proper running fit.

F

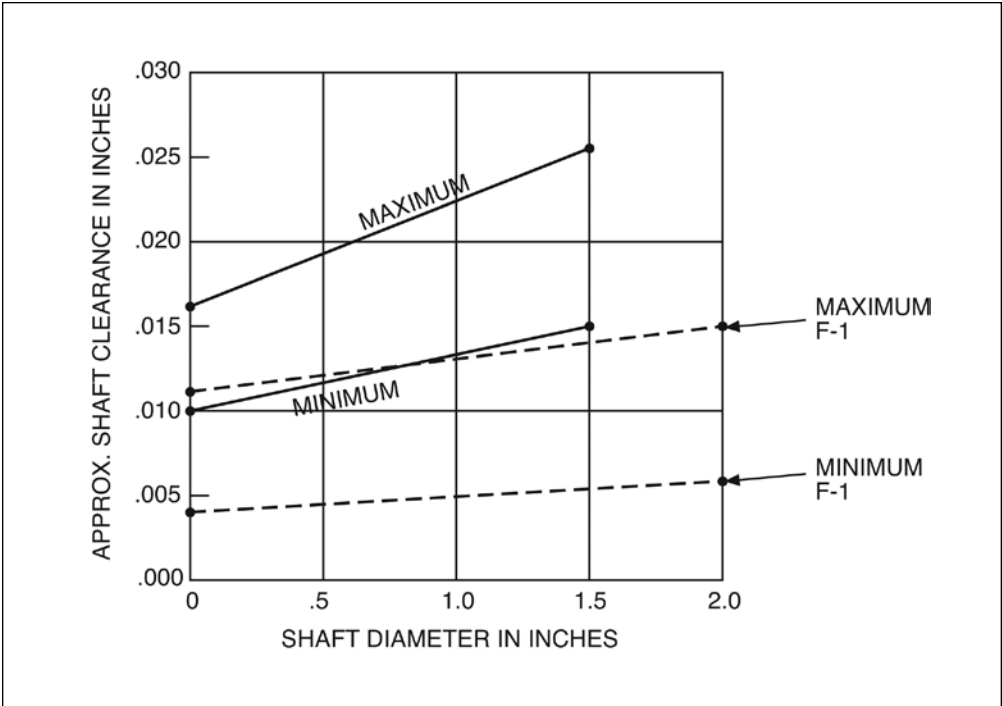
BOST-BRONZ



BEAR-N-BRONZ

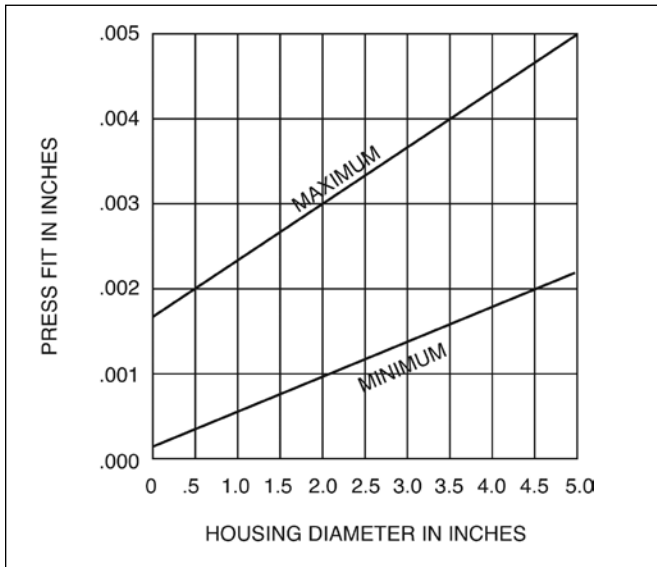


Plastics



The allowance for press fit into a housing will vary depending upon bearing size, wall thickness, housing material, and housing construction. The accompanying graphs will be a useful guide in determining allowances for press fits.

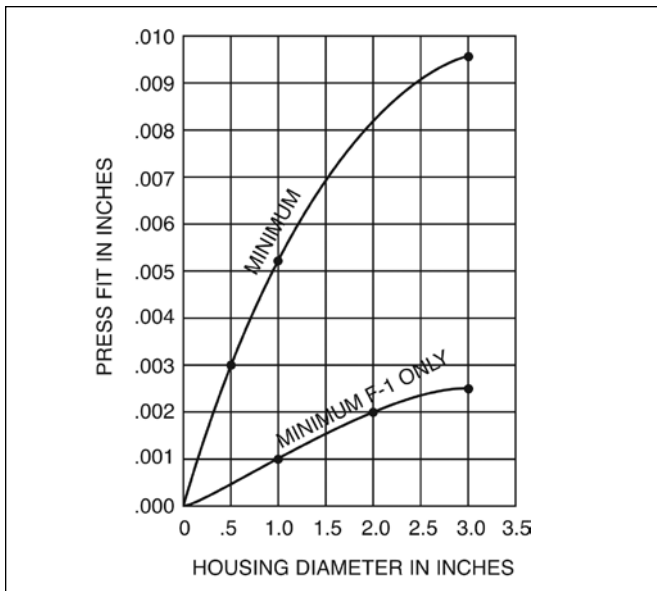
### BEAR-N-BRONZ



### Plastics

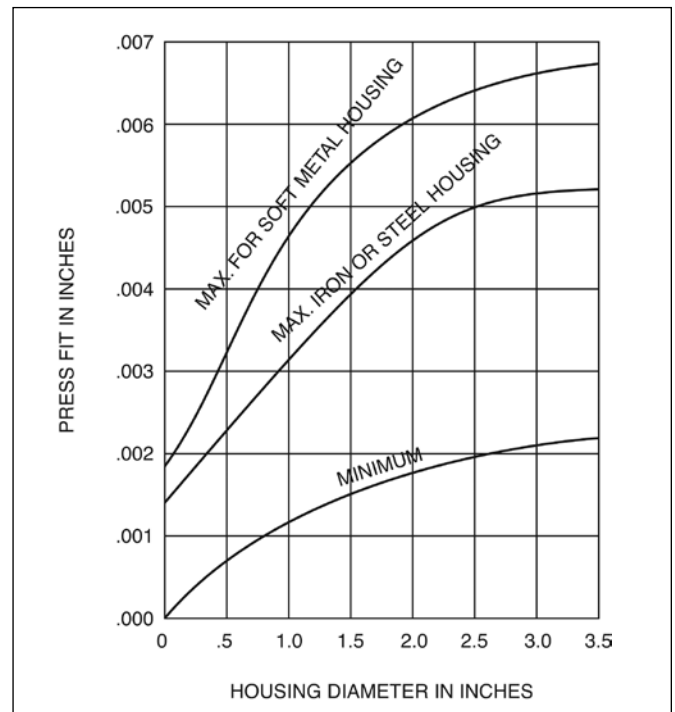
Due to normal variations in molded bearings, practicality dictates the measuring of actual bearing O.D. and adjusting bore size accordingly.

For this reason, the minimum required press fit depicted in graph, for F-1 material and other plastic material is approximate and may be used as a guide.



### BOST-BRONZ

When a BOST-BRONZ bearing is pressed into a housing, the inside diameter (I.D.) will close-in (becoming smaller). The amount will depend upon the same factors influencing the Press Fit, but will average approximately 75% of the Press Fit allowance.



## Machining

In cases where it is desired to alter a standard stock bearing or to manufacture parts from a bronze bar or plate stock, the following machining practices are suggested.

### BOST-BRONZ

BOST-BRONZ may be readily machined. For best results, use carbide tools. For finishing cuts on bearing surfaces, the cutting tool should be extremely sharp. Use feeds and speeds that are normal for machining regular bronze. Finish with a light cut (up to .005"). This method avoids the pulling or spreading of metal over the surface pores. Cutting oils or coolants should not be used. After machining, parts should be recoiled, using a good grade of oxidation-resistant mineral oil of about SAE20 (ISO 68) viscosity. For re-oiling procedure, see lubrication, Page 178.

### BEAR-N-BRONZ

The use of carbide tools or high speed tools is recommended for machining Bear-N-Bronz. Carbide tools should be used at speeds of 500 to 1000 surface feet per minute. High speed steel tools should be used to 200 to 500 surface feet per minute. Either tool should be held to a minimum clearance angle for best results. Cutting solutions are not required.

## Assembly and Sizing – BOST-BRONZ

In most instances, sizing the bore of BOST-BRONZ bearing is not necessary. The desired inside diameter will be obtained by proper press fit (and close-in) at assembly. In applications where sizing is necessary, it may be accomplished during assembly by the use of a shouldered sizing arbor, as illustrated in Figure 1. The arbor should be ground and lapped to a size slightly larger (.0002" to .0003" approx.) than the hole desired. A multiple step burnishing tool (see Figure 2) may also be used to size the hole in BOST-BRONZ bearings after assembly.

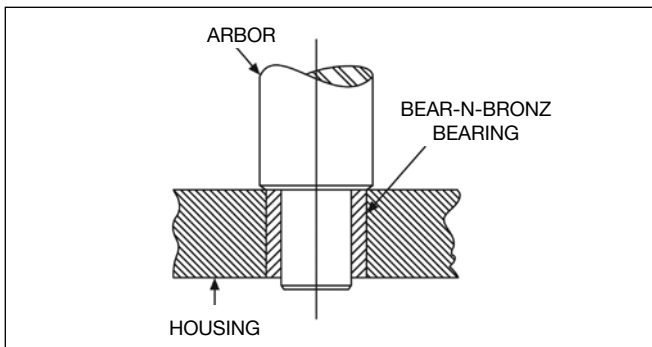


FIGURE 1.

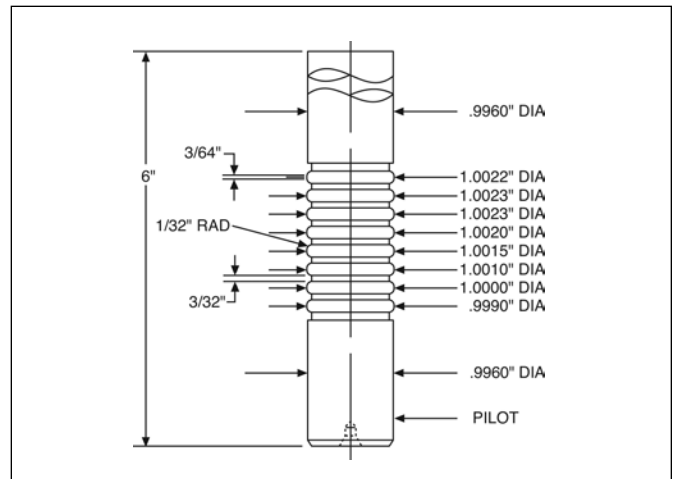
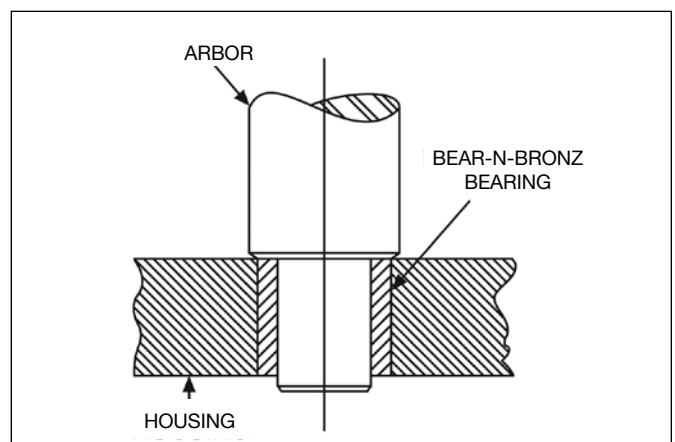


FIGURE 2.

## Assembly – BEAR-N-BRONZ

BEAR-N-BRONZ can be easily assembled by using a shouldered arbor, as illustrated, to maintain proper bearing alignment. A steady, even pressure should be applied. The arbor diameter should be of a size to allow for close-in of bearing I.D. at assembly. The surface of the arbor should be lightly oiled to facilitate withdrawal after assembly.





Boston Gear's line of unmounted, inch size ball bearings, rod ends, spherical and linear bearings, give the designer freedom to choose from a wide range of quality bearing products that will resolve numerous application problems.

Boston Gear's inch size ball bearings are offered in Precision Ground, Semi- and Unground Radial and Thrust bearings. Our rod end and linear bearings are offered in Precision and Commercial Series.

## Ball Bearings

Boston Ball Bearings provide improved performance over a wide range of operating conditions.

Major features include: Honed raceways on precision ball bearings for maximum life and smoother, quieter operation. Superior, low friction (low torque) seals, to more effectively exclude foreign matter and retain lubricant over a longer period.

The line of Ball Bearings include close tolerance precision units and inexpensive steel assemblies of the semi-ground type. These anti-friction items, available quickly from stock, make it easier to use a superior bearing "exactly right" for the majority of applications.



# Anti-Friction Bearings

## Ball Bearings (Continued)

F



The bearings listed in this catalog are made from steel of various analyses. Carburizing grades are case hardened to the desired depths and hardness values, insuring high resistance to wear and breakdown. High carbon chrome alloy steels are through hardened. If you have a special material application, Boston Gear engineers will welcome the opportunity to help you make a proper bearing selection.

Bearings in this catalog may be selected according to finish or accuracy: ground bearings are available in the radial and thrust designs primarily. With boundary dimensions and internal fit-up held to exacting tolerances and with ground and polished ball grooves, ground bearings are recommended for applications requiring greater speeds and loads and where quiet accurate operation is essential. Normal tolerance level is .005"/.0010".

Unground bearings are designed for applications where speeds and loads are moderate and the requirements of running accuracy and noise level do not warrant the more expensive ground precision bearing. The three basic design types are available. Normal tolerance level is .005"/.010".

## Rod End and Spherical Bearings



Boston Gear's broad line of rod end and spherical bearings serve many markets, which include textile, agriculture and off-highway vehicles along with military.

# Anti-Friction Bearings

## 1600 Series

### Radial Ball Bearings; Ground, Single Row



F

**HIGH QUALITY INCH DIMENSIONAL BEARINGS** for adaptation to many precision bearing applications. Suitable for speeds in the neighborhood of 5000 R.P.M.

**IMPROVED BALL GROOVE FINISH** for smoother, quieter operation.

**GROUND BORES** held to a tolerance of + .0000" to -.0005" on all sizes, 1/4" bore and over.

**NYLON BALL RETAINERS** (TN) furnished as standard. Steel retainers (J) available on special production order.

**GREASE PACKED** as standard on Types DC and DS. Types SC, SS and NS can be grease packed on special order.

**NYLON SEALS** more effectively retain lubricant and exclude foreign matter.

**SPECIAL FEATURES** including dimensions, tolerances, etc. available on special order.

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore   | Double Shield  |           | Double Sealed  |           |
|--------|----------------|-----------|----------------|-----------|
|        | Catalog Number | Item Code | Catalog Number | Item Code |
| .2500  | 1602DS         | 50724     | 1602DC         | 50701     |
| .3125  | 1603DS         | 50725     | 1603DC         | 50702     |
| .3750  | 1604DS         | 50726     | 1604DC         | 50703     |
| .3125  | 1605DS         | 50727     | 1605DC         | 50704     |
| .3750  | 1606DS         | 50728     | 1606DC         | 50705     |
| .4375  | 1607DS         | 50729     | 1607DC         | 50706     |
| .3750  | 1614DS         | 50730     | 1614DC         | 50707     |
| .4375  | 1615DS         | 50731     | 1615DC         | 50708     |
| .5000  | 1616DS         | 50732     | 1616DC         | 50709     |
| .4375  | 1620DS         | 50733     | —              | —         |
| .5000  | 1621DS         | 50734     | 1621DC         | 50710     |
| .6250  | 1623DS         | 50736     | 1623DC         | 50712     |
| .6250  | 1628DS         | 50737     | 1628DC         | 50713     |
| .7500  | 1630DS         | 50738     | 1630DC         | 50714     |
| .6250  | 1633DS         | 50739     | 1633DC         | 50715     |
| .7500  | 1635DS         | 50740     | 1635DC         | 50716     |
| .7500  | 1638DS         | 50741     | 1638DC         | 50717     |
| .8750  | 1640DS         | 50742     | 1640DC         | 50718     |
| 1.0000 | 1641DS         | 50743     | 1641DC         | 50719     |
| 1.1250 | 1652DS         | 50744     | 1652DC         | 50720     |
| 1.2500 | 1654DS         | 50745     | 1654DC         | 50721     |
| 1.2500 | 1657DS         | 50746     | 1657DC         | 50722     |

NOTE: Dimensions and load data on next page.

#### Seal and Shield Arrangements

TYPES SC, SS and NS are available via special order only

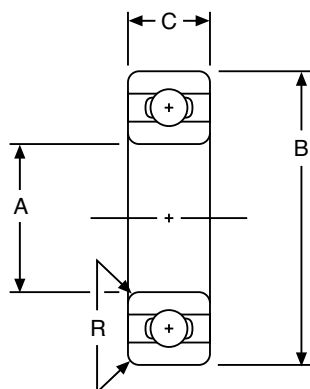
|               |               |             |               |            |
|---------------|---------------|-------------|---------------|------------|
|               |               |             |               |            |
| DOUBLE SEALED | DOUBLE SHIELD | SINGLE SEAL | SINGLE SHIELD | NO SHIELDS |
| DC            | DS            | SC          | SS            | NS         |

# Anti-Friction Bearings

## 1600 Series

### Radial Ball Bearings; Ground, Single Row

F



#### STANDARD TOLERANCES

| DIMENSIONS |                               | TOLERANCE                              |
|------------|-------------------------------|----------------------------------------|
| A          | 2500-1.2500                   | +.0000 to - .0005                      |
| B          | .6875-1.7500<br>2.0000-2.5625 | +.0000 to - .0005<br>+.0000 to - .0006 |
| C          | All                           | +.000 to - .005                        |

For recommended shaft and housing fits, see engineering section, page 238.

#### ALL DIMENSIONS IN INCHES

| Basic Bearing No. | A      | B      | C      | R      |     | Balls |  |
|-------------------|--------|--------|--------|--------|-----|-------|--|
|                   |        |        |        | Radius | No. | Dia.  |  |
| 1602              | .2500  | .6875  | 1/4+   | .012   | 6   | 1/8   |  |
| 1603              | .3125  | .8750  | 9/32++ | .012   | 7   | 5/32  |  |
| 1604              | .3750  |        |        | .015   |     |       |  |
| 1605              | .3125  |        | 5/16   | .012   | 9   | 1/8   |  |
| 1606              | .3750  |        |        | .015   |     |       |  |
| 1607              | .4375  |        |        | .015   |     |       |  |
| 1614              | .3750  | 1.1250 | 3/8    | .025   | 7   | 3/16  |  |
| 1615              | .4375  |        |        |        |     |       |  |
| 1616              | .5000  |        |        |        |     |       |  |
| 1620              | .4375  | 1.3750 | 7/16   | .025   | 8   | 15/64 |  |
| 1621              | .5000  |        |        |        |     |       |  |
| 1623              | .6250  |        |        |        |     |       |  |
| 1628              | .6250  | 1.6250 | 1/2    | .025   | 8   | 1/4   |  |
| 1630              | .7500  |        |        |        |     |       |  |
| 1633              | .6250  | 1.7500 | 1/2    | .025   | 8   | 1/4   |  |
| 1635              | .7500  |        |        |        |     |       |  |
| 1638              | .7500  | 2.0000 | 9/16   | .035   | 10  | 1/4   |  |
| 1640              | .8750  |        |        |        |     |       |  |
| 1641              | 1.0000 |        |        |        |     |       |  |
| 1652              | 1.1250 | 2.5000 | 5/8    | .035   | 10  | 5/16  |  |
| 1654              | 1.2500 |        |        |        |     |       |  |
| 1657              | 1.2500 | 2.5625 | 11/16  | .035   | 9   | 3/8   |  |

\*Maximum fillet on shaft or in housing which bearing corner will clear.

+ Width SC & DC = 5/16"

++ Width SC & DC = 11/32"

## Load Data

The indicated load ratings are based on 2500 hours average life. ( $L_{50}$ ) to determine the load ratings at 3500 and 5000 hours, 90 percent and 80 percent respectively, of the above ratings should be used.

| Basic<br>Bearing<br>Number   | Radial Capacity (Lbs.) |      |      |      |      |      |      |      | Limiting<br>Thrust<br>(Lbs.) |
|------------------------------|------------------------|------|------|------|------|------|------|------|------------------------------|
|                              | Revolutions Per Minute |      |      |      |      |      |      |      |                              |
|                              | 50                     | 100  | 300  | 500  | 1200 | 1800 | 2500 | 5000 |                              |
| 1602                         | 230                    | 185  | 130  | 110  | 80   | 70   | 65   | 50   | 42                           |
| 1603<br>1604                 | 380                    | 300  | 210  | 175  | 130  | 115  | 105  | 80   | 75                           |
| 1605<br>1606<br>1607         | 305                    | 245  | 170  | 140  | 105  | 95   | 85   | 65   | 65                           |
| 1614<br>1615<br>1616         | 530                    | 420  | 290  | 245  | 185  | 160  | 145  | 115  | 110                          |
| 1620<br>1621<br>1623         | 860                    | 690  | 475  | 400  | 300  | 260  | 235  | 185  | 200                          |
| 1628<br>1630<br>1633<br>1635 | 980                    | 780  | 540  | 460  | 340  | 300  | 265  | 210  | 225                          |
| 1638<br>1640<br>1641         | 1140                   | 905  | 630  | 530  | 395  | 345  | 310  | 245  | 280                          |
| 1652<br>1654                 | 1695                   | 1345 | 935  | 790  | 590  | 515  | 460  | 365  | 440                          |
| 1657                         | 2200                   | 1750 | 1215 | 1025 | 765  | 665  | 600  | 475  | 570                          |

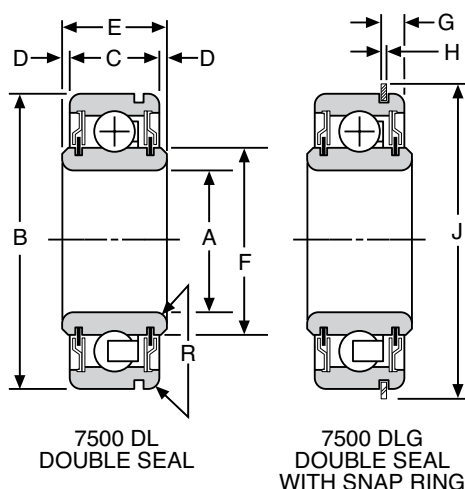
**NYLON BALL RETAINERS** (TN) standard on all sizes.

**SINGLE LIP CONTACT SEALS** effectively retain lubricant and exclude foreign material.

**GREASE PACKED** as standard on all "Double Sealed" Type DL and DLG.

**SPECIAL FEATURES** including dimensions, tolerances, single or without seals, steel retainers available on special order if quantity warrants.

**SNAP RINGS** included on all Type DLG sizes. Type DL sizes include snap ring groove but no snap rings furnished.



#### STANDARD TOLERANCES

|   | DIMENSIONS              | TOLERANCE                                |
|---|-------------------------|------------------------------------------|
| A | All                     | +0.0000 to -0.0005                       |
| B | 1.7500<br>2.0000-2.5625 | +0.0000 to -0.0005<br>+0.0000 to -0.0006 |
| C | All                     | +0.000 to -0.005                         |
| E | All                     | +0.000 to -0.005                         |
| G | All                     | ±0.005                                   |

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A                       | B                | C          | D            | E          | F              | G            | H            | J                 | R<br>Radius<br>* | Balls   |            | DL Series                  |                         | DLG Series                    |                         |
|-------------------------|------------------|------------|--------------|------------|----------------|--------------|--------------|-------------------|------------------|---------|------------|----------------------------|-------------------------|-------------------------------|-------------------------|
|                         |                  |            |              |            |                |              |              |                   |                  | No.     | Dia.       | Catalog<br>Number          | Item<br>Code            | Catalog<br>Number             | Item<br>Code            |
| .5000<br>.6250<br>.7500 | 1.7500           | 5/8        | 1/16         | 3/4        | .993           | .136         | .042         | 1-59/64           | .035             | 8       | 1/4        | 7508DL<br>7510DL<br>7512DL | 50587<br>50588<br>50589 | 7508DLG<br>7510DLG<br>7512DLG | 50581<br>50582<br>50583 |
| 1.0000<br>1.2500        | 2.0000<br>2.5625 | 5/8<br>3/4 | 1/16<br>1/16 | 3/4<br>7/8 | 1.290<br>1.631 | .136<br>.190 | .042<br>.065 | 2-5/32<br>2-49/64 | .035<br>.035     | 10<br>9 | 1/4<br>3/8 | 7516DL<br>7520DL           | 50591<br>50592          | 7516DLG<br>7520DLG            | 50585<br>50586          |

\*Maximum fillet on shaft or housing which bearing will clear.

For recommended shaft and housing fits, see engineering section, page 238.

#### Load Data

The indicated load ratings are based on 2500 hours average life ( $L_{50}$ ). To determine the load ratings at 3500 and 5000 hours, 90 percent and 80 percent respectively, of the above ratings should be used.

| Basic<br>Bearing<br>Number | Radial Capacity (Lbs.) |      |      |      |      |      |      |      |      |      | Max.<br>Thrust<br>Lbs. |
|----------------------------|------------------------|------|------|------|------|------|------|------|------|------|------------------------|
|                            | Revolutions Per Minute |      |      |      |      |      |      |      |      |      |                        |
|                            | 50                     | 100  | 300  | 500  | 1000 | 1200 | 1800 | 2500 | 3600 | 5000 |                        |
| 7508-7512                  | 1180                   | 940  | 650  | 550  | 435  | 410  | 360  | 320  | 285  | 255  | 340                    |
| 7516                       | 1365                   | 1085 | 750  | 635  | 505  | 475  | 415  | 370  | 330  | 295  | 375                    |
| 7520                       | 2640                   | 2100 | 1460 | 1230 | 975  | 915  | 805  | 715  | 635  | 570  | 740                    |

# Anti-Friction Bearings

## 7600 Series

### Radial Ball Bearings; Ground, Single Row; Extended Inner Race



**NYLON BALL RETAINERS** (TN) standard on all sizes.

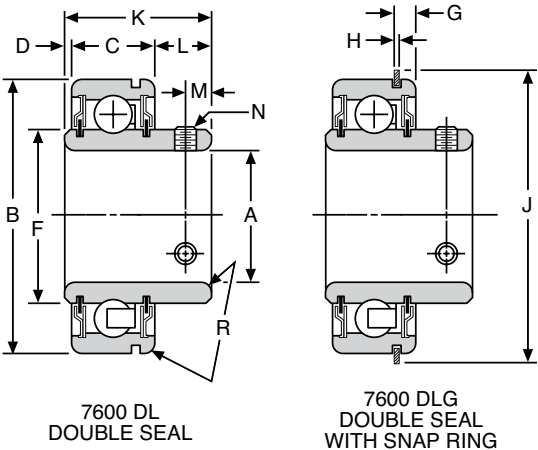
**SINGLE LIP CONTACT SEALS** effectively retain lubricant and exclude foreign material.

**GREASE PACKED** as standard on all “Double Sealed” Type DL and DLG.

**SPECIAL FEATURES** including dimensions, tolerances, single or without seals, steel retainers available on special order if quantity warrants.

**SNAP RINGS** included on all Type DLG sizes. Type DL sizes include snap ring groove but no snap rings furnished.

| STANDARD TOLERANCES |                         |                                      |
|---------------------|-------------------------|--------------------------------------|
| DIMENSIONS          |                         | TOLERANCE                            |
| A                   | All                     | +.0008 to -.0000                     |
| B                   | 1.7500<br>2.0000-2.5625 | +.0000 to -.0005<br>+.0000 to -.0006 |
| C                   | All                     | +.000 to -.005                       |
| E                   | All                     | +.000 to -.005                       |
| G                   | All                     | ±.005                                |
| K                   | All                     | +.000 to -.005                       |



### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A              | B      | C   | D    | F     | G    | H    | J       | K     | L    | M    | N      | R*<br>Radius<br>* | Balls |      | DL Series         |                | DLG Series         |                |
|----------------|--------|-----|------|-------|------|------|---------|-------|------|------|--------|-------------------|-------|------|-------------------|----------------|--------------------|----------------|
|                |        |     |      |       |      |      |         |       |      |      |        |                   | No.   | Dia. | Catalog<br>Number | Item<br>Code   | Catalog<br>Number  | Item<br>Code   |
| .6250<br>.7500 | 1.7500 | 5/8 | 1/16 | .993  | .136 | .042 | 1-59/64 | 1.092 | .405 | .233 | 10-32  | .035              | 8     | 1/4  | 7610DL<br>7612DL  | 50600<br>50601 | 7610DLG<br>7612DLG | 50594<br>50595 |
| 1.0000         | 2.0000 | 5/8 | 1/16 | 1.290 | .136 | .042 | 2-5/32  | 1.179 | .492 | .261 | 10-32  | .035              | 10    | 1/4  | 7616DL            | 50603          | 7616DLG            | 50597          |
| 1.2500         | 2.5625 | 3/4 | 1/16 | 1.631 | .190 | .065 | 2-49/64 | 1.417 | .605 | .261 | 1/4-28 | .035              | 9     | 3/8  | 7620DL            | 50604          | 7620DLG            | 50598          |

\*Maximum fillet on shaft or housing which bearing will clear.  
For recommended shaft and housing fits, see engineering section, page 238.

### Load Data

The indicated load ratings are based on 2500 hours average life (L<sub>50</sub>). To determine the load ratings at 3500 and 5000 hours, 90 percent and 80 percent respectively, of the above ratings should be used.

| Basic<br>Bearing<br>Number | Radial Capacity (Lbs.) |      |      |      |      |      |      |      |      |      | Max.<br><br>(Lbs.) |        |
|----------------------------|------------------------|------|------|------|------|------|------|------|------|------|--------------------|--------|
|                            | Revolutions Per Minute |      |      |      |      |      |      |      |      |      |                    | Thrust |
|                            | 50                     | 100  | 300  | 500  | 1000 | 1200 | 1800 | 2500 | 3600 | 5000 |                    |        |
| 7610-7612                  | 1180                   | 940  | 650  | 550  | 435  | 410  | 360  | 320  | 285  | 255  | 340                |        |
| 7616                       | 1365                   | 1085 | 750  | 635  | 505  | 475  | 415  | 370  | 330  | 295  | 375                |        |
| 7620                       | 2640                   | 2100 | 1460 | 1230 | 975  | 915  | 805  | 715  | 635  | 570  | 740                |        |

# Anti-Friction Bearings

## 6900 Series

### Radial Ball Bearings; Ground, Single Row; Flange Mounted

**AVAILABLE AS COMPLETE ASSEMBLY, BEARING only or HOUSING only.**

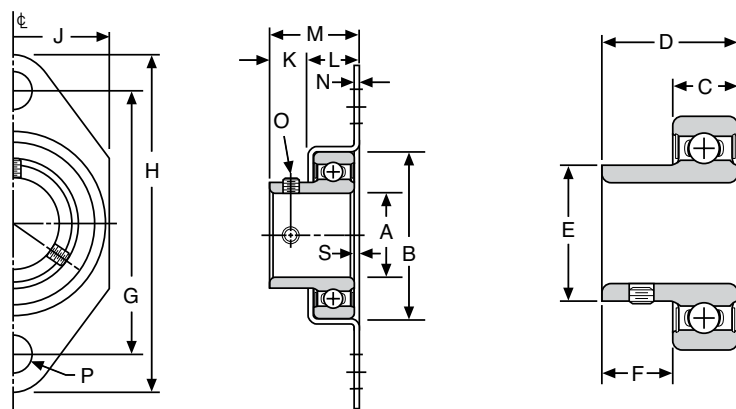
**INNER RACE** includes 2 setscrews.

**GREASE PACKED, COMPOSITION SEALED.**

**NYLON RETAINERS (TN)** furnished as standard.



F



ASSEMBLY

BEARING ONLY

#### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE    |
|------------|--------------|
| A          | All          |
| B          | .9062-1.6250 |
| C          | All          |

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A               | B      | C    | D      | E     | F   | G<br>Bolt<br>Ctrs. | H     | J<br>+ | K     | L     | M     | N    | O               | P    | S    | Assembly*         |                | Bearing Only      |                |
|-----------------|--------|------|--------|-------|-----|--------------------|-------|--------|-------|-------|-------|------|-----------------|------|------|-------------------|----------------|-------------------|----------------|
|                 |        |      |        |       |     |                    |       |        |       |       |       |      |                 |      |      | Catalog<br>Number | Item<br>Code   | Catalog<br>Number | Item<br>Code   |
| .3750           | .9062  | 5/16 | 11/16  | .555  | 3/8 | 1-7/8              | 2-1/2 | 1-1/8  | 11/32 | 11/32 | 11/16 | .035 | 8-32            | 5/16 | .000 | 6906              | 50572          | 6906B             | 50571          |
| .5000<br>.6250  | 1.6250 | 1/2  | 1      | .995  | 1/2 | 2-7/8              | 3-3/4 | 1-7/8  | 7/16  | 11/16 | 1     | .062 | 1/4-28          | 7/16 | .010 | 6908<br>6910      | 50574<br>50576 | 6908B<br>6910B    | 50573<br>50575 |
| .7500<br>1.0000 | 2.0000 | 9/16 | 1-1/16 | 1.293 | 1/2 | 3-1/4              | 4-1/8 | 2-1/4  | 7/16  | 11/16 | 1-1/8 | .062 | 1/4-28<br>10-32 | 7/16 | 1/16 | 6912<br>6916      | 50578<br>50580 | 6912B<br>6916B    | 50577<br>50579 |

\*Housings do not have Catalog Numbers. To order specify bearing size-housing. Example: 6906-Housing.  
+ J dimension is the overall width.

| Basic<br>Bearing<br>Number | Radial Capacity (Lbs.)<br>Revolutions Per Minute |     |     |      |
|----------------------------|--------------------------------------------------|-----|-----|------|
|                            | 50                                               | 100 | 500 | 1800 |
| 6906                       | 305                                              | 245 | 140 | 95   |
| 6908-6910                  | 735                                              | 585 | 340 | 225  |
| 6912                       | 850                                              | 675 | 395 | 260  |
| 6916                       | 1140                                             | 905 | 530 | 345  |

#### Load Data

The indicated load ratings are based on 2500 hours average life ( $L_{50}$ ). To determine the load ratings at 3500 and 5000 hours, 90 percent and 80 percent respectively, of the above ratings should be used.

# Anti-Friction Bearings

## 3000 Series

### Radial Ball Bearings; Semi-Ground, Single Row



**LOW COST INCH DIMENSIONAL BEARINGS** similar to 1600 Series in construction and dimensions and suitable for speeds up to 2500 R.P.M.

**NYLON BALL RETAINERS** (TN) furnished as standard. Steel retainers (J) available on special production order.

**GREASE PACKED** as standard on Types DC and DS. Types SC, SS and NS can be grease packed on special order.

**NYLON SEALS** more effectively retain lubricant and exclude foreign matter.

**SPECIAL FEATURES** including dimensions, tolerances, etc. available on special order.

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore | Double Shield  |           | Double Sealed  |           |
|------|----------------|-----------|----------------|-----------|
|      | Catalog Number | Item Code | Catalog Number | Item Code |
| 1/4  | 3002DS         | 50768     | 3002DC         | 50749     |
| 3/8  | 3004DS         | 50770     | —              | —         |
| 3/8  | 3014DS         | 50774     | 3014DC         | 50755     |
| 1/2  | 3016DS         | 50776     | 3016DC         | 50757     |
| 1/2  | 3021DS         | 50778     | 3021DC         | 50758     |
| 5/8  | 3023DS         | 50779     | 3023DC         | 50759     |
| 5/8  | 3028DS         | 50780     | 3028DC         | 50760     |
| 3/4  | 3030DS         | 50781     | 3030DC         | 50761     |
| 3/4  | 3035DS         | 50783     | 3035DC         | 50763     |
| 1    | 3041DS         | 50786     | 3041DC         | 50766     |

### Seal and Shield Arrangements

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| DOUBLE<br>SEALED                                                                    | DOUBLE<br>SHIELD                                                                    | SINGLE<br>SEAL                                                                      | SINGLE<br>SHIELD                                                                    | NO<br>SHIELDS                                                                       |
| DC                                                                                  | DS                                                                                  | SC                                                                                  | SS                                                                                  | NS                                                                                  |

TYPES SC, SS and NS are available via special order only.

# Anti-Friction Bearings

## 3000 Series

### Radial Ball Bearings; Semi-Ground, Single Row

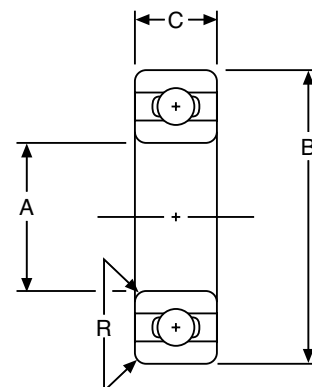
#### ALL DIMENSIONS IN INCHES

| Basic Bearing Number | A   | B     | C      | R *<br>Radius | Balls |       |
|----------------------|-----|-------|--------|---------------|-------|-------|
|                      |     |       |        |               | No.   | Dia.  |
| 3002                 | 1/4 | 11/16 | 1/4+   | .012          | 6     | 1/8   |
| 3004                 | 3/8 | 7/8   | 9/32++ | .012          | 7     | 5/32  |
| 3014                 | 3/8 | 1-1/8 | 3/8    | .025          | 7     | 3/16  |
| 3016                 | 1/2 |       |        |               |       |       |
| 3021                 | 1/2 | 1-3/8 | 7/16   | .025          | 8     | 15/64 |
| 3023                 | 5/8 |       |        |               |       |       |
| 3028                 | 5/8 | 1-5/8 | 1/2    | .025          | 8     | 1/4   |
| 3030                 | 3/4 |       |        |               |       |       |
| 3035                 | 3/4 | 1-3/4 | 1/2    | .025          | 8     | 1/4   |
| 3040                 | 7/8 | 2     | 9/16   | .035          | 10    | 1/4   |
| 3041                 | 1   |       |        |               |       |       |

\*Maximum fillet on shaft or in housing which bearing corner will clear.

+ Width SC & DC = 5/16"

++ Width SC = 11/32"



#### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE        |
|------------|------------------|
| A          | All              |
| B          | 11/16-1-3/4<br>2 |
| C          | All              |

For recommended shaft and housing fits, see engineering section, page 244.

| Basic<br>Bearing<br>Number | Radial Capacity (Lbs.) |     |     |      |      | Limiting<br>Thrust<br>(Lbs.) |
|----------------------------|------------------------|-----|-----|------|------|------------------------------|
|                            | Revolutions Per Minute |     |     |      |      |                              |
|                            | 50                     | 100 | 500 | 1800 | 2500 |                              |
| 3002                       | 150                    | 120 | 70  | 45   | 40   | 30                           |
| 3004                       | 250                    | 200 | 120 | 80   | 70   | 50                           |
| 3014<br>3016               | 350                    | 280 | 165 | 105  | 95   | 75                           |
| 3021<br>3023               | 575                    | 460 | 270 | 175  | 155  | 135                          |
| 3028<br>3030<br>3035       | 650                    | 520 | 305 | 200  | 180  | 150                          |
| 3040<br>3041               | 760                    | 605 | 355 | 230  | 205  | 185                          |

#### Load Data

Load ratings are provided only as a guide for bearing selection and are not to be used for life calculation.

# Anti-Friction Bearings

## Flanged 400F Series

Radial Ball Bearings; Unground, Single Row



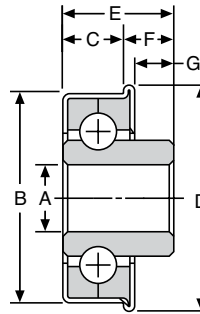
### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| A          | All | +.005 to -.000 |
| B          | All | +.005 to -.000 |
| C          | All | ±.010          |

**FULL BALL TYPE (V)** without retainer.

**SUITABLE** for **SPEEDS** up to 1200 RPM.

**SOFT STEEL BAND** on O.D. permits bearing to be pressed in a housing without the necessity of close housing tolerances.



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

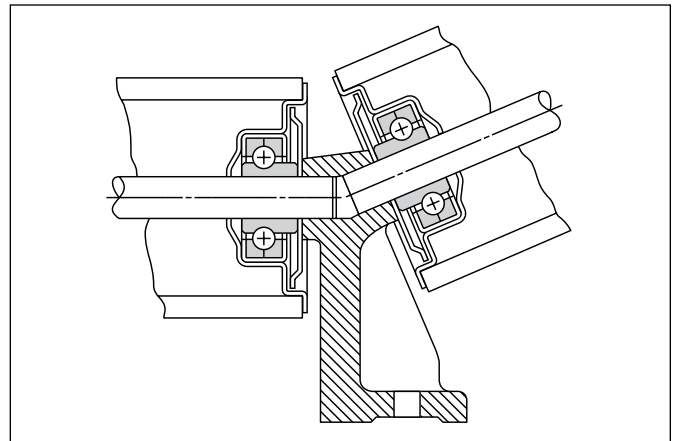
| A   | B     | C     | D       | E     | F    | G    | Balls  |      | Catalog Number | Item Code |
|-----|-------|-------|---------|-------|------|------|--------|------|----------------|-----------|
|     |       |       |         |       |      |      | Number | Dia. |                |           |
| 1/4 | 11/16 | 13/65 | 3/4     | 1/4   | 3/64 | 0    | 10     | 1/8  | 5561           | 50566     |
| 3/8 | 29/32 | 17/64 | 1       | .350  | .088 | .048 | 15     | 1/8  | 5543           | 50565     |
| 1/2 | 1-1/8 | .305  | 1-1/4   | 7/16  | .132 | 1/16 | 18     | 1/8  | 5491           | 50564     |
| 1/2 | 1-3/8 | 11/32 | 1-1/2   | .475  | 1/8  | 1/32 | 15     | 3/16 | 5881           | 50569     |
| 5/8 | 1-3/8 | 11/32 | 1-1/2   | .475  | 1/8  | 1/32 | 15     | 3/16 | 5273           | 50559     |
| 1/2 | 1-1/2 | 3/8   | 1-21/32 | 11/16 | .320 | 1/4  | 11     | 1/4  | 5327           | 50561     |
| 3/4 | 1-3/4 | .462  | 1-15/16 | 37/64 | 1/8  | 1/64 | 14     | 1/4  | 5891           | 50570     |
| 3/4 | 2     | 13/32 | 2-1/8   | 9/16  | 5/32 | 1/16 | 17     | 1/4  | 5875           | 50568     |
| 1   | 2     | 13/32 | 2-1/8   | 5/8   | 7/32 | 1/8  | 17     | 1/4  | 5418           | 50563     |

### Load Data

Load ratings are provided only as a guide for bearing selection and are not to be used for life calculation.

| Basic Bearing Number | Radial Capacity (Lbs.) |     |     |      |
|----------------------|------------------------|-----|-----|------|
|                      | Revolutions Per Minute |     |     |      |
|                      | 50                     | 200 | 600 | 1200 |
| 5561                 | 110                    | 53  | 30  | 21   |
| 5543                 | 167                    | 80  | 45  | 32   |
| 5368-5491            | 200                    | 96  | 54  | 38   |
| 5881-5273            | 375                    | 180 | 101 | 71   |
| 5327                 | 492                    | 236 | 132 | 92   |
| 5891                 | 625                    | 300 | 168 | 177  |
| 5875-5418            | 757                    | 362 | 204 | 142  |

### Typical Application Flanged Series



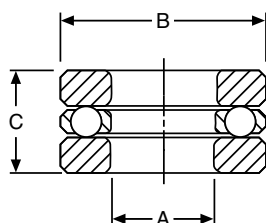
**Hardened Alloy Steel — AO Series**  
**Hardened Stainless Steel — SAO Series**  
**FOR LIGHT LOADS**

**HIGH QUALITY HARDENED STEEL BALLS**, retained in a nylon cage.

**HARDENED THRUST WASHERS**, are ground both sides to provide smooth, flat, parallel ball raceway surfaces.

**QUALITY and NUMBER OF BALLS** assure high load carrying capacity.

**NYLON RETAINER** assures minimum frictional losses.



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| A*         | All | +.002 to +.007 |
| B          | All | +.000 to -.005 |
| C          | All | +.000 to -.010 |

\*AO/SAO 16 +.002 to +.010

**ALL DIMENSIONS IN INCHES**  
**ORDER BY ITEM CODE (2 WASHERS AND 1 NYLON CAGE)**

| A    | B     | C    | Balls  |          | Basic Bearing Number | AO Series Alloy |            | SAO Series Stainless Steel |            |
|------|-------|------|--------|----------|----------------------|-----------------|------------|----------------------------|------------|
|      |       |      | Number | Diameter |                      | Washer          | Nylon Cage | Washer                     | Nylon Cage |
| 3/16 | 7/16  | 3/16 | 9      | 1/16     | AO/SAO1              | 06724           | 56807      | 06760                      | 56813      |
| 1/4  | 9/16  | 7/32 | 10     | 3/32     | AO/SAO5              | 06726           | 56808      | 06762                      | 56814      |
| 5/16 | 5/8   | 1/4  | 10     | 3/32     | AO/SAO8              | 06728           | 56809      | 06764                      | 56815      |
| 3/8  | 11/16 | 9/32 | 12     | 3/32     | AO/SAO10             | 06730           | 56810      | 06766                      | 56816      |
| 1/2  | 7/8   | 3/8  | 10     | 1/8      | AO/SAO16             | 06734           | 56812      | 06770                      | 56818      |

#### Load Data

The indicated load ratings are based on 2500 hours average life ( $L_{50}$ ). To determine the load ratings at 3500 and 5000 hours, 90 percent and 80 percent respectively, of the above ratings should be used.

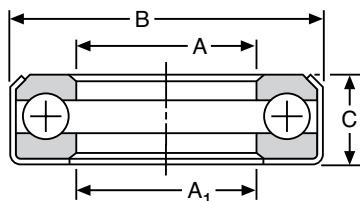
| Basic Bearing Number | Thrust Capacity (Lbs.) |     |     |      |
|----------------------|------------------------|-----|-----|------|
|                      | Revolutions Per Minute |     |     |      |
|                      | 50                     | 100 | 500 | 1000 |
| AO/SAO1              | 30                     | 25  | 14  | 11   |
| AO/SAO5              | 64                     | 56  | 31  | 25   |
| AO/SAO8              | 68                     | 60  | 34  | 27   |
| AO/SAO10             | 85                     | 72  | 42  | 32   |
| AO/SAO16             | 250                    | 125 | 70  | 58   |

# Anti-Friction Bearings

## 600 Series

### Thrust Ball Bearings; Unground, Banded

F



#### STANDARD TOLERANCES

| DIMENSIONS     |     | TOLERANCE      |
|----------------|-----|----------------|
| A              | All | -.000 to +.010 |
| A <sub>1</sub> | All | ±.010          |
| B              | All | ±.010          |
| C              | All | ±.010          |

FULL BALL TYPE (M) without retainer.

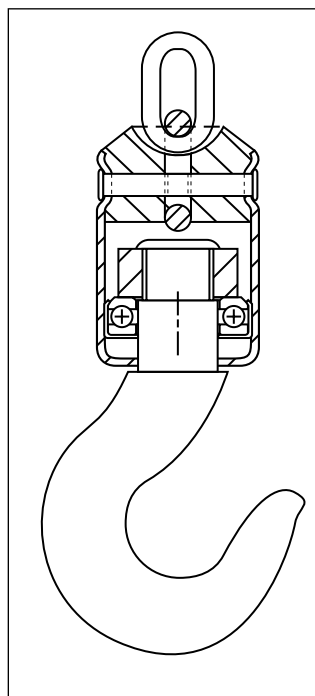
#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| A     | A <sub>1</sub> | B       | C    | Balls |      | Catalog Number | Item Code |
|-------|----------------|---------|------|-------|------|----------------|-----------|
|       |                |         |      | No.   | Dia. |                |           |
| .250  | .275           | 27/32   | .333 | 10    | 5/32 | 601            | 50537     |
| .375  | .400           | 1-3/64  | .359 | 14    | 5/32 | 602            | 50538     |
| .453  | .478           | 55/64   | .281 | 15    | 1/8  | 602-3/4        | 50540     |
| .500  | .525           | 1-17/64 | .437 | 10    | 1/4  | 603            | 50541     |
| .500  | .525           | 1       | .344 | 12    | 3/16 | 603-1/4        | 50542     |
| .625  | .656           | 1-1/8   | .344 | 16    | 5/32 | 605            | 50543     |
| .625  | .656           | 1-27/64 | .456 | 12    | 1/4  | 606            | 50544     |
| .750  | .775           | 1-21/32 | .545 | 15    | 1/4  | 607            | 50545     |
| .875  | .900           | 1-57/64 | .594 | 17    | 1/4  | 608            | 50547     |
| 1.000 | 1.075          | 2       | .640 | 12    | 3/8  | 609            | 50548     |
| 1.000 | 1.031          | 1-31/32 | .625 | 18    | 1/4  | 610            | 50549     |
| 1.016 | 1.031          | 1-3/4   | .625 | 16    | 1/4  | 610-1/4        | 50550     |
| 1.063 | 1.094          | 1-31/32 | .625 | 18    | 1/4  | 611            | 50551     |
| 1.125 | 1.150          | 2-3/32  | .625 | 19    | 1/4  | 613            | 50552     |
| 1.457 | 1.462          | 2-15/32 | .625 | 23    | 1/4  | 619            | 50555     |
| 1.500 | 1.525          | 2-19/32 | .625 | 25    | 1/4  | 621            | 50556     |

## Load Data

Load ratings are provided only as a guide for bearing selection and are not to be used for life calculation.

| Bearing<br>Number | Thrust Capacity (Lbs.) |      |      |     |     |      | Crane<br>Hook |
|-------------------|------------------------|------|------|-----|-----|------|---------------|
|                   | Revolutions Per Minute |      |      |     |     |      |               |
|                   | 10                     | 50   | 100  | 250 | 500 | 1000 |               |
| 601               | 304                    | 246  | 182  | 98  | 71  | 51   | 912           |
| 602               | 426                    | 344  | 254  | 138 | 100 | 71   | 1277          |
| 602-3/4           | 292                    | 236  | 174  | 94  | 68  | 48   | 873           |
| 603               | 780                    | 630  | 465  | 252 | 182 | 129  | 2325          |
| 603-1/4           | 526                    | 425  | 314  | 170 | 123 | 87   | 1570          |
| 605               | 487                    | 394  | 291  | 158 | 114 | 81   | 1460          |
| 606               | 936                    | 750  | 558  | 302 | 218 | 155  | 2790          |
| 607               | 1170                   | 945  | 698  | 378 | 273 | 194  | 3490          |
| 608               | 1326                   | 1071 | 791  | 428 | 309 | 220  | 3960          |
| 609               | 1706                   | 1378 | 1017 | 551 | 398 | 284  | 5080          |
| 610               | 1404                   | 1134 | 837  | 454 | 328 | 233  | 4190          |
| 610-1/4           | 1248                   | 1008 | 744  | 403 | 291 | 207  | 3730          |
| 611               | 1404                   | 1134 | 837  | 454 | 328 | 233  | 4190          |
| 613               | 1482                   | 1197 | 883  | 479 | 346 | 246  | 4420          |
| 619               | 1794                   | 1449 | 1069 | 579 | 419 | 298  | 5350          |
| 621               | 1950                   | 1575 | 1162 | 630 | 455 | 324  | 5820          |



#### Crane Hook Swivel Application Bearing No. 605

This standard product provided the exact bearing needed by this crane hoist manufacturer. An unground bearing provided the economy, while a full ball complement provided the required high thrust-load capacity. The bearing features a bonded non-separable assembly that provides easy installation and lubrication.

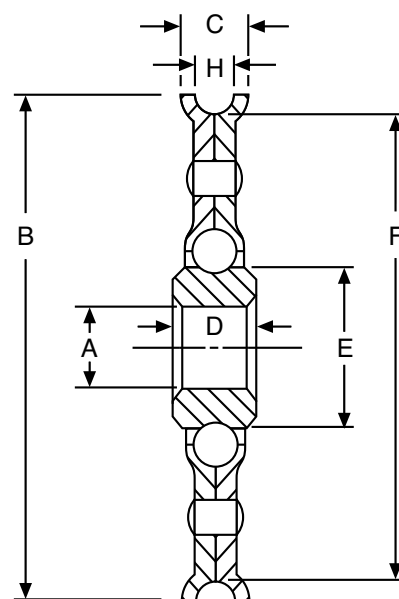
Special platings and stainless steel balls are readily available as a cost-effective way to fight corrosion and increase service life.

NR 2000 Series are unground, of pressed steel construction with hardened raceways. For rope, wire rope, etc. and special uses requiring a semi-circular tread.

**ALL DIMENSIONS IN INCHES**  
**ORDER BY CATALOG NUMBER OR ITEM CODE**

|      |                  |                |              |            |                  |                |                  |                |
|------|------------------|----------------|--------------|------------|------------------|----------------|------------------|----------------|
| .166 | 1-1/4<br>1-21/32 | 9/32<br>5/16   | 7/16<br>7/16 | 3/8<br>3/8 | 1<br>1-11/32     | 7/32<br>7/32   | NR2000<br>NR2006 | 67135<br>67136 |
| 1/4  | 2-7/8<br>3-1/16  | 17/32<br>37/64 | 1/2<br>1/2   | 1<br>1     | 2-9/16<br>2-9/16 | 13/32<br>13/32 | NR2008<br>NR2010 | 67137<br>67138 |
| 5/16 | 3                | 19/32          | 3/4          | 1          | 2-5/8            | 1/2            | NR2011           | 67139          |
| 3/8  | 2-3/4            | 1/2            | 7/16         | 1          | 2-3/8            | 3/8            | NR2012           | 67140          |
|      | 2-3/4            | 1/2            | 9/16         | 1          | 2-3/8            | 3/8            | NR2012-1         | 67141          |
|      | 2-3/4            | 9/16           | 7/16         | 1          | 2-3/8            | 7/16           | NR2013           | 67142          |
|      | 2-7/8            | 17/32          | 1/2          | 1          | 2-9/16           | 13/32          | NR2014           | 67143          |
|      | 3                | 1/2            | 11/16        | 1          | 2-3/8            | 3/8            | NR2015           | 67144          |
|      | 3-1/16           | 37/64          | 1/2          | 1          | 2-9/16           | 13/32          | NR2016           | 67145          |
|      | 3-5/16           | 3/4            | 13/16        | 13/16      | 2-3/8            | 7/16           | NR2017           | 67146          |
| 1/2  | 4-1/16           | 17/32          | 3/4          | 1          | 3-9/16           | 13/32          | NR2024           | 67149          |
|      | 2-7/8            | 11/16          | 13/16        | 13/16      | 2-1/4            | 17/32          | NR5378           | 67267          |
| 5/8  | 4-1/16           | 17/32          | 3/4          | 1          | 3-9/16           | 13/32          | NR2025           | 67150          |
|      | 2-3/4            | 7/16           | 9/16         | 13/16      | 2-3/16           | 5/16           | NR2018           | 67147          |
| 1    | 3                | 19/32          | 3/4          | 1          | 2-5/8            | 1/2            | NR2020*          | 67148          |
|      | 7-1/8            | 13/16          | 5/8          | 1-3/8      | 6                | 17/32          | NR5623           | 67275          |

\* Inner race "D" dimension not centered.



### Load Data

Load ratings are provided only as a guide for bearing selection and are not to be used for life calculation.

#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| A          | All | +.005 to -.000 |

|                                      |     |     |     |     |     |     |    |      |
|--------------------------------------|-----|-----|-----|-----|-----|-----|----|------|
| NR2000<br>NR2006                     | 88  | 62  | 42  | 34  | 24  | 19  | 10 | 1/8  |
| NR2008<br>NR2010                     | 300 | 210 | 144 | 116 | 81  | 66  | 14 | 1/4  |
| NR2011                               | 293 | 208 | 146 | 121 | 82  | 70  | 14 | 1/4  |
| NR2012<br>NR2012-1                   | 300 | 210 | 144 | 116 | 81  | 66  | 14 | 1/4  |
| NR2013                               | 230 | 164 | 115 | 95  | 65  | 55  | 14 | 1/4  |
| NR2014<br>NR2015<br>NR2016<br>NR2017 | 300 | 210 | 144 | 116 | 81  | 66  | 14 | 1/4  |
|                                      |     |     |     |     |     |     | 15 | 3/16 |
|                                      |     |     |     |     |     |     | 14 | 1/4  |
|                                      |     |     |     |     |     |     | 15 | 3/16 |
| NR2024<br>NR5378<br>NR2025           | 471 | 334 | 235 | 194 | 132 | 112 | 14 | 1/4  |
|                                      |     |     |     |     |     |     | 15 | 3/16 |
|                                      |     |     |     |     |     |     | 14 | 1/4  |
| NR2018                               | 300 | 210 | 144 | 116 | 81  | 66  | 15 | 3/16 |
| NR2020<br>NR5623                     | 293 | 208 | 146 | 121 | 82  | 70  | 19 | 1/4  |

# Anti-Friction Bearings

## 2100 Series

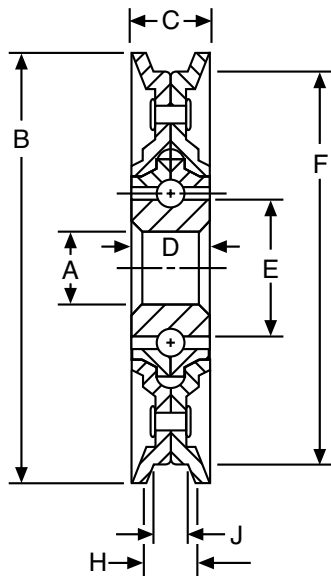
### Ball Bearings Sheaves; Unground



NR 2100 Series are unground, of pressed steel construction with hardened raceways. For chain or belt application.

ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| A    | B       | C     | D     | E     | F       | H     | J     | Catalog No. | Item Code |
|------|---------|-------|-------|-------|---------|-------|-------|-------------|-----------|
| .372 | 2-1/4   | 19/32 | 7/8   | 9/16  | 1-5/8   | 15/32 | 15/32 | NR2105      | 67151     |
| 3/8  | 2-5/8   | 1/2   | 5/8   | 13/16 | 2       | 3/8   | 3/8   | NR2106      | 67152     |
|      | 3-1/4   | 19/32 | 11/16 | 1     | 2-11/16 | 15/32 | 7/16  | NR2111-1    | 67154     |
|      | 3-3/8   | 19/32 | 11/16 | 1     | 2-11/16 | 15/32 | 7/16  | NR2111      | 67153     |
| 1/2  | 3-3/8   | 19/32 | 7/8   | 1     | 2-11/16 | 15/32 | 7/16  | NR2112      | 67155     |
|      | 3       | 5/8   | 15/16 | 1     | 2-13/16 | 1/2   | 1/2   | NR2113      | 67156     |
|      | 4-15/16 | 3/4   | 7/8   | 1     | 4       | 5/8   | 9/16  | NR2118      | 67157     |
| 5/8  | 4-7/16  | 5/8   | 3/4   | 1     | 3-7/8   | 27/64 | 27/64 | NR2120      | 67158     |



### Load Data

Load ratings are provided only as a guide for bearing selection and are not to be used for life calculation.

| Sheave<br>Number                       | Radial Load Capacity in Pounds |     |     |     |     |     | Balls |       |
|----------------------------------------|--------------------------------|-----|-----|-----|-----|-----|-------|-------|
|                                        | Revolutions Per Minute         |     |     |     |     |     |       |       |
|                                        | 50                             | 100 | 200 | 300 | 600 | 900 | No.   | Diam. |
| NR2105                                 | 220                            | 153 | 119 | 85  | 59  | 48  | 11    | 3/16  |
| NR2106                                 | 356                            | 247 | 170 | 137 | 96  | 78  | 10    | 1/4   |
| NR2111-1<br>NR2111<br>NR2112<br>NR2113 | 327                            | 232 | 163 | 135 | 92  | 78  | 10    | 5/16  |
| NR2118                                 | 500                            | 344 | 240 | 192 | 134 | 109 | 14    | 1/4   |
| NR2120                                 | 293                            | 208 | 146 | 121 | 82  | 70  | 14    | 1/4   |

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE      |
|------------|----------------|
| A          | All            |
|            | +.005 to -.000 |

# Anti-Friction Bearings

## 2200 Series

### Ball Bearings Wheels; Unground

The NR 2200 series pressed steel, ball bearing type wheels conform to the drawings showing their tread types. NR2201, 2204 and 2205 have ball races and outer housing carefully hardened. NR 2203 and 2206 have hardened races and unhardened outer housings.

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

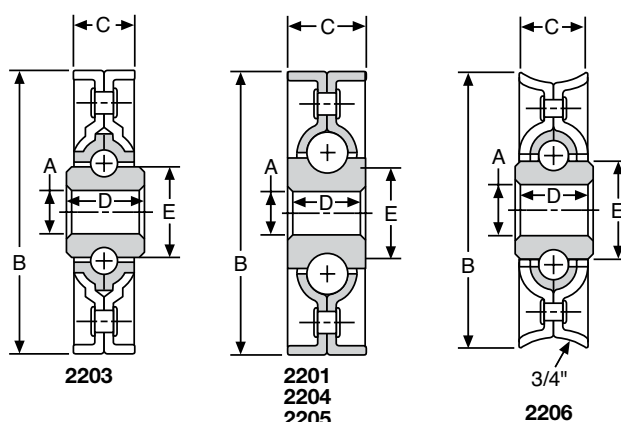
| A     | B     | C     | D     | E     | R   | Catalog No. | Item Code |
|-------|-------|-------|-------|-------|-----|-------------|-----------|
| 1/4   | 1.400 | 1/2   | 7/16  | 9/16  | —   | NR2201      | 67159     |
| 3/8   | 2-1/8 | 1/2   | 5/8   | 13/16 | —   | NR2203      | 67160     |
| 3/8   | 2-1/2 | 11/16 | 11/16 | 1     | —   | NR2204      | 67161     |
| 17/32 | 2-1/2 | 11/16 | 11/16 | 1     | —   | NR2205      | 67162     |
| 1/2   | 2-3/4 | 9/16  | 11/16 | 1     | 3/4 | NR2206      | 67163     |

#### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE      |
|------------|----------------|
| A          | All            |
|            | +.005 to -.000 |

#### LOAD DATA\*

| Wheel Number | Radial Load Capacity in Pounds |     |     |     |     |     | Balls |       |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-------|-------|
|              | Revolutions Per Minute         |     |     |     |     |     | No.   | Diam. |
|              | 50                             | 100 | 200 | 300 | 600 | 900 |       |       |
| NR2201       | 91                             | 66  | 47  | 37  | 25  | 23  | 15    | 1/8   |
| NR2203       | 230                            | 164 | 115 | 95  | 65  | 55  | 15    | 3/16  |
| NR2204       | 136                            | 100 | 71  | 56  | 38  | 34  | 14    | 1/4   |
| NR2205       | 136                            | 100 | 71  | 56  | 38  | 34  | 14    | 1/4   |
| NR2206       | 327                            | 232 | 163 | 135 | 92  | 78  | 14    | 1/4   |



## Flanged 2300 Series Unground

The NR 2300 Series pressed steel, ball bearing type wheels are advantageous for application to wooden rollers or steel tubes, pipes, etc. The flange serves as an economical method of locating the roller in its nest. The ball races are carefully hardened while the outer housing is unhardened.

#### ALL DIMENSIONS IN INCHES ORDER BY CATALOG NUMBER OR ITEM CODE

| 3/8 | 2     | 1/2  | 11/16 | 9/16 | 1.875 | 1.875 | 7/16 | NR2308  | 67165 |
|-----|-------|------|-------|------|-------|-------|------|---------|-------|
| 3/8 | 2-1/4 | 9/16 | 3/4   | 9/16 | 1.625 | 1.625 | 1/2  | NR2312+ | 67166 |
| 1/2 | 3     | 9/16 | 15/16 | 1    | 2.781 | 2.810 | 1/2  | NR2324  | 67167 |

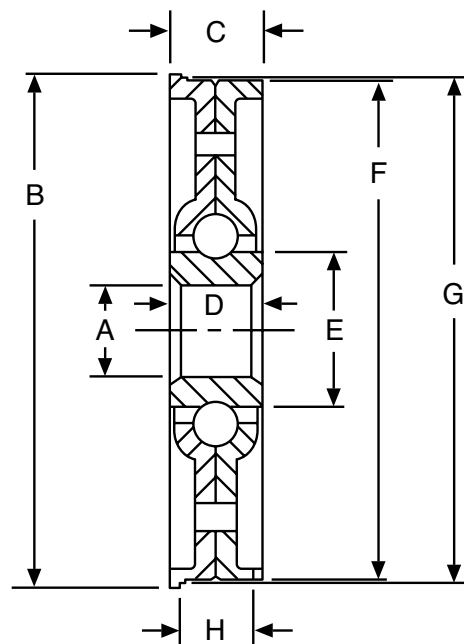
+Screw holes in Flange, for application to Wood Rollers.

#### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE      |
|------------|----------------|
| A          | All            |
|            | +.005 to -.000 |

#### LOAD DATA\*

| Wheel Number | Radial Load Capacity in Pounds |     |     |     |     |     | Balls |       |
|--------------|--------------------------------|-----|-----|-----|-----|-----|-------|-------|
|              | Revolutions Per Minute         |     |     |     |     |     | No.   | Diam. |
|              | 50                             | 100 | 200 | 300 | 600 | 900 |       |       |
| NR2308       | 77                             | 56  | 40  | 32  | 21  | 19  | 15    | 1/8   |
| NR2312       | 220                            | 153 | 119 | 85  | 59  | 48  | 15    | 1/8   |
| NR2324       | 327                            | 232 | 163 | 135 | 92  | 78  | 14    | 1/4   |

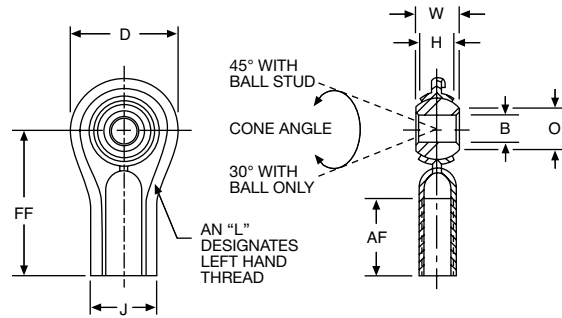
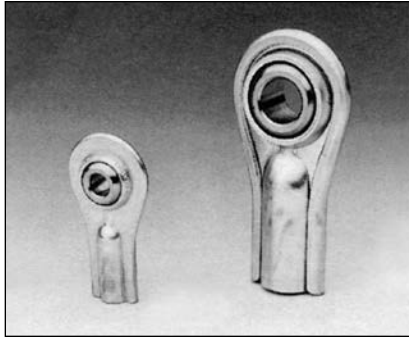


\*Load ratings are provided only as a guide for bearing selection and are not to be used for life calculation.

# Self-Aligning Bearings

## KF Female Series

### Rod Ends – Economical



#### SPECIFICATIONS

|              |                                                                          |
|--------------|--------------------------------------------------------------------------|
| Outer Member | Low carbon steel stamping plated for corrosion resistance                |
| Ball         | Low carbon steel, case hardened plated for corrosion resistance and wear |

#### ALL DIMENSIONS IN INCHES

| Bore B             | W     | H    | AF    | FF    | D     | J     | O    | Ball Dia. | Thread      |
|--------------------|-------|------|-------|-------|-------|-------|------|-----------|-------------|
| +0.0025<br>-0.0005 | ±.005 | REF  | ±.060 | ±.030 | ±.030 | REF   | REF  | REF       | Class UNF-2 |
| .1900              | .312  | .250 | .500  | 1.062 | .750  | .450  | .296 | .430      | 10-32       |
| .2500              | .375  | .287 | .687  | 1.312 | .850  | .515  | .346 | .510      | 1/4-28      |
| .3125              | .437  | .305 | .687  | 1.375 | 1.015 | .590  | .438 | .618      | 5/16-24     |
| .3750              | .500  | .400 | .875  | 1.625 | 1.125 | .725  | .508 | .713      | 3/8-24      |
| .5000              | .625  | .500 | 1.125 | 2.125 | 1.470 | 1.010 | .690 | .931      | 1/2-20      |

#### LOAD DATA

| Basic Bearing Number | Ultimate Static Load (Radial) Rating (Lbs.) | Approx. Wt. (Lbs.) |
|----------------------|---------------------------------------------|--------------------|
| 3                    | 1,000                                       | .02                |
| 4                    | 1,900                                       | .04                |
| 5                    | 2,300                                       | .07                |
| 6                    | 3,000                                       | .11                |
| 8                    | 6,100                                       | .23                |

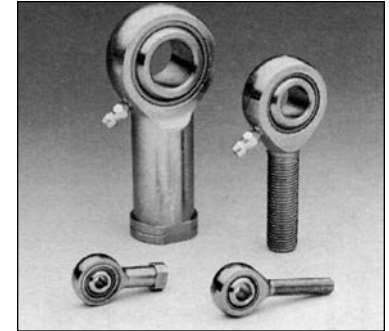
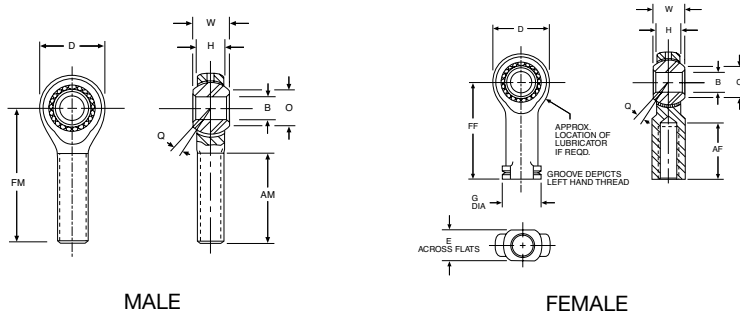
#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore  | Right Hand     |           | Left Hand      |           |
|-------|----------------|-----------|----------------|-----------|
|       | Catalog Number | Item Code | Catalog Number | Item Code |
| .1900 | KF-3           | 65001     | KFL-3          | 65070     |
| .2500 | KF-4           | 65002     | KFL-4          | 65140     |
| .3125 | KF-5           | 65041     | KFL-5          | 65141     |
| .3750 | KF-6           | 65042     | KFL-6          | 65142     |
| .5000 | KF-8           | 65069     | KFL-8          | 65252     |

**NOTES:** To order with optional studs, add letters "Y" or "S" to suffix. For stud specifications, see Page 211.  
For Engineering Data, see Pages 207-211.

# Self-Aligning Bearings

## HM-C Male/HF-C Female Series Rod Ends – Commercial



ALL DIMENSIONS IN INCHES

| Bore B             | W     | H    | AM    | FM    | AF    | FF    | D                 | G     | E     | O     | Ball Dia. | Q       | Thread      |
|--------------------|-------|------|-------|-------|-------|-------|-------------------|-------|-------|-------|-----------|---------|-------------|
| +0.0025<br>-0.0005 | ±.005 | REF  | ±.060 | ±.030 | ±.060 | ±.030 | ±.010             | REF   | REF   | REF   | REF       | REF     | Class UNF-2 |
| .1900              | .312  | .250 | .750  | 1.250 | .562  | 1.062 | .750              | .406  | .312  | .296  | .430      | ±5-1/2° | 10-32       |
| .2500              | .375  | .281 | 1.000 | 1.562 | .750  | 1.312 | .750 <sup>1</sup> | .468  | .375  | .346  | .510      | ±6-1/2° | 1/4-28      |
| .3125              | .437  | .344 | 1.250 | 1.875 | .750  | 1.375 | .875              | .500  | .437  | .438  | .618      | ±5-1/2° | 5/16-24     |
| .3750              | .500  | .406 | 1.250 | 1.938 | .937  | 1.625 | 1.000             | .687  | .562  | .508  | .713      | ±5°     | 3/8-24      |
| .4375              | .562  | .437 | 1.375 | 2.125 | 1.062 | 1.812 | 1.125             | .750  | .625  | .578  | .806      | ±6°     | 7/16-20     |
| .5000              | .625  | .500 | 1.500 | 2.438 | 1.187 | 2.125 | 1.312             | .875  | .750  | .690  | .931      | ±5°     | 1/2-20      |
| .6250              | .750  | .562 | 1.625 | 2.625 | 1.500 | 2.500 | 1.500             | 1.000 | .875  | .801  | 1.098     | ±6°     | 5/8-18      |
| .7500              | .875  | .687 | 1.750 | 2.875 | 1.750 | 2.875 | 1.750             | 1.125 | 1.000 | 1.010 | 1.336     | ±5°     | 3/4-16      |

+Tolerance +.015/-0.010

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore               | Right Hand      |           |                    |           | Left Hand       |           |                    |           |
|--------------------|-----------------|-----------|--------------------|-----------|-----------------|-----------|--------------------|-----------|
|                    | With Lubricator |           | Without Lubricator |           | With Lubricator |           | Without Lubricator |           |
|                    | Catalog Number  | Item Code | Catalog Number     | Item Code | Catalog Number  | Item Code | Catalog Number     | Item Code |
| <b>MALE TYPE</b>   |                 |           |                    |           |                 |           |                    |           |
| .1900              | —               | —         | HM-3C              | 48193     | —               | —         | HML-3C             | 48208     |
| .2500              | HM-4CG          | 48201     | HM-4C              | 48194     | HML-4CG         | 48216     | HML-4C             | 48209     |
| .3125              | HM-5CG          | 48202     | HM-5C              | 48195     | HML-5CG         | 48217     | HML-5C             | 48210     |
| .3750              | HM-6CG          | 48203     | HM-6C              | 48196     | HML-6CG         | 48218     | HML-6C             | 48211     |
| .4375              | HM-7CG          | 48204     | HM-7C              | 48197     | HML-7CG         | 48219     | HML-7C             | 48212     |
| .5000              | HM-8CG          | 48205     | HM-8C              | 48198     | HML-8CG         | 48220     | HML-8C             | 48213     |
| .6250              | HM-10CG         | 48206     | HM-10C             | 48199     | HML-10CG        | 48221     | HML-10C            | 48214     |
| .7500              | HM-12CG         | 48207     | HM-12C             | 48200     | HML-12CG        | 48222     | HML-12C            | 48215     |
| <b>FEMALE TYPE</b> |                 |           |                    |           |                 |           |                    |           |
| .1900              | —               | —         | HF-3C              | 48163     | —               | —         | HFL-3C             | 48178     |
| .2500              | HF-4CG          | 48171     | HF-4C              | 48164     | HFL-4CG         | 48186     | HFL-4C             | 48179     |
| .3125              | HF-5CG          | 48172     | HF-5C              | 48165     | HFL-5CG         | 48187     | HFL-5C             | 48180     |
| .3750              | HF-6CG          | 48173     | HF-6C              | 48166     | HFL-6CG         | 48188     | HFL-6C             | 48181     |
| .4375              | HF-7CG          | 48174     | HF-7C              | 48167     | HFL-7CG         | 48189     | HFL-7C             | 48182     |
| .5000              | HF-8CG          | 48175     | HF-8C              | 48168     | HFL-8CG         | 48190     | HFL-8C             | 48183     |
| .6250              | HF-10CG         | 48176     | HF-10C             | 48169     | HFL-10CG        | 48191     | HFL-10C            | 48184     |
| .7500              | HF-12CG         | 48177     | HF-12C             | 48170     | HFL-12CG        | 48192     | HFL-12C            | 48185     |

### SPECIFICATIONS

|              |                                                              |
|--------------|--------------------------------------------------------------|
| Outer Member | Low carbon steel plated for corrosion resistance             |
| Ball         | Case hardened steel plated for corrosion resistance and wear |
| Insert       | Oil impregnated sintered bronze                              |

### LOAD DATA

| Basic Bearing Number | Ultimate Static Load (Radial) Rating (Lbs.) |        | Approx. Wt. (Lbs.) |        |
|----------------------|---------------------------------------------|--------|--------------------|--------|
|                      | Male                                        | Female | Male               | Female |
| 3                    | 1,600                                       | 1,800  | .04                | .04    |
| 4                    | 2,250                                       | 2,300  | .05                | .06    |
| 5                    | 2,850                                       | 2,900  | .08                | .09    |
| 6                    | 3,900                                       | 4,300  | .12                | .16    |
| 7                    | 5,300                                       | 5,350  | .17                | .20    |
| 8                    | 7,400                                       | 8,400  | .27                | .32    |
| 10                   | 9,350                                       | 9,550  | .40                | .48    |
| 12                   | 10,450                                      | 10,500 | .72                | .72    |

### NOTES:

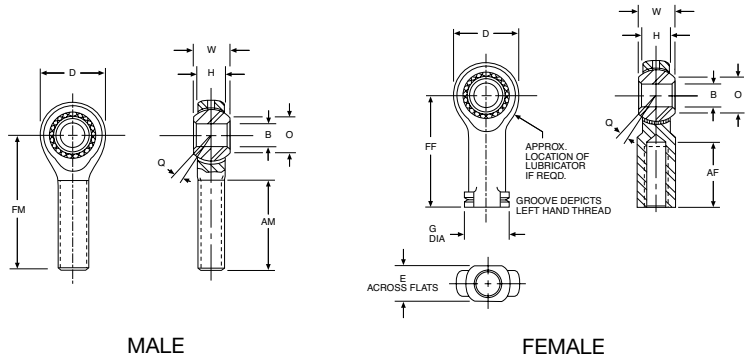
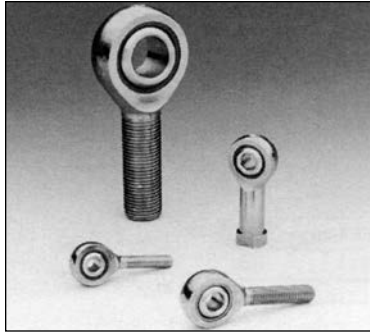
To order with optional studs, add letter "Y" or "S" to suffix. For stud specifications, see Page 211.

Lubricators available on sizes 4 through 12 only, studs available on all sizes.

For Engineering Data, see Pages 207-211.

# Self-Aligning Bearings

## CMHD Male/CFHD Female Series Rod Ends – Commercial; Self Lubricating



### ALL DIMENSIONS IN INCHES

| Bore<br>B          | W     | H    | AM    | FM    | AF    | FF    | D     | G     | E     | O     | Ball<br>Dia. | Thread         | Q       |
|--------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|----------------|---------|
| +0.0025<br>-0.0005 | ±.005 | REF  | ±.060 | ±.030 | ±.060 | ±.030 | ±.010 | REF   | REF   | REF   | REF          | Class<br>UNF-2 | REF     |
| .1900              | .312  | .250 | .750  | 1.250 | .562  | 1.062 | .625  | .406  | .312  | .296  | .430         | 10-32          | ±6°     |
| .2500              | .375  | .281 | 1.000 | 1.562 | .750  | 1.312 | .750  | .468  | .375  | .346  | .510         | 1/4-28         | ±7°     |
| .3125              | .437  | .344 | 1.250 | 1.875 | .750  | 1.375 | .875  | .500  | .437  | .438  | .618         | 5/16-24        | ±6°     |
| .3750              | .500  | .406 | 1.250 | 1.938 | .937  | 1.625 | 1.000 | .687  | .562  | .508  | .713         | 3/8-24         | ±5-1/2° |
| .4375              | .562  | .437 | 1.375 | 2.125 | 1.062 | 1.812 | 1.125 | .750  | .625  | .578  | .806         | 7/16-20        | ±6°     |
| .5000              | .625  | .500 | 1.500 | 2.438 | 1.187 | 2.125 | 1.312 | .875  | .750  | .690  | .931         | 1/2-20         | ±5°     |
| .6250              | .750  | .562 | 1.625 | 2.625 | 1.500 | 2.500 | 1.500 | 1.000 | .875  | .801  | 1.098        | 5/8-18         | ±7-1/2° |
| .7500              | .875  | .687 | 1.750 | 2.875 | 1.750 | 2.875 | 1.750 | 1.125 | 1.000 | 1.010 | 1.336        | 3/4-16         | ±6°     |

### SPECIFICATIONS

|              |                                                  |
|--------------|--------------------------------------------------|
| Outer Member | Low carbon steel plated for corrosion resistance |
| Ball         | Case hardened steel electroless nickel plated    |
| Insert       | Reinforced nylon                                 |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore               | Right Hand     |           | Left Hand      |           |
|--------------------|----------------|-----------|----------------|-----------|
|                    | Catalog Number | Item Code | Catalog Number | Item Code |
| <b>MALE TYPE</b>   |                |           |                |           |
| .1900              | CMHD-3         | 48307     | CMHDL-3        | 48315     |
| .2500              | CMHD-4         | 48308     | CMHDL-4        | 48316     |
| .3125              | CMHD-5         | 48309     | CMHDL-5        | 48317     |
| .3750              | CMHD-6         | 48310     | CMHDL-6        | 48318     |
| .4375              | CMHD-7         | 48311     | CMHDL-7        | 48319     |
| .5000              | CMHD-8         | 48312     | CMHDL-8        | 48320     |
| .6250              | CMHD-10        | 48313     | CMHDL-10       | 48321     |
| .7500              | CMHD-12        | 48314     | CMHDL-12       | 48322     |
| <b>FEMALE TYPE</b> |                |           |                |           |
| .1900              | CFHD-3         | 48291     | CFHDL-3        | 48299     |
| .2500              | CFHD-4         | 48292     | CFHDL-4        | 48300     |
| .3125              | CFHD-5         | 48293     | CFHDL-5        | 48301     |
| .3750              | CFHD-6         | 48294     | CFHDL-6        | 48302     |
| .4375              | CFHD-7         | 48295     | CFHDL-7        | 48303     |
| .5000              | CFHD-8         | 48296     | CFHDL-8        | 48304     |
| .6250              | CFHD-10        | 48297     | CFHDL-10       | 48305     |
| .7500              | CFHD-12        | 48298     | CFHDL-12       | 48306     |

### LOAD DATA

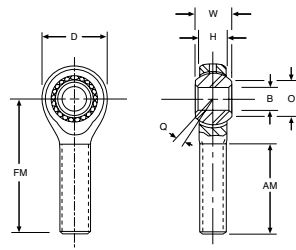
| Basic Bearing Number | Ultimate Static Load (Radial) Rating (Lbs.) |        | Approx. Wt. (Lbs.) |
|----------------------|---------------------------------------------|--------|--------------------|
|                      | Male                                        | Female |                    |
| 3                    | 1,150                                       | 1,200  | .02                |
| 4                    | 1,600                                       | 1,650  | .04                |
| 5                    | 2,700                                       | 2,800  | .07                |
| 6                    | 3,200                                       | 3,250  | .11                |
| 7                    | 3,750                                       | 3,800  | .15                |
| 8                    | 5,800                                       | 6,400  | .23                |
| 10                   | 7,050                                       | 7,100  | .38                |
| 12                   | 8,800                                       | 9,000  | .58                |

### NOTES:

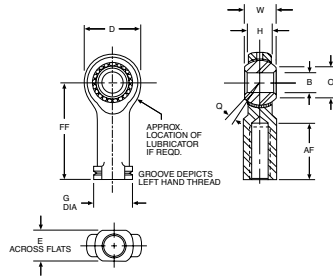
To order with optional studs, add letter "Y" or "S" to suffix. For stud specifications, see Page 211.  
For Engineering Data, see Pages 207-211.

# Self-Aligning Bearings

## HM Males/HF Female Series Rod Ends – Precision



MALE



FEMALE



### ALL DIMENSIONS IN INCHES

| Bore<br>B          | W     | H     | AM    | FM    | AF    | FF    | D                    | G     | E     | O     | Ball<br>Dia. | Q       | Thread                  |
|--------------------|-------|-------|-------|-------|-------|-------|----------------------|-------|-------|-------|--------------|---------|-------------------------|
| +0.0015<br>-0.0005 | ±.005 | REF   | ±.060 | ±.030 | ±.060 | ±.030 | ±.010                | REF   | REF   | REF   | REF          | REF     | Class<br>UNF-2          |
| .1900              | .312  | .250  | .750  | 1.250 | .562  | 1.062 | .750                 | .406  | .312  | .296  | .430         | ±5-1/2° | 10-32                   |
| .2500              | .375  | .281  | 1.000 | 1.562 | .750  | 1.312 | .750 <sup>(1)</sup>  | .468  | .375  | .346  | .510         | ±6-1/2° | 1/4-28                  |
| .3125              | .437  | .344  | 1.250 | 1.875 | .750  | 1.375 | .875                 | .500  | .437  | .438  | .618         | ±5-1/2° | 5/16-24                 |
| .3750              | .500  | .406  | 1.250 | 1.938 | .937  | 1.625 | 1.000                | .687  | .562  | .508  | .713         | ±5°     | 3/8-24                  |
| .4375              | .562  | .437  | 1.375 | 2.125 | 1.062 | 1.812 | 1.125                | .750  | .625  | .578  | .806         | ±6°     | 7/16-20                 |
| .5000              | .625  | .500  | 1.500 | 2.438 | 1.187 | 2.125 | 1.312                | .875  | .750  | .690  | .931         | ±5°     | 1/2-20                  |
| .6250              | .750  | .562  | 1.625 | 2.625 | 1.500 | 2.500 | 1.500                | 1.000 | .875  | .801  | 1.098        | ±6°     | 5/8-18                  |
| .7500              | .875  | .687  | 1.750 | 2.875 | 1.750 | 2.875 | 1.750                | 1.125 | 1.000 | 1.010 | 1.336        | ±5°     | 3/4-16                  |
| 1.0000             | 1.375 | 1.000 | 2.125 | 4.125 | 2.125 | 4.125 | 2.750 <sup>(2)</sup> | 1.625 | 1.500 | 1.269 | 1.875        | 7°      | 1-1/4-12 <sup>(4)</sup> |

(1) Tolerance +.015/-0.010

(2) Tolerance +.030/-0.010

(3) Tolerance +.000/-0.005

(4) Class 3 Threads

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore               | Right Hand      |           |                    |           | Left Hand       |           |                    |           |
|--------------------|-----------------|-----------|--------------------|-----------|-----------------|-----------|--------------------|-----------|
|                    | With Lubricator |           | Without Lubricator |           | With Lubricator |           | Without Lubricator |           |
|                    | Catalog Number  | Item Code | Catalog Number     | Item Code | Catalog Number  | Item Code | Catalog Number     | Item Code |
| <b>MALE TYPE</b>   |                 |           |                    |           |                 |           |                    |           |
| .1900              | —               | —         | HM-3               | 48259     | —               | —         | HML-3              | 48276     |
| .2500              | HM-4G           | 48267     | HM-4               | 48260     | HML-4G          | 48284     | HML-4              | 48277     |
| .3125              | HM-5G           | 48268     | HM-5               | 48261     | HML-5G          | 48285     | HML-5              | 48278     |
| .3750              | HM-6G           | 48269     | HM-6               | 48262     | HML-6G          | 48286     | HML-6              | 48279     |
| .4375              | HM-7G           | 48270     | HM-7               | 48263     | HML-7G          | 48287     | HML-7              | 48280     |
| .5000              | HM-8G           | 48271     | HM-8               | 48264     | HML-8G          | 48288     | HML-8              | 48281     |
| .6250              | HM-10G          | 48272     | HM-10              | 48265     | HML-10G         | 48289     | HML-10             | 48282     |
| .7500              | HM-12G          | 48273     | HM-12              | 48266     | HML-12G         | 48290     | HML-12             | 48283     |
| 1.0000             | HM-16G          | 48103     | HM-16              | 48102     | HML-16G         | 48107     | HML-16             | 48106     |
| <b>FEMALE TYPE</b> |                 |           |                    |           |                 |           |                    |           |
| .1900              | —               | —         | HF-3               | 48225     | —               | —         | HFL-3              | 48242     |
| .2500              | HF-4G           | 48233     | HF-4               | 48226     | HFL-4G          | 48250     | HFL-4              | 48243     |
| .3125              | HF-5G           | 48234     | HF-5               | 48227     | HFL-5G          | 48251     | HFL-5              | 48244     |
| .3750              | HF-6G           | 48235     | HF-6               | 48228     | HFL-6G          | 48252     | HFL-6              | 48245     |
| .4375              | HF-7G           | 48236     | HF-7               | 48229     | HFL-7G          | 48253     | HFL-7              | 48246     |
| .5000              | HF-8G           | 48237     | HF-8               | 48230     | HFL-8G          | 48254     | HFL-8              | 48247     |
| .6250              | HF-10G          | 48238     | HF-10              | 48231     | HFL-10G         | 48255     | HFL-10             | 48248     |
| .7500              | HF-12G          | 48239     | HF-12              | 48232     | HFL-12G         | 48256     | HFL-12             | 48249     |
| 1.0000             | HF-16G          | 48105     | HF-16              | 48104     | HFL-16G         | 48109     | HFL-16             | 48108     |

### SPECIFICATIONS

|              | Sizes 3 - 12                                          | Size 16                                                  |
|--------------|-------------------------------------------------------|----------------------------------------------------------|
| Outer Member | Low carbon steel plated for corrosion resistance      |                                                          |
| Ball         | Case hardened steel for corrosion resistance and wear | 52100 steel heat treated plated for corrosion resistance |
| Insert       | Oil impregnated sintered bronze                       | Low carbon steel plated for corrosion resistance         |

### LOAD DATA

| Basic Bearing Number | Ultimate Static Load (Radial) Rating (Lbs.) |        | Approx. Wt. (Lbs.) |        |
|----------------------|---------------------------------------------|--------|--------------------|--------|
|                      | Male                                        | Female | Male               | Female |
| 3                    | 1,600                                       | 1,800  | .04                | .04    |
| 4                    | 2,250                                       | 2,300  | .05                | .06    |
| 5                    | 2,850                                       | 2,900  | .08                | .09    |
| 6                    | 3,900                                       | 4,300  | .12                | .16    |
| 7                    | 5,300                                       | 5,350  | .17                | .20    |
| 8                    | 7,400                                       | 8,400  | .27                | .32    |
| 10                   | 9,350                                       | 9,550  | .40                | .48    |
| 12                   | 10,450                                      | 10,500 | .62                | .72    |
| 16                   | 43,540                                      | 43,540 | 2.41               | 2.13   |

### NOTES:

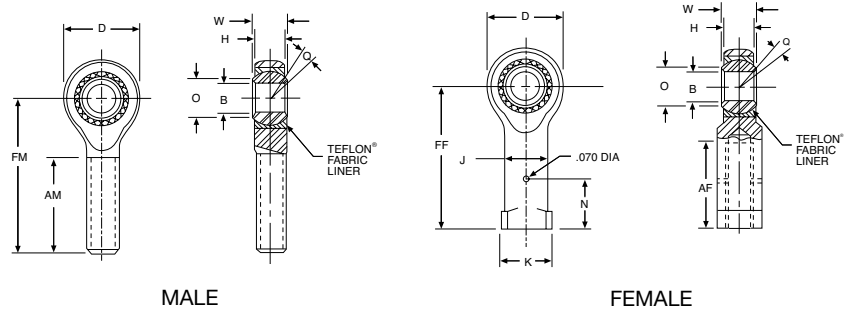
To order with optional studs, add letter "Y" or "S" to suffix. For stud specifications, see Page 211.

Lubricators available on sizes 4 through 16 only, studs available on sizes 3 through 12 only.

For Engineering Data, see Pages 207-211.

# Self-Aligning Bearings

## HME Male/HFE Female Series Rod Ends – Precision; Self Lubricating



ALL DIMENSIONS IN INCHES

| Bore<br>B          | W                | H                    | AM               | FM    | AF               | FF    | D                    | O     | J     | K     | N                | Ball<br>Dia. | Q       | Thread         |
|--------------------|------------------|----------------------|------------------|-------|------------------|-------|----------------------|-------|-------|-------|------------------|--------------|---------|----------------|
| + .0015<br>- .0005 | + .000<br>- .005 | ±.005                | + .060<br>- .030 | ±.010 | + .060<br>- .030 | ±.010 | ±.010                | REF   | ±.010 | ±.010 | + .000<br>- .005 | REF          | REF     | Class<br>UNF-3 |
| .1900              | .312             | .250                 | .750             | 1.250 | .562             | 1.062 | .625                 | .306  | .312  | .406  | .312             | .406         | ±6-1/2° | 10-32          |
| .2500              | .375             | .281                 | 1.000            | 1.562 | .750             | 1.312 | .750                 | .331  | .375  | .468  | .312             | .500         | ±8°     | 1/4-28         |
| .3125              | .437             | .344                 | 1.250            | 1.875 | .750             | 1.375 | .875                 | .447  | .437  | .500  | .406             | .625         | ±7°     | 5/16-24        |
| .3750              | .500             | .406                 | 1.250            | 1.938 | .937             | 1.625 | 1.000                | .517  | .562  | .687  | .469             | .713         | ±6°     | 3/8-24         |
| .4375              | .562             | .437                 | 1.375            | 2.125 | 1.062            | 1.812 | 1.125                | .586  | .625  | .750  | .531             | .813         | ±7°     | 7/16-20        |
| .5000              | .625             | .500                 | 1.500            | 2.438 | 1.187            | 2.125 | 1.312                | .656  | .750  | .875  | .594             | .906         | ±6°     | 1/2-20         |
| .6250              | .750             | .562                 | 1.625            | 2.625 | 1.500            | 2.500 | 1.500                | .832  | .875  | 1.000 | .750             | 1.125        | ±8°     | 5/8-18         |
| .7500              | .875             | .687                 | 1.750            | 2.875 | 1.750            | 2.875 | 1.750                | .978  | 1.000 | 1.125 | .875             | 1.312        | ±7°     | 3/4-16         |
| 1.0000             | 1.375            | 1.000 <sup>(1)</sup> | 2.125            | 4.125 | 2.125            | 4.125 | 2.750 <sup>(2)</sup> | 1.269 | 1.500 | 1.625 | —                | 1.875        | ±7°     | 1-1/4-12       |

(1) Tolerance +.015/- .010

(2) Tolerance +.030/- .010

### SPECIFICATIONS

|              |                                                                   |
|--------------|-------------------------------------------------------------------|
| Outer Member | Low carbon steel plated for corrosion resistance                  |
| Ball         | 52100 Steel - heat treated Rc 56 Min hard chrome plated           |
| Insert       | Carbon steel - plated for corrosion resistance or stainless steel |
| Liner        | Teflon® fabric permanently bonded to insert I.D.                  |

Teflon® is a trade name of E.I. DuPont de Nemours & Co. Inc.

### LOAD DATA

| Basic Bearing Number | Ultimate Static Load (Radial) Rating (Lbs.) |        | Approx. Wt. (Lbs.) |        |
|----------------------|---------------------------------------------|--------|--------------------|--------|
|                      | Male                                        | Female | Male               | Female |
| 3                    | 1,169                                       | 1,531  | .03                | .04    |
| 4                    | 2,158                                       | 2,539  | .04                | .06    |
| 5                    | 2,784                                       | 3,133  | .08                | .09    |
| 6                    | 3,915                                       | 3,915  | .12                | .16    |
| 7                    | 4,218                                       | 4,218  | .16                | .20    |
| 8                    | 6,660                                       | 6,660  | .25                | .32    |
| 10                   | 7,364                                       | 7,364  | .39                | .48    |
| 12                   | 11,518                                      | 11,518 | .60                | .72    |
| 16                   | 43,540                                      | 43,540 | 2.41               | 2.13   |

### NOTE:

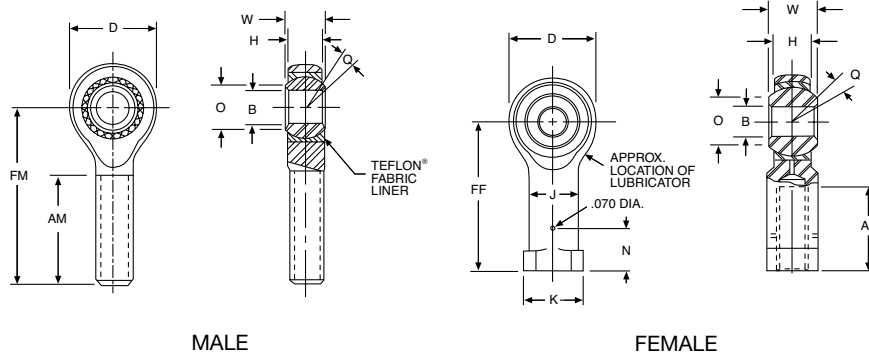
For Engineering Data, see Pages 207-211.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore               | Right Hand     |           | Left Hand      |           |
|--------------------|----------------|-----------|----------------|-----------|
|                    | Catalog Number | Item Code | Catalog Number | Item Code |
| <b>MALE TYPE</b>   |                |           |                |           |
| .1900              | HME-3          | 48038     | HMLE-3         | 48059     |
| .2500              | HME-4          | 48039     | —              | —         |
| .3125              | HME-5          | 48040     | HMLE-5         | 48065     |
| .3750              | HME-6          | 48041     | HMLE-6         | 48067     |
| .4375              | HME-7          | 48043     | HMLE-7         | 48068     |
| .5000              | HME-8          | 48044     | HMLE-8         | 48069     |
| .6250              | HME-10         | 48045     | HMLE-10        | 48076     |
| .7500              | HME-12         | 48046     | HMLE-12        | 48077     |
| 1.0000             | HME-16         | 48047     | HMLE-16        | 48078     |
| <b>FEMALE TYPE</b> |                |           |                |           |
| .1900              | HFE-3          | 48079     | HFLE-3         | 48004     |
| .2500              | HFE-4          | 48080     | HFLE-4         | 48006     |
| .3125              | HFE-5          | 48086     | HFLE-5         | 48007     |
| .3750              | HFE-6          | 48088     | HFLE-6         | 48008     |
| .4375              | HFE-7          | 48091     | HFLE-7         | 48010     |
| .5000              | HFE-8          | 48093     | HFLE-8         | 48012     |
| .6250              | HFE-10         | 48094     | HFLE-10        | 48014     |
| .7500              | HFE-12         | 48095     | HFLE-12        | 46017     |
| 1.000              | HFE-16         | 48096     | HFLE-16        | 48019     |

# Self-Aligning Bearings

## HMX Male/HFX Female Series Rod Ends – Extra Capacity



F

### ALL DIMENSIONS IN INCHES

| Bore<br>B          | W                | H     | AM               | FM    | AF               | FF    | D     | O    | J     | K     | N                | Ball<br>Dia. | Q   | Female<br>Thread | Male<br>Thread  |
|--------------------|------------------|-------|------------------|-------|------------------|-------|-------|------|-------|-------|------------------|--------------|-----|------------------|-----------------|
| +0.0015<br>-0.0005 | +0.000<br>-0.005 | ±.005 | +0.060<br>-0.030 | ±.010 | +0.060<br>-0.030 | ±.010 | ±.010 | REF  | ±.010 | ±.010 | +0.000<br>-0.005 | REF          | REF | Class<br>UNF-3B  | Class<br>UNF-3A |
| .2500              | .375             | .281  | 1.000            | 1.562 | .750             | 1.312 | .750  | .331 | .375  | .468  | .312             | .500         | ±8° | 1/4-28           | 5/16-24         |
| .3125              | .437             | .344  | 1.250            | 1.875 | .750             | 1.375 | .875  | .447 | .437  | .500  | .406             | .625         | ±7° | 5/16-24          | 3/8-24          |
| .3750              | .500             | .406  | 1.250            | 1.938 | .937             | 1.625 | 1.000 | .517 | .562  | .687  | .469             | .718         | ±6° | 3/8-24           | 7/16-20         |
| .4375              | .562             | .437  | 1.375            | 2.125 | 1.062            | 1.812 | 1.125 | .586 | .625  | .750  | .531             | .813         | ±7° | 7/16-20          | 1/2-20          |
| .5000              | .625             | .500  | 1.500            | 2.438 | 1.187            | 2.125 | 1.312 | .656 | .750  | .875  | .594             | .906         | ±6° | 1/2-20           | 5/8-18          |
| .6250              | .750             | .562  | 1.625            | 2.625 | 1.500            | 2.500 | 1.500 | .832 | .875  | 1.000 | .750             | 1.125        | ±8° | 5/8-18           | 3/4-16          |
| .7500              | .875             | .687  | 1.750            | 2.875 | 1.750            | 2.875 | 1.750 | .978 | 1.000 | 1.125 | .875             | 1.312        | ±7° | 3/4-16           | 7/8-14          |
| .7500              | .875             | .687  | 1.750            | 2.875 | 1.750            | 2.875 | 1.750 | .978 | 1.000 | 1.125 | .875             | 1.312        | ±7° | 3/4-16           | 7/8-14          |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore               | Right Hand<br>with Lubricator |              | Left Hand<br>with Lubricator |              |
|--------------------|-------------------------------|--------------|------------------------------|--------------|
|                    | Catalog<br>Number             | Item<br>Code | Catalog<br>Number            | Item<br>Code |
| <b>MALE TYPE</b>   |                               |              |                              |              |
| .2500              | HMX-4G                        | 48337        | HMXL-4G                      | 48344        |
| .3125              | HMX-5G                        | 48338        | HMXL-5G                      | 48345        |
| .3750              | HMX-6G                        | 48339        | HMXL-6G                      | 48346        |
| .4375              | HMX-7G                        | 48340        | HMXL-7G                      | 48347        |
| .5000              | HMX-8G                        | 48341        | HMXL-8G                      | 48348        |
| .6250              | HMX-10G                       | 48342        |                              |              |
| .7500              | HMX-12G                       | 48343        | HMXL-12G                     | 48350        |
| <b>FEMALE TYPE</b> |                               |              |                              |              |
| .2500              | HFX-4G                        | 48323        | HFXL-4G                      | 48330        |
| .3125              | HFX-5G                        | 48324        | HFXL-5G                      | 48331        |
| .3750              | HFX-6G                        | 48325        | HFXL-6G                      | 48332        |
| .4375              | HFX-7G                        | 48326        | HFXL-7G                      | 48333        |
| .5000              | HFX-8G                        | 48327        | HFXL-8G                      | 48334        |
| .6250              | HFX-10G                       | 48328        | HFXL-10G                     | 48335        |
| .7500              | HFX-12G                       | 48329        | HFXL-12G                     | 46336        |

### SPECIFICATIONS

|              | HMX Series                                                                           | HFX Series                                                                                 |
|--------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Outer Member | Alloy steel, heat treated magnetic particle inserted plated for corrosion resistance | Steel alloy, heat treated plated for corrosion resistance                                  |
| Ball         | 52100 steel heat treated, hard chrome plated                                         | 52100 steel heat treated, hard chrome plated                                               |
| Insert       | Aluminum bronze                                                                      | Alloy steel, heat treated plated for corrosion resistance or stainless steel, heat treated |

### LOAD DATA

| Basic<br>Bearing<br>Number | Ultimate Static Load<br>(Radial) (Lbs.) |        | Approx.<br>Wt. (Lbs.) |        |
|----------------------------|-----------------------------------------|--------|-----------------------|--------|
|                            | Male                                    | Female | Male                  | Female |
| 4                          | 5,390                                   | 6,190  | .06                   | .06    |
| 5                          | 7,500                                   | 7,639  | .09                   | .09    |
| 6                          | 9,590                                   | 9,544  | .13                   | .15    |
| 7                          | 11,000                                  | 10,285 | .18                   | .20    |
| 8                          | 13,575                                  | 16,238 | .30                   | .32    |
| 10                         | 17,300                                  | 17,955 | .46                   | .48    |
| 12                         | 23,225                                  | 28,081 | .72                   | .72    |

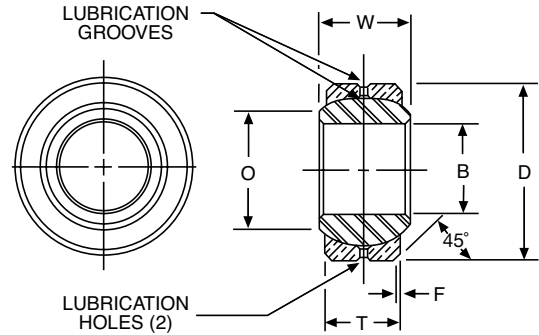
### NOTE

For Engineering Data, see Pages 207-211.

# Self-Aligning Bearings

## LHA-LHB-LHSS Series

### Sphericals – Precision



#### SPECIFICATIONS

|              | LHA                                                                | LHB             | LHSS                         |
|--------------|--------------------------------------------------------------------|-----------------|------------------------------|
| Outer Member | 4130 Steel or equal heat treated plated for corrosion resistance   | Aluminum Bronze | 410 or equal Stainless Steel |
| Ball         | 52100 Steel heat treated, plated for corrosion resistance and wear |                 |                              |

#### ORDER BY CATALOG NUMBER OR ITEM CODE ALL DIMENSIONS IN INCHES

| Bore<br>B        | D                | F    | T     | W     | O     | Ball<br>Dia. | LHA Series        |              | LHB Series        |              | LHSS Series       |              |
|------------------|------------------|------|-------|-------|-------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|
|                  |                  |      |       |       |       |              | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code |
| +.0000<br>-.0005 | +.0000<br>-.0005 | REF  | ±.005 | ±.005 | REF   | REF          |                   |              |                   |              |                   |              |
| .1650            | .4687            | .020 | .187  | .250  | .235  | .343         | LHA-2             | 48405        | LHB-2             | 48417        | LHSS-2            | 48429        |
| .1900            | .5625            | .020 | .218  | .281  | .293  | .406         | LHA-3             | 48406        | LHB-3             | 48418        | LHSS-3            | 48430        |
| .2500            | .6562            | .022 | .250  | .343  | .364  | .500         | LHA-4             | 48407        | LHB-4             | 48419        | LHSS-4            | 48431        |
| .3125            | .7500            | .032 | .281  | .375  | .419  | .562         | LHA-5             | 48408        | LHB-5             | 48420        | LHSS-5            | 48432        |
| .3750            | .8125            | .032 | .312  | .406  | .517  | .656         | LHA-6             | 48409        | LHB-6             | 48421        | LHSS-6            | 48433        |
| .4375            | .9062            | .032 | .343  | .437  | .572  | .718         | LHA-7             | 48410        | LHB-7             | 48422        | LHSS-7            | 48434        |
| .5000            | 1.0000           | .032 | .390  | .500  | .642  | .813         | LHA-8             | 48411        | LHB-8             | 48423        | LHSS-8            | 48435        |
| .5625            | 1.0937           | .032 | .437  | .562  | .670  | .906         | LHA-9             | 48412        | LHB-9             | 48424        | LHSS-9            | 48436        |
| .6250            | 1.1875           | .032 | .500  | .625  | .739  | .968         | LHA-10            | 48413        | LHB-10            | 48425        | LHSS-10           | 48437        |
| .7500            | 1.4375           | .044 | .593  | .750  | .920  | 1.187        | LHA-12            | 48414        | LHB-12            | 48426        | LHSS-12           | 48438        |
| .8750            | 1.5625           | .044 | .703  | .875  | .980  | 1.312        | LHA-14            | 48415        | LHB-14            | 48427        | LHSS-14           | 48439        |
| 1.0000           | 1.7500           | .044 | .797  | 1.000 | 1.118 | 1.500        | LHA-16            | 48416        | LHB-16            | 48428        | LHSS-16           | 48440        |

#### LOAD DATA

| Basic<br>Bearing<br>Number | Maximum Static<br>Radial Load (Lbs.) |        | Approx.<br>Weight<br>(Lbs.) |
|----------------------------|--------------------------------------|--------|-----------------------------|
|                            | LHA/LHSS                             | LHB    |                             |
| 2                          | 2,000                                | 1,000  | .01                         |
| 3                          | 5,400                                | 2,700  | .02                         |
| 4                          | 8,400                                | 4,200  | .02                         |
| 5                          | 11,600                               | 5,800  | .03                         |
| 6                          | 15,600                               | 7,800  | .04                         |
| 7                          | 18,600                               | 9,300  | .05                         |
| 8                          | 22,400                               | 11,200 | .07                         |
| 9                          | 30,000                               | 15,000 | .09                         |
| 10                         | 40,000                               | 20,000 | .11                         |
| 12                         | 50,000                               | 30,000 | .21                         |
| 14                         | 86,000                               | 43,000 | .27                         |
| 16                         | 104,000                              | 52,000 | .39                         |

#### NOTES:

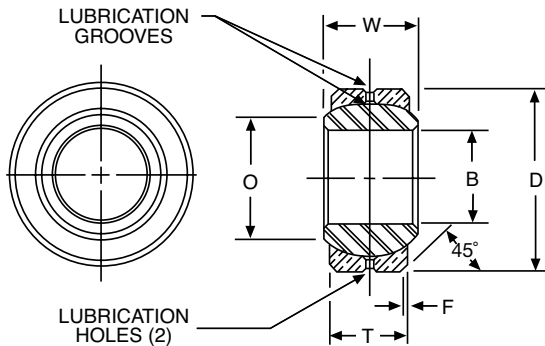
For Engineering Data, see Pages 207-211.

For Housing Bores, see Page 210.

# Self-Aligning Bearings

## LHSSE-LHSSV Series

Sphericals – Precision; Self Lubricating



F

ORDER BY CATALOG NUMBER OR ITEM CODE  
ALL DIMENSIONS IN INCHES

| Bore<br>B        | O     | D                | F    | T     | W              | Ball<br>Dia. | LHSSE Series      |              | LHSSV Series      |              |
|------------------|-------|------------------|------|-------|----------------|--------------|-------------------|--------------|-------------------|--------------|
|                  |       |                  |      |       |                |              | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code |
| +.0000<br>-.0005 | REF   | +.0000<br>-.0005 | REF  | ±.005 | +.000<br>-.005 | REF          |                   |              |                   |              |
| .1650            | .235  | .4687            | .020 | .187  | .250           | .343         | LHSSE-2           | 48021        | LHSSV-2           | 48453        |
| .1900            | .293  | .5625            | .020 | .218  | .281           | .406         | LHSSE-3           | 48023        | LHSSV-3           | 48454        |
| .2500            | .364  | .6562            | .022 | .250  | .343           | .500         | LHSSE-4           | 48025        | LHSSV-4           | 48455        |
| .3125            | .419  | .7500            | .032 | .281  | .375           | .562         | LHSSE-5           | 48027        | LHSSV-5           | 48456        |
| .3750            | .517  | .8125            | .032 | .312  | .406           | .656         | LHSSE-6           | 48029        | LHSSV-6           | 48457        |
| .4375            | .572  | .9062            | .032 | .343  | .437           | .718         | LHSSE-7           | 48030        | LHSSV-7           | 48458        |
| .5000            | .642  | 1.0000           | .032 | .390  | .500           | .813         | LHSSE-8           | 48032        | LHSSV-8           | 48459        |
| .5625            | .670  | 1.0937           | .032 | .437  | .562           | .906         | LHSSE-9           | 48033        | LHSSV-9           | 48460        |
| .6250            | .739  | 1.1875           | .032 | .500  | .625           | .968         | LHSSE-10          | 48034        | LHSSV-10          | 48461        |
| .7500            | .920  | 1.4375           | .044 | .593  | .750           | 1.187        | LHSSE-12          | 48035        | LHSSV-12          | 48462        |
| .8750            | .980  | 1.5625           | .044 | .703  | .875           | 1.312        | LHSSE-14          | 48036        | LHSSV-14          | 48463        |
| 1.0000           | 1.118 | 1.7500           | .044 | .797  | 1.000          | 1.500        | LHSSE-16          | 48037        | LHSSV-16          | 48464        |

### LOAD DATA

| Basic<br>Bearing<br>Number | Maximum Static Radial Load (Lbs.) |        | Approx.<br>Wt.<br>(Lbs.) |
|----------------------------|-----------------------------------|--------|--------------------------|
|                            | LHSSE                             | LHSSV  |                          |
| 2                          | 1,200                             | 1,200  | .010                     |
| 3                          | 3,250                             | 3,250  | .014                     |
| 4                          | 4,900                             | 4,900  | .022                     |
| 5                          | 6,450                             | 6,450  | .03                      |
| 6                          | 8,250                             | 8,250  | .04                      |
| 7                          | 10,200                            | 10,200 | .05                      |
| 8                          | 13,600                            | 13,600 | .07                      |
| 9                          | 15,900                            | 15,900 | .09                      |
| 10                         | 21,000                            | 21,000 | .11                      |
| 12                         | 30,000                            | 30,000 | .21                      |
| 14                         | 41,100                            | 41,100 | .26                      |
| 16                         | 54,700                            | 54,700 | .39                      |

### SPECIFICATIONS

|                           | LHSSE Series                                                               | LHSSV Series                                                               |
|---------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Outer Member              | 410 Stainless Steel                                                        | 410 Stainless Steel                                                        |
| Ball                      | 52100 Steel<br>heat treated plated<br>for corrosion resistance<br>and wear | 52100 Steel<br>heat treated plated<br>for corrosion resistance<br>and wear |
| Self Lubricating<br>Liner | Teflon®                                                                    | Teflon® Fabric                                                             |

Teflon® is a trade name of E. I. DuPont de Nemours & Co. Inc.

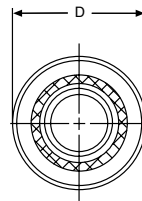
#### NOTES:

For Engineering Data, see Pages 207-211.

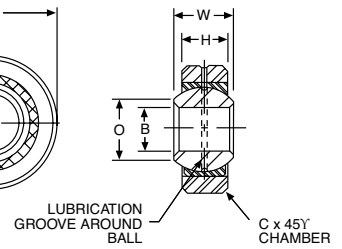
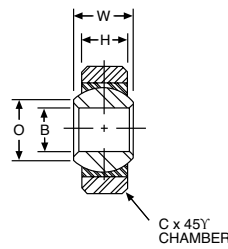
# Self-Aligning Bearings

## LS/LSS Series

### Sphericals – Special Purpose



LS/LSS 3 – 10



LS 12 – 30

#### ORDER BY CATALOG NUMBER OR ITEM CODE ALL DIMENSIONS IN INCHES

| Bore<br>B          | D                  | H     | w     | Ball<br>Dia. | O     | C                | LS Series         |              |
|--------------------|--------------------|-------|-------|--------------|-------|------------------|-------------------|--------------|
| +0.0025<br>-0.0005 | +0.0000<br>-0.0005 | ±.005 | ±.005 | REF          | REF   | +0.015<br>-0.000 | Catalog<br>Number | Item<br>Code |
| .1900              | .6250              | .187  | .281  | .400         | .285  | .016             | LS-3              | 48381        |
| .2500              | .7500              | .281  | .375  | .510         | .346  | .016             | LS-4              | 48382        |
| .3125              | .8750              | .313  | .437  | .618         | .438  | .016             | LS-5              | 48383        |
| .3750              | 1.0000             | .375  | .500  | .713         | .508  | .016             | LS-6              | 48384        |
| .4375              | 1.1875             | .437  | .562  | .806         | .578  | .032             | LS-7              | 48385        |
| .5000              | 1.3125             | .531  | .687  | .931         | .627  | .044             | LS-8              | 48386        |
| .6250              | 1.5625             | .687  | .875  | 1.178        | .789  | .044             | LS-10             | 48387        |
| .7500              | 2.2500             | .937  | 1.250 | 1.625        | 1.038 | .044             | LS-12             | 48388        |
| 1.0000             | 2.3750             | .875  | 1.125 | 1.750        | 1.345 | .062             | LS-16             | 48389        |
| 1.1875             | 2.6250             | 1.000 | 1.250 | 2.000        | 1.562 | .085             | LS-19             | 48390        |
| 1.5000             | 3.2500             | 1.250 | 1.500 | 2.500        | 2.000 | .085             | LS-24             | 48391        |
| 1.8750             | 4.0000             | 1.313 | 1.625 | 3.000        | 2.521 | .125             | LS-30             | 48392        |

#### SPECIFICATIONS

|              | LS Series                                             |                                      | LSS Series                                        |
|--------------|-------------------------------------------------------|--------------------------------------|---------------------------------------------------|
|              | Size 3 - 10                                           | Size 12 - 30                         | All                                               |
| Outer Member | Low carbon steel, plated for corrosion resistance     | Carbon steel, cadmium or zinc plated | 4130 Steel or equal, RC 36-42 cadmium plated      |
| Ball         | Low carbon steel, case hardened, plated for corrosion | Chrome steel heat treated            | S.A.E. 52100 Steel heat treated and chrome plated |
| Insert       | Sintered Bronze Oil impregnated                       | Brass                                | None                                              |

#### LOAD DATA

| Bore<br>B          | D                  | H               | w               | Ball<br>Dia. | O     | C                | LSS Series        |              |
|--------------------|--------------------|-----------------|-----------------|--------------|-------|------------------|-------------------|--------------|
| +0.0000<br>-0.0005 | +0.0000<br>-0.0005 | ±.005<br>-0.005 | ±.000<br>-0.000 | (REF)        | (REF) | +0.000<br>-0.005 | Catalog<br>Number | Item<br>Code |
| .1900              | .5625              | .218            | .281            | .406         | .293  | .020             | LSS-3             | 48394        |
| .2500              | .6562              | .250            | .343            | .500         | .364  | .022             | LSS-4             | 48395        |
| .3125              | .7500              | .281            | .375            | .562         | .419  | .032             | LSS-5             | 48396        |
| .3750              | .8125              | .312            | .406            | .656         | .517  | .032             | LSS-6             | 48397        |
| .4375              | .9062              | .343            | .437            | .718         | .572  | .032             | LSS-7             | 48398        |
| .5000              | 1.0000             | .390            | .500            | .813         | .642  | .032             | LSS-8             | 48399        |
| .5625              | 1.0937             | .437            | .562            | .906         | .670  | .032             | LSS-9             | 48400        |
| .6250              | 1.1875             | .500            | .625            | .968         | .739  | .032             | LSS-10            | 48401        |
| .7500              | 1.4375             | .593            | .750            | 1.187        | .920  | .044             | LSS-12            | 48402        |
| .8750              | 1.5625             | .703            | .875            | 1.312        | .980  | .044             | LSS-14            | 48403        |
| 1.0000             | 1.7500             | .797            | 1.000           | 1.500        | 1.118 | .044             | LSS-16            | 48404        |

|                      | LS SERIES                          |                   | LSS SERIES                         |                   |
|----------------------|------------------------------------|-------------------|------------------------------------|-------------------|
| Basic Bearing Number | Maximum Static Radial Load in Lbs. | Approx. Wt.(Lbs.) | Maximum Static Radial Load in Lbs. | Approx. Wt.(Lbs.) |
| 3                    | 1,520                              | .02               | 5,400                              | .014              |
| 4                    | 2,900                              | .04               | 8,400                              | .022              |
| 5                    | 3,900                              | .05               | 11,600                             | .030              |
| 6                    | 5,400                              | .08               | 15,600                             | .038              |
| 7                    | 7,100                              | .12               | 18,600                             | .048              |
| 8                    | 9,900                              | .18               | 22,400                             | .065              |
| 9                    |                                    |                   | 30,000                             | .086              |
| 10                   | 16,300                             | .33               | 40,000                             | .110              |
| 12                   | 47,600                             | .94               | 50,000                             | .204              |
| 14                   |                                    |                   | 86,000                             | .263              |
| 16                   | 48,200                             | 1.00              | 104,000                            | .386              |
| 19                   | 63,000                             | 1.27              |                                    |                   |
| 24                   | 98,000                             | 2.38              |                                    |                   |
| 30                   | 123,000                            | 3.75              |                                    |                   |

#### NOTES:

For Engineering Data, see Pages 207-211.



## Environment and Mounting

### Corrosive Environments

All components are protected by plating or corrosion inhibiting oil.

### Lubrication and Contaminants

The rating of all series with metal-on-metal bearing members is based on the presence of an adequate lubricant film. Ratings for the Reinforced Nylon race series are based on dry operation with the inherent lubrication provided by the bronze ball.

A controlled internal clearance is present in all metal-on-metal bearings. The reinforced Nylon race series are molded with a positive interference fit-up which excludes contaminants and results in an excellent self-wiping action.

Protection from contaminants should be provided wherever possible. Grease fittings or lubricant entry provisions are available for most metal-on-metal bearings. Periodic relubrication will improve operation under severe conditions. Contaminants are also flushed out during relubrication. Where relubrication is difficult or impractical, the self-lubricating features of the sintered ball or race materials and the reinforced Nylon race provide built-in protection.

### Caution:

The lubricator mounting hole in housings reduces the strength of housings by varying amounts depending on size and location.

### Mounting

Sintered bronze balls may be distorted by excessive clamping pressure. Care should be used in tightening a nut against the ball to prevent distortion or binding. Caution: certain ANSI bolt series with fillets under the head will interfere with proper assembly. Use of a countersunk washer is suggested.

### Temperature and Water Immersion

Self Aligning bearings may be operated between  $-30^{\circ}\text{F}$  and  $+300^{\circ}\text{F}$ , with wider ranges obtained by the use of special lubricants. Reinforced nylon race bearings may be operated between  $-30^{\circ}\text{F}$  and  $+150^{\circ}\text{F}$ . Prolonged immersion of Nylon races in water can cause an increase in torque.

Engineering Data

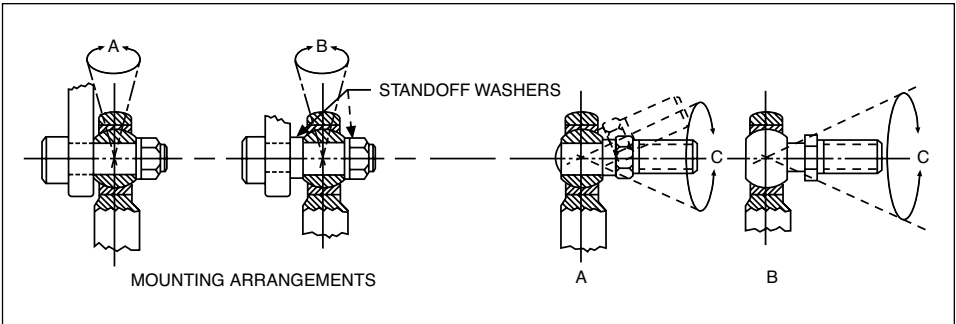
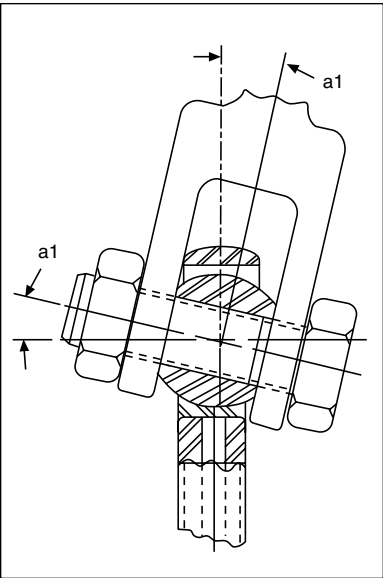
Mounting and Misalignment Factors

The single biggest reason rod end bearings are used is for their ability to absorb gross misalignment and still transmit motion in the preferred direction. To overcome misalignment, the ball or housing rotates as far as necessary or until it strikes an obstruction. The amount of misalignment a bearing can absorb is limited by the mounting arrangement. Shown below are common mounting arrangements, along with an indication of the misalignment absorbing capabilities of each. The table lists the maximum angular displacement in each mounting mode.

Rod Ends offer the least misalignment absorbing capability when fitted closely between the legs of a clevis or when the ball is bolted against the face of a lever. The limit is reached when the housing head strikes the mounting member.

Adding a standoff washer with the same diameter as the ball face increases misalignment absorbing capability. The limit is reached when the washer strikes the face.

The greatest misalignment compensation results when the ball is fitted with a stud, the shank diameter of which equals the ball bore chamfer, (see A). One piece ball studs (see B) of similar proportions also allow similar misalignment. Exceeding these dimensional limits may deform the race, so care should be taken to choose the proper mounting arrangement.



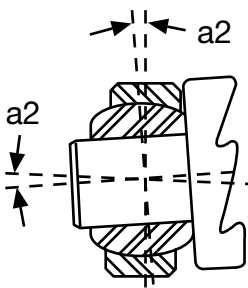
Reference Letters

D – Head Diameter or Outer Race Diameter  
H – Housing Width  
W – Ball Width  
 $A_1 = \sin^{-1} \frac{W}{D} - \sin^{-1} \frac{H}{D}$

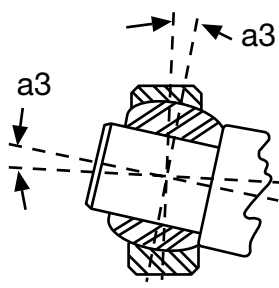
ANGLE OF MISALIGNMENT (A1)

| Size | SERIES |                    |           |                    |
|------|--------|--------------------|-----------|--------------------|
|      | KF     | HM-C/HF-C<br>HM/HF | CMHD/CFHD | HME/HFE<br>HMX/HFX |
| -3   | ±15°   | ±5-1/2°            | ±6°       | ±6-1/2°            |
| -4   | ±15°   | ±6-1/2°            | ±7°       | ±8°                |
| -5   | ±15°   | ±5-1/2°            | ±6°       | ±7°                |
| -6   | ±15°   | ±5°                | ±5-1/2°   | ±6°                |
| -7   | —      | ±6°                | ±6°       | ±7°                |
| -8   | ±15°   | ±5°                | ±5°       | ±6°                |
| -10  | —      | ±6°                | ±7-1/2°   | ±8°                |
| -12  | —      | ±5°                | ±6°       | ±7°                |
| -16  | —      | ±7°                | —         | ±7°                |

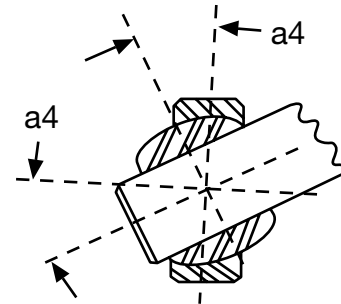
Spherical bearings offer a greater variety of mounting positions compared to the rod end bearings. The angle of misalignment is calculated based on its mounting arrangement. Shown are three common mountings and the formulae for calculating the angle of misalignment.



$$a_2 = \sin^{-1} \frac{W}{A} - \sin^{-1} \frac{H}{A}$$



$$a_3 = \sin^{-1} \frac{W}{E} - \sin^{-1} \frac{H}{E}$$



$$a_4 = \sin^{-1} \frac{B}{E} - \sin^{-1} \frac{H}{E}$$

### Reference Letters

- B – Ball Bore
- C – Outer Race Chamfer
- D – Head Diameter or Outer Race Diameter
- E – Ball Diameter
- H – Housing Width
- A –  $\sqrt{(D-2C)^2 + H^2}$
- W – Ball Width

### SPHERICAL BEARINGS

| Series<br>LS | Mounting<br>Arrangements |                |                | Series<br>LHA<br>LHB<br>LHSS<br>LHSSE<br>LHSSVV | Mounting<br>Arrangements |                |                |
|--------------|--------------------------|----------------|----------------|-------------------------------------------------|--------------------------|----------------|----------------|
|              | a <sub>2</sub>           | a <sub>3</sub> | a <sub>4</sub> |                                                 | a <sub>2</sub>           | a <sub>3</sub> | a <sub>4</sub> |
| -3           | ±9°                      | ±16 1/2°       | ±34 1/2°       | -2                                              | ±8 1/2°                  | ±13 1/2°       | ±28°           |
| -4           | ±8°                      | ±14 1/2°       | ±29°           | -3                                              | ±7°                      | ±11°           | ±29 1/2°       |
| -5           | ±9°                      | ±14°           | ±30°           | -4                                              | ±9°                      | ±13°           | ±30°           |
| -6           | ±8°                      | ±12 1/2°       | ±27°           | -5                                              | ±8°                      | ±12°           | ±26°           |
| -7           | ±6 1/2°                  | ±11°           | ±25°           | -6                                              | ±7 1/2°                  | ±10 1/2°       | ±23°           |
| -8           | ±7 1/2°                  | ±12 1/2°       | ±23°           | -7                                              | ±6 1/2°                  | ±9 1/2°        | ±20 1/2°       |
| -10          | ±8°                      | ±12°           | ±23°           | -8                                              | ±7°                      | ±10°           | ±20°           |
| -12          | ±9°                      | ±15°           | ±27°           | -9                                              | ±7 1/2°                  | ±10°           | ±20°           |
| -16          | ±6 1/2°                  | ±10°           | ±25°           | -10                                             | ±7°                      | ±9°            | ±19°           |
| -19          | ±6°                      | ±18 1/2°       | ±23 1/2°       | -12                                             | ±7°                      | ±9°            | ±21°           |
| -24          | ±5°                      | ±7°            | ±23°           | -14                                             | ±7°                      | ±9°            | ±16°           |
| -30          | ±5°                      | ±7°            | ±25°           | -16                                             | ±7 1/2°                  | ±9 1/2°        | ±16°           |

# Engineering Information

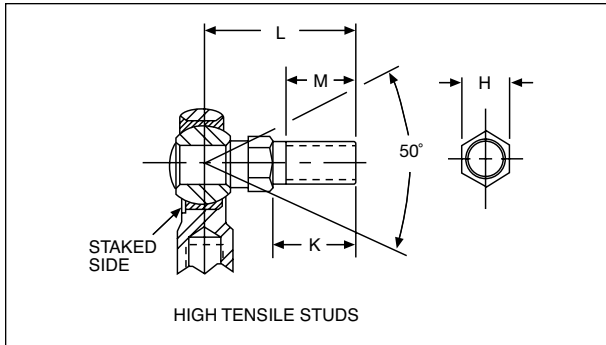
## Engineering Data

### Housing Bore for Press Fit of Spherical Bearings

| Basic<br>Bearing<br>Size | D<br>Bearing O.D.<br>+.0000 /-.0005 | HOUSING BORE<br>RECOMMENDED<br>(Aluminum or Steel) |
|--------------------------|-------------------------------------|----------------------------------------------------|
| <b>LS SERIES</b>         |                                     |                                                    |
| 3                        | .6250                               | .6248/.6243                                        |
| 4                        | .7500                               | .7498/.7493                                        |
| 5                        | .8750                               | .8748/.8743                                        |
| 6                        | 1.0000                              | .9998/.9993                                        |
| 7                        | 1.1875                              | 1.1873/1.1868                                      |
| 8                        | 1.3125                              | 1.3123/1.3118                                      |
| 10                       | 1.5625                              | 1.5623/1.5618                                      |
| 12                       | 2.2500                              | 2.2498/2.2493                                      |
| 16                       | 2.3750                              | 2.3748/2.3743                                      |
| 19                       | 2.6250                              | 2.6248/2.6243                                      |
| 24                       | 3.2500                              | 3.2498/3.2493                                      |
| 30                       | 4.0000                              | 3.9998/3.9993                                      |

| Basic<br>Bearing<br>Size             | D<br>Bearing O.D.<br>+.0000 /-.0005 | HOUSING BORE<br>RECOMMENDED<br>(Aluminum or Steel) |
|--------------------------------------|-------------------------------------|----------------------------------------------------|
| <b>LHA, LHB, LHSSE, LHSSV SERIES</b> |                                     |                                                    |
| 2                                    | .4687                               | .4685/.4680                                        |
| 3                                    | .5625                               | .5623/.5618                                        |
| 4                                    | .6562                               | .6560/.6555                                        |
| 5                                    | .7500                               | .7498/.7493                                        |
| 6                                    | .8125                               | .8123/.8118                                        |
| 7                                    | .9062                               | .9060/.9055                                        |
| 8                                    | 1.0000                              | .9998/.9993                                        |
| 9                                    | 1.0937                              | 1.0935/1.0930                                      |
| 10                                   | 1.1875                              | 1.1873/1.1868                                      |
| 12                                   | 1.4375                              | 1.4373/1.4368                                      |
| 14                                   | 1.5625                              | 1.5623/1.5618                                      |
| 16                                   | 1.7500                              | 1.7498/1.7493                                      |

## Stud – Specifications



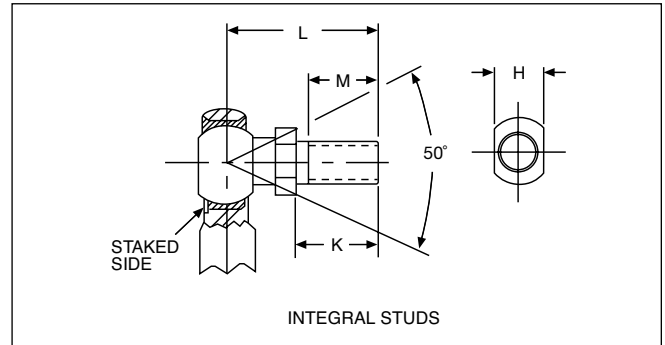
Steel studs are available in the CMHD/CFHD, HM/HF, HM-C/HF-C and KF Series to facilitate right angle connections. Standard misalignment is 50° in all sizes. Threads are only available as right hand. There are two types of studs available:

### High Tensile Steel Studs–(Y Suffix)

High tensile steel studs are available for sizes 3 through 12. These studs are machined for exact fit-up within the ball bore, providing smooth operation and high performance. The studs are assembled to maintain the internal clearances inherent in the Rod Ends. They are permanently secured in the bore of the ball, threaded for easy mounting and have a hex section to facilitate tightening. The stud is designed to accommodate 50° misalignment in any direction, and provides maximum load capacity.

### Integral Ball Studs–(S Suffix)

The ball and stud are combined into a single unit of case hardened machined plated steel. Wrench flats are provided for tightening. These studs offer the same operational features as the high tensile studs, with slightly reduced load capacity. The integral studs are available in sizes 3 through 8 only.



### Numbering System

#### High Tensile Steel Studs

Use a “Y” suffix after the complete catalog number

**Example:** CFHDL-3Y

#### Integral Ball Stud

Use a “S” suffix after the complete catalog number

**Example:** HF-5S

### Materials

Rod End: Refer to basic Rod End specification page

Stud: High tensile steel - Plated for corrosion resistance

Integral Stud: Low carbon steel - case hardened - plated for corrosion resistance

## DIMENSIONS AND LOAD DATA

### DIMENSIONS IN INCHES

| To Fit<br>Rod End<br>Size | Stud<br>Thread<br>UNF-2 | H     | K     | L     | M     | Static Load Rating (Lbs.) |           |
|---------------------------|-------------------------|-------|-------|-------|-------|---------------------------|-----------|
|                           |                         | ±.005 | ±.010 | ±.015 | MIN   | High-Tensile Stud         | Ball Stud |
| 3                         | 10-32                   | .312  | .500  | 1.016 | .437  | 350                       | 250       |
| 4                         | 1/4-28                  | .375  | .562  | 1.047 | .500  | 850                       | 550       |
| 5                         | 5/16-24                 | .438  | .687  | 1.234 | .594  | 1,600                     | 1,050     |
| 6                         | 3/8-24                  | .500  | .906  | 1.570 | .812  | 2,400                     | 1,500     |
| 7                         | 7/16-20                 | .625  | 1.125 | 1.968 | .938  | 2,700                     | 1,800     |
| 8                         | 1/2-20                  | .625  | 1.125 | 2.000 | .938  | 3,100                     | 2,200     |
| 10                        | 5/8-18                  | .750  | 1.500 | 2.500 | 1.250 | 4,500                     | N/A       |
| 12                        | 3/4-16                  | 1.000 | 1.812 | 3.000 | 1.625 | 6,000                     | N/A       |

# Mounted Bearings

## Replacement Bearings for Setscrew Locking Series

F



Mounted Bearings offer a simple, convenient method of providing load support. Selection for most applications may be readily accomplished from a single selection chart, based on shaft size, radial and thrust load requirements. Installation normally requires only bolting to a suitable mounting surface and securing bearing to shaft with setscrews or eccentric locking collar provided.

The Boston Gear Mounted Bearing line is one of the most comprehensive available to industry. Ranging from light duty, plain bearing blocks to precision units. They all feature Boston Gear's tradition of design excellence and precision manufacture.

### Light Duty Series

**PPB** — Split cast iron housing with bore and mounting base machined.

**SRP** — PPB Series with a Bost-Bronz (oil impregnated) sleeve bearing.

**PS** — Stamped steel housing with pillow block, 2 bolt and 3 bolt flange configuration. Extended inner race, (2) setscrews locking to shaft. Prelubricated spherical O.D. bearing.

**XL** — Ductile iron housing with pillow block, 2 bolt and 3 bolt flange configuration. Extended inner race, (2) setscrews locking to shaft. Prelubricated spherical O.D. bearing.

### Standard Duty Series

**All Series** — Solid one-piece cast iron housing of American manufacture with removable zerk-type threaded grease fitting. Precision machined base and spherical bore. Available in pillow block, 2 bolt and 4 bolt flanges.

**H & L Series** — Eccentric shaft lock of international manufacture.

**S Series** — Extended inner race with double setscrews for positive shaft locking.

### Medium Duty Series

**MB Series** — Solid one-piece heavy duty cast iron housing with removable zerk-type threaded grease fitting. Available in pillow block 4 bolt flange and piloted flange with precision machined base, pilot diameter and spherical bore. Spherical O.D. bearing of international manufacture with extended inner race and double setscrews for positive shaft locking and smoothness of operation.

## Replacement Bearings and Locking Collars for Eccentric Locking Collar Series



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | INTERNATIONAL BEARINGS |           |                 |           |                                     |           |
|---------|------------------------|-----------|-----------------|-----------|-------------------------------------|-----------|
|         | Replacement Bearings   |           | Locking Collars |           | Bearing and Carrier (A Series Only) |           |
|         | Catalog Number         | Item Code | Catalog Number  | Item Code | Catalog Number                      | Item Code |
| 1/2     | NX3008M                | 67374     | NX3008LC        | 67373     | 3A-1/2 B&C                          | 07030     |
| 5/8     | NX3010M                | 67377     | —               | —         | 3A-5/8 B&C                          | 07032     |
| 3/4     | NX4012M                | 67380     | NX4012LC        | 67379     | 4A-3/4 B&C                          | 07014     |
| 7/8     | NX5014M                | 67383     | —               | —         | 5A-7/8 B&C                          | 07034     |
| 15/16   | NX5015M                | 67386     | NX5015LC        | 67385     | 5A-15/16 B&C                        | 07036     |
| 1       | NX5016M                | 67389     | NX5016LC        | 67388     | 5A-1 B&C                            | 07022     |
| 1-1/8   | NX6018M                | 67392     | —               | —         | 6A-1-1/8 B&C                        | 07038     |
| 1-3/16  | NX6019M                | 67395     | NX6019LC        | 67394     | 6A-1-3/16 B&C                       | 07040     |
| 1-1/4S  | NX6020M                | 67398     | NX6020LC        | 67397     | 6A-1-1/4 B&C                        | 07042     |
| 1-1/4   | NX7104M                | 67401     | —               | —         | —                                   | —         |
| 1-5/16  | NX7105M                | 67404     | NX7105LC        | 67403     | —                                   | —         |
| 1-3/8   | NX7106M                | 67407     | NX7106LC        | 67406     | —                                   | —         |
| 1-7/16  | NX7107M                | 67410     | NX7107LC        | 67409     | —                                   | —         |
| 1-1/2   | NX8108M                | 67413     | NX8108LC        | 67412     | —                                   | —         |
| 1-5/8   | NX9110M                | 67416     | NX9110LC        | 67415     | —                                   | —         |
| 1-11/16 | NX9111M                | 67419     | NX9111LC        | 67418     | —                                   | —         |
| 1-3/4   | NX9112M                | 67422     | NX9112LC        | 67421     | —                                   | —         |
| 1-15/16 | NX10115M               | 67425     | NX10115LC       | 67424     | —                                   | —         |
| 2       | NX11200M               | 67428     | NX11200LC       | 67427     | —                                   | —         |
| 2-3/16  | NX11203M               | 67431     | NX11203LC       | 67430     | —                                   | —         |
| 2-1/4   | NX11204M               | 67434     | —               | —         | —                                   | —         |
| 2-7/16  | NX11207M               | 67437     | NX11207LC       | 67436     | —                                   | —         |

(FOR USE WITH THE L, H, F, T AND A SERIES BEARINGS)

# Mounted Bearings

## Replacement Bearings for Setscrew Locking Series

F



### PS & XL SERIES

| Bore   | Catalog Number | Item Code |
|--------|----------------|-----------|
| 1/2    | NBG15-1/2      | 68880     |
| 5/8    | NBG15-5/8      | 68881     |
| 3/4    | NBG15-3/4      | 68882     |
| 7/8    | NBG15-7/8      | 68883     |
| 15/16  | NBG15-15/16    | 68884     |
| 1      | NBG15-1        | 68885     |
| 1-1/16 | NBG15-1-1/16   | 68886     |
| 1-1/8  | NBG15-1-1/8    | 68887     |
| 1-3/16 | NBG15-1-3/16   | 68888     |
| 1-1/4S | NBG15-1-1/4S   | 68889     |
| 1-3/8  | NBG15-1-3/8    | 68891     |
| 1-7/16 | NBG15-1-7/16   | 68892     |

(FOR USE WITH THE PS, PS2, PS3, XL, XL2 AND XL3 SERIES BEARINGS)

### S SERIES

| Bore    | Catalog Number | Item Code |
|---------|----------------|-----------|
| 1/2     | NBG25-1/2      | 68893     |
| 5/8     | NBG25-5/8      | 68894     |
| 3/4     | NBG25-3/4      | 68895     |
| 7/8     | NBG25-7/8      | 68896     |
| 15/16   | NBG25-15/16    | 68897     |
| 1       | NBG25-1        | 68898     |
| 1-1/16  | NBG25-1-1/16   | 68899     |
| 1-1/8   | NBG25-1-1/8    | 68900     |
| 1-3/16  | NBG25-1-3/16   | 68901     |
| 1-1/4S  | NBG25-1-1/4S   | 68902     |
| 1-5/16  | NBG25-1-5/16   | 68903     |
| 1-3/8   | NBG25-1-3/8    | 68904     |
| 1-7/16  | NBG25-1-7/16   | 68905     |
| 1-1/2   | NBG25-1-1/2    | 68906     |
| 1-5/8   | NBG25-1-5/8    | 68907     |
| 1-11/16 | NBG25-1-11/16  | 68908     |
| 1-3/4   | NBG25-1-3/4    | 68909     |
| 1-15/16 | NBG25-1-15/16  | 68910     |
| 2       | NBG25-2        | 68911     |
| 2-3/16  | NBG25-2-3/16   | 68912     |
| 2-1/4   | NBG25-2-1/4    | 68913     |
| 2-7/16  | NBG25-2-7/16   | 68914     |

(FOR USE WITH THE SF, SH, SL AND ST SERIES BEARINGS)

### MB SERIES

| Bore    | Catalog Number | Item Code |
|---------|----------------|-----------|
| 1-7/16  | NBG35-1-7/16   | 68915     |
| 1-1/2   | NBG35-1-1/2    | 68916     |
| 1-11/16 | NBG35-1-11/16  | 68917     |
| 1-3/4   | NBG35-1-3/4    | 68918     |
| 1-15/16 | NBG35-1-15/16  | 68919     |
| 2       | NBG35-2        | 68920     |
| 2-3/16  | NBG35-2-3/16   | 68921     |
| 2-1/4   | NBG35-2-1/4    | 68922     |
| 2-7/16  | NBG35-2-7/16   | 68923     |
| 2-1/2   | NBG35-2-1/2    | 68924     |
| 2-11/16 | NBG35-2-11/16  | 68925     |
| 2-15/16 | NBG25-2-15/16  | 68926     |
| 3       | NBG35-3        | 68927     |
| 3-3/16  | NBG35-3-3/16   | 68928     |
| 3-1/4   | NBG35-3-1/4    | 68929     |
| 3-7/16  | NBG35-3-7/16   | 68930     |
| 3-1/2   | NBG35-3-1/2    | 68931     |

(FOR USE WITH THE MB, MBF AND MBP SERIES BEARINGS)

## PPB Series SRP Series – With Bost-Bronz Bushings

### Pillow Blocks – Light Duty Split Cast Iron

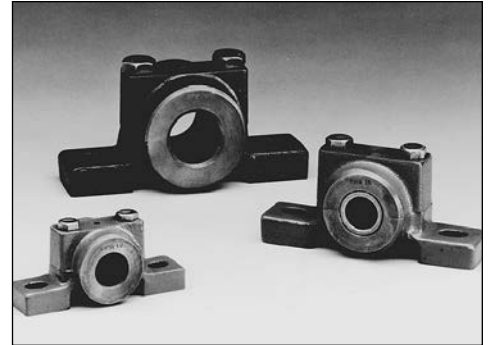
The bottom surface and the split surfaces are ground. Both end surfaces of the bore are finished perpendicular to the base. Bolt holes in the base are slotted except Cat. No. PPB4 which has drilled holes. PPB Series blocks have an oil hole drilled in center of cap.†

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore   | PPB SERIES     |           | SRP SERIES     |           |                     |           |
|--------|----------------|-----------|----------------|-----------|---------------------|-----------|
|        | Catalog Number | Item Code | Pillow Blocks  |           | Replacement Bearing |           |
|        |                |           | Catalog Number | Item Code | Catalog Number      | Item Code |
| 1/4    | PPB4           | 34304     | SRP4           | 34434     | B46-2               | 34542     |
| 3/8    | PPB6           | 34306     | SRP6           | 34436     | B68-3               | 34634     |
| 1/2    | PPB8           | 34308     | SRP8           | 34438     | B812-4              | 34752     |
| 5/8    | PPB10          | 34310     | SRP10          | 34440     | B1014-6             | 34852     |
| 3/4    | PPB12          | 34312     | SRP12          | 34442     | B1216-6             | 34934     |
| 7/8    | PPB14          | 34314     | —              | —         | —                   | —         |
| 15/16  | PPB15          | 34316     | SRP15          | 34444     | B1520-8             | 35042     |
| 1      | PPB16          | 34318     | SRP16          | 34446     | B1620-8             | 35068     |
| 1-3/16 | PPB19          | 34320     | SRP19          | 34448     | B1924-8             | 35172     |
| 1-1/4  | PPB20          | 34322     | SRP20          | 34450     | B2024-8             | 35186     |
| 1-7/16 | PPB23          | 34324     | —              | —         | —                   | —         |
| 1-1/2  | PPB24          | 34326     | —              | —         | —                   | —         |

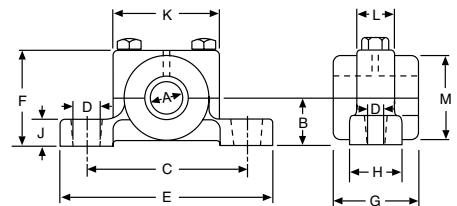
\*Two required.

†The 1/4" size is made of brass and has no oil holes.



#### STANDARD TOLERANCES

| DIMENSIONS        |               | TOLERANCE      |
|-------------------|---------------|----------------|
| <b>PPB Series</b> |               |                |
| Bore              | All           | +.000 to -.001 |
| <b>SRP Series</b> |               |                |
| Bore              | .252–1.003    | +.000 to -.001 |
|                   | 1.1905–1.2530 | +.000 to -.002 |



#### ALL DIMENSIONS IN INCHES

| A (Bore)                             | B     | C     | D         | E     | F     | G     | H     | J    | K      | L     | M     |
|--------------------------------------|-------|-------|-----------|-------|-------|-------|-------|------|--------|-------|-------|
| <b>PPB SERIES</b>                    |       |       |           |       |       |       |       |      |        |       |       |
| .2500                                | 1/4   | 1-1/8 | 1/8       | 1-1/2 | 1/2   | 1/2   | 3/8   | 1/4  | 3/4    | 3/8   | 7/16  |
| .3760<br>.5010                       | 9/16  | 2-1/8 | 5/16x3/16 | 2-3/4 | 1-1/8 | 1     | 5/8   | 5/16 | 1-7/16 | 7/16  | 1     |
| .6260<br>.7510                       | 13/16 | 2-7/8 | 1/2x5/16  | 3-3/4 | 1-5/8 | 1-1/2 | 1     | 1/2  | 2      | 11/16 | 1-1/2 |
| .8760<br>.9385<br>1.0010             | 1-1/8 | 3-3/4 | 5/8x3/8   | 5     | 2-1/4 | 2     | 1-1/4 | 5/8  | 2-1/2  | 7/8   | 2     |
| 1.1885<br>1.2510<br>1.4385<br>1.5010 | 1-3/8 | 4-1/2 | 3/4x1/2   | 6     | 2-3/4 | 2-1/2 | 1-1/2 | 3/4  | 3      | 1     | 2-1/2 |
| <b>SRP SERIES</b>                    |       |       |           |       |       |       |       |      |        |       |       |
| .2510<br>.3770                       | 9/16  | 2-1/8 | 5/16x3/16 | 2-3/4 | 1-1/8 | 1     | 5/8   | 5/16 | 1-7/16 | 7/16  | 1     |
| .5020                                | 13/16 | 2-7/8 | 1/2x5/16  | 3-3/4 | 1-5/8 | 1-1/2 | 1     | 1/2  | 2      | 11/16 | 1-1/2 |
| .6270<br>.7530                       | 1-1/8 | 3-3/4 | 5/8x3/8   | 5     | 2-1/8 | 2     | 1-1/4 | 5/8  | 2-1/2  | 7/8   | 2     |
| .9405<br>1.0030<br>1.1905<br>1.2530  | 1-3/8 | 4-1/2 | 3/4x1/2   | 6     | 2-3/4 | 2-1/2 | 1-1/2 | 3/4  | 3      | 1     | 2-1/2 |

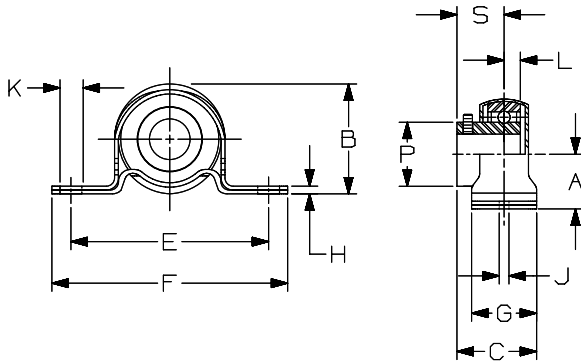
# Mounted Ball Bearings

## PS Series Pressed Steel Housing Pillow Blocks – Light Duty Setscrew Locking



### Features —

- Quality pressed steel outer housing.
- Deep groove ball bearings for high radial and thrust loads.
- Spherical outer race for full self-alignment.
- Synthetic lip type seals.
- Positive locking by setscrews through extended inner race.
- Lubricated for life.
- Housing halves snap together for ease of assembly.



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore   | Catalog Number | Item Code |
|--------|----------------|-----------|
| 1/2    | PS-1/2         | 64500     |
| 5/8    | PS-5/8         | 64501     |
| 3/4    | PS-3/4         | 64502     |
| 7/8    | PS-7/8         | 64503     |
| 15/16  | PS-15/16       | 64504     |
| 1      | PS-1           | 64505     |
| 1-1/16 | PS-1-1/16      | 64506     |
| 1-1/8  | PS-1-1/2       | 64507     |
| 1-3/16 | PS-1-3/16      | 64508     |
| 1-1/4S | PS-1-1/4S      | 64509     |

### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE        |
|------------|-----|------------------|
| Bore       | All | +0.001 to -0.000 |

### ALL DIMENSIONS IN INCHES

| Bore   | A      | B      | C     | E       | F     | G     | H    | J   | K   | L     | P       | R*<br>Setscrew<br>UNF | S     | Bolt<br>Size | Approx.<br>Weight<br>(Lbs.) |
|--------|--------|--------|-------|---------|-------|-------|------|-----|-----|-------|---------|-----------------------|-------|--------------|-----------------------------|
| 1/2    | 7/8    | 1-3/4  | 1.125 | 2-11/16 | 3-5/8 | 1     | .133 | .34 | .54 | 15/64 | 31/32   | 10—32                 | 5/8   | 5/16         | .52                         |
| 5/8    | 1      | 2-1/16 | 1.203 | 3       | 4-1/8 | 1     | .178 | .40 | .54 | 9/32  | 1-11/64 | 10—32                 | 45/64 | 5/16         | .48                         |
| 3/4    | 1      | 2-1/16 | 1.203 | 3       | 4-1/8 | 1     | .178 | .40 | .54 | 9/32  | 1-11/64 | 10—32                 | 45/64 | 5/16         | .58                         |
| 7/8    | 1-1/8  | 2-7/32 | 1.328 | 3-3/8   | 4-1/2 | 1-1/8 | .208 | .40 | .54 | 19/64 | 1-11/32 | 10—32                 | 49/64 | 3/8          | .67                         |
| 15/16  | 1-1/8  | 2-7/32 | 1.328 | 3-3/8   | 4-1/2 | 1-1/8 | .208 | .40 | .54 | 19/64 | 1-11/32 | 10—32                 | 49/64 | 3/8          | .64                         |
| 1      | 1-1/8  | 2-7/32 | 1.328 | 3-3/8   | 4-1/2 | 1-1/8 | .208 | .40 | .54 | 19/64 | 1-11/32 | 10—32                 | 49/64 | 3/8          | .61                         |
| 1-1/16 | 1-5/16 | 2-5/8  | 1.390 | 3-3/4   | 4-7/8 | 1-1/8 | .238 | .53 | .75 | 5/16  | 1-39/64 | 1/4—28                | 53/64 | 3/8          | 1.10                        |
| 1-1/8  | 1-5/16 | 2-5/8  | 1.390 | 3-3/4   | 4-7/8 | 1-1/8 | .238 | .53 | .75 | 5/16  | 1-39/64 | 1/4—28                | 53/64 | 3/8          | 1.05                        |
| 1-3/16 | 1-5/16 | 2-5/8  | 1.390 | 3-3/4   | 4-7/8 | 1-1/8 | .238 | .53 | .75 | 5/16  | 1-39/64 | 1/4—28                | 53/64 | 3/8          | 1.00                        |
| 1-1/4S | 1-5/16 | 2-5/8  | 1.390 | 3-3/4   | 4-7/8 | 1-1/8 | .238 | .53 | .75 | 5/16  | 1-39/64 | 1/4—28                | 53/64 | 3/8          | .95                         |

\*2 at 120°

Eccentric Locking Collar bearings are available to special order.

For Load Ratings, See Engineering Section, Page 242.

Replacement Bearings are shown on Page 214.

# Mounted Ball Bearings

## XL Series Cast Ductile Housing Pillow Blocks – Light Duty Setscrew Locking

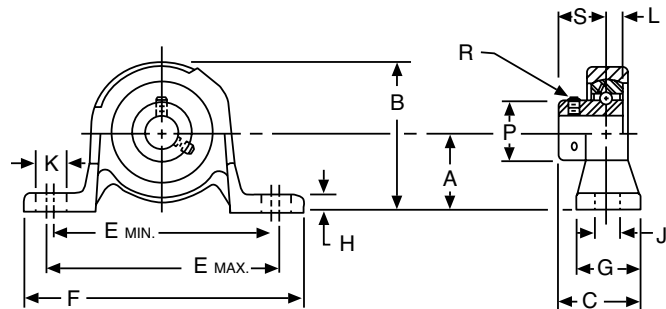
### Features —

- One-piece housing (ductile casting).
- Deep groove ball bearings for high radial and thrust loads.
- Machined housing bore and spherical outer race for full self-alignment.
- Synthetic lip type seal.
- Positive locking by setscrews through extended inner race.



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore   | Catalog Number | Item Code |
|--------|----------------|-----------|
| 1/2    | XL-1/2         | 64534     |
| 5/8    | XL-5/8         | 64535     |
| 3/4    | XL-3/4         | 64536     |
| 7/8    | XL-7/8         | 64537     |
| 15/16  | XL-15/16       | 64538     |
| 1      | XL-1           | 64539     |
| 1-1/16 | XL-1-1/16      | 64540     |
| 1-1/8  | XL-1-1/8       | 64541     |
| 1-3/16 | XL-1-3/16      | 64542     |
| 1-1/4S | XL-1-1/4S      | 64543     |
| 1-3/8  | XL-1-3/8       | 64545     |
| 1-7/16 | XL-1-7/16      | 64546     |



### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |              |
|------------|-----------|--------------|
| Bore       | All       | ±.001 - .000 |

### ALL DIMENSIONS IN INCHES

| Bore                                | A       | B       | C       | E Min. | E Max.  | F     | G      | H     | J    | K     | L     | P       | R*<br>Setscrew<br>UNF | S     | Bolt<br>Size | Approx.<br>Weight<br>(Lbs.) |
|-------------------------------------|---------|---------|---------|--------|---------|-------|--------|-------|------|-------|-------|---------|-----------------------|-------|--------------|-----------------------------|
| 1/2<br>5/8                          | 1-3/16  | 2-5/32  | 1-1/8   | 3-3/16 | 3-11/16 | 4-1/2 | 1      | 9/32  | 7/16 | 11/16 | 15/64 | 31/32   | 10—32                 | 5/8   | 3/8          | .6                          |
| 3/4                                 | 1-5/16  | 2-7/16  | 1-15/64 | 3-5/8  | 3-7/8   | 4-3/4 | 1-1/16 | 5/16  | 7/16 | 9/16  | 9/32  | 1-11/64 | 10—32                 | 45/64 | 3/8          | .8                          |
| 7/8<br>15/16<br>1                   | 1-7/16  | 2-21/32 | 1-11/32 | 3-7/8  | 4-1/8   | 5     | 1-1/8  | 11/32 | 7/16 | 9/16  | 19/64 | 1-11/32 | 10—32                 | 49/64 | 3/8          | 1.0                         |
| 1-1/16<br>1-1/8<br>1-3/16<br>1-1/4S | 1-11/16 | 3-5/32  | 1-31/64 | 4-1/2  | 4-3/4   | 6     | 1-5/16 | 3/8   | 9/16 | 11/16 | 5/16  | 1-39/64 | 1/4—28                | 53/64 | 1/2          | 1.4                         |
| 1-3/8<br>1-7/16                     | 1-7/8   | 3-9/16  | 1-11/16 | 4-3/4  | 5       | 6-3/8 | 1-3/8  | 13/32 | 9/16 | 11/16 | 11/32 | 1-27/32 | 1/4—28                | 1     | 1/2          | 1.9                         |

\*2 at 120°

These units also available with Eccentric Locking Collars on Special Order.

For Load Ratings, see Engineering Section, Page 237.

Replacement Bearings are shown on Page 214.

# Mounted Ball Bearings

## L/H Series Pillow Blocks – Standard Duty; Eccentric Locking Collar



**L Series Low Backing**  
**H Series High Backing**

### Features —

- Rigid one piece housing.
- Chrome alloy steel balls.
- Spherical outer race.
- Synthetic lip type seals.
- Eccentric locking collar.
- 1/4-28 threaded grease fitting.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | Low Backing    |           | High Backing   |           |
|---------|----------------|-----------|----------------|-----------|
|         | L Series       |           | H Series       |           |
|         | Catalog Number | Item Code | Catalog Number | Item Code |
| 1/2     | 3L-1/2         | 06906     | 3H-1/2         | 06902     |
| 5/8     | 3L-5/8         | 06908     | 3H-5/8         | 06904     |
| 3/4     | 4L-3/4         | 06912     | 4H-3/4         | 06910     |
| 7/8     | 5L-7/8         | 06920     | 5H-7/8         | 06914     |
| 15/16   | 5L-15/16       | 06922     | 5H-15/16       | 06916     |
| 1       | 5L-1           | 06924     | 5H-1           | 06918     |
| 1-1/8   | 6L-1-1/8       | 06928     | 6H-1-1/8       | 06932     |
| 1-3/16  | 6L-1-3/16      | 06930     | 6H-1-3/16      | 06936     |
| 1-1/4S  | 6L-1-1/4S      | 06934     | 6H-1-1/4S      | 06926     |
| 1-1/4   | 7L-1-1/4*      | 06858     | 7H-1-1/4*      | 06850     |
| 1-5/16  | 7L-1-5/16*     | 06860     | 7H-1-5/16*     | 06852     |
| 1-3/8   | 7L-1-3/8*      | 06862     | 7H-1-3/8*      | 06854     |
| 1-1/2   | 8L-1-1/2*      | 06868     | 8H-1-1/2*      | 06866     |
| 1-5/8   | 9L-1-5/8*      | 06876     | 9H-1-5/8*      | 06870     |
| 1-11/16 | 9L-1-11/16*    | 06878     | 9H-1-11/16*    | 06872     |
| 1-15/16 | 10L-1-15/16*   | 06884     | 10H-1-15/16*   | 06882     |
| 2-1/4   | 12L-2-1/4*     | 06898     | 12H-2-1/4*     | 06894     |
| 2-7/16  | 12L-2-7/16*    | 06900     | 12H-2-7/16*    | 06896     |

\*Bearings equipped with steel flinger.  
Replacement Bearings are shown on Page 213.

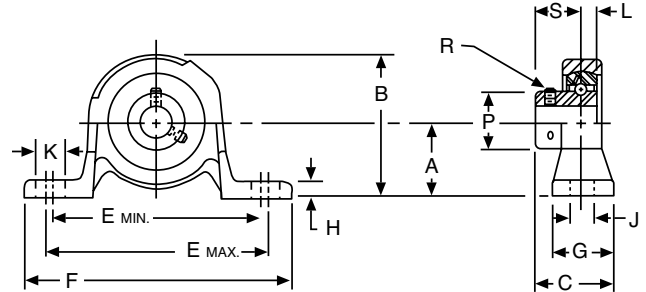
# Mounted Ball Bearings

## L/H Series

### Pillow Blocks – Standard Duty; Eccentric Locking Collar

#### SHAFT HEIGHT DIMENSIONS IN INCHES

| Bore                               | Low Backing |         |       | High Backing |         |         |
|------------------------------------|-------------|---------|-------|--------------|---------|---------|
|                                    | A           | B       | H     | A            | B       | H       |
| 1/2<br>5/8                         | 1-1/16      | 2-5/32  | 1/2   | 1-3/16       | 2-9/32  | 5/8     |
| 3/4                                | 1-1/4       | 2-15/32 | 9/16  | 1-5/16       | 2-17/32 | 5/8     |
| 7/8<br>15/16<br>1                  | 1-5/16      | 2-21/32 | 5/8   | 1-7/16       | 2-25/32 | 3/4     |
| 1-1/8<br>1-3/16<br>1-1/4S          | 1-9/16      | 3-1/8   | 3/4   | 1-11/16      | 3-1/4   | 7/8     |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16 | 1-13/16     | 3-11/16 | 1     | 1-7/8        | 3-3/4   | 1-1/16  |
| 1-1/2                              | 1-15/16     | 4       | 1-1/8 | 2            | 4-1/16  | 1-3/16  |
| 1-5/8<br>1-11/16<br>1-3/4          | 2-1/16      | 4-1/4   | 1-1/4 | 2-1/8        | 4-5/16  | 1-5/16  |
| 1-15/16                            | 2-3/16      | 4-1/2   | 1-3/8 | 2-1/4        | 4-9/16  | 1-7/16  |
| 2<br>2-3/16                        | 2-7/16      | 4-15/16 | 1-1/2 | 2-1/2        | 5       | 1-9/16  |
| 2-1/4<br>2-7/16                    | 2-11/16     | 5-7/16  | 1-5/8 | 2-3/4        | 5-1/2   | 1-11/16 |



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE          |
|------------|-----|--------------------|
| Bore       | All | +0.0012 to -0.0000 |

#### ALL DIMENSIONS IN INCHES

| Bore                               | C       | E       |         | F       | G      | J     | K      | L      | P       | R<br>Setscrew<br>UNF | S       | Bolt<br>Size | Approx.<br>Wt. (Lbs.) |      |
|------------------------------------|---------|---------|---------|---------|--------|-------|--------|--------|---------|----------------------|---------|--------------|-----------------------|------|
|                                    |         | Min.    | Max.    |         |        |       |        |        |         |                      |         |              | L                     | H    |
| 1/2<br>5/8                         | 1-5/8   | 3-5/16  | 4       | 5-1/16  | 1-1/2  | 7/16  | 25/32  | 1/4    | 1-9/64  | 1/4-28               | 7/8     | 3/8          | 1.1                   | 1.2  |
| 3/4                                | 1-45/64 | 3-7/16  | 4-1/8   | 5-1/4   | 1-9/16 | 7/16  | 25/32  | 19/64  | 1-19/64 | 1/4-28               | 59/64   | 3/8          | 1.6                   | 1.6  |
| 7/8<br>15/16<br>1                  | 1-47/64 | 3-7/16  | 4-1/4   | 5-1/2   | 1-5/8  | 7/16  | 11/16  | 19/64  | 1-1/2   | 1/4-28               | 59/64   | 3/8          | 1.9                   | 1.9  |
| 1-1/8<br>1-3/16<br>1-1/4S          | 1-59/64 | 4-5/16  | 4-15/16 | 6-1/4   | 1-3/4  | 9/16  | 7/8    | 23/64  | 1-3/4   | 5/16-24              | 1-3/64  | 1/2          | 2.6                   | 2.7  |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16 | 2-13/64 | 4-3/4   | 5-3/8   | 6-11/16 | 1-7/8  | 9/16  | 7/8    | 47/64  | 2-3/16  | 3/8-24               | 1-17/64 | 1/2          | 4.1                   | 4.3  |
| 1-1/2                              | 2-3/8   | 5-1/4   | 5-13/16 | 7-1/4   | 2      | 9/16  | 27/32  | 27/32  | 2-23/64 | 3/8-24               | 1-3/8   | 1/2          | 5.5                   | 5.6  |
| 1-5/8<br>1-11/16<br>1-3/4          | 2-7/16  | 5-9/16  | 6-1/8   | 7-3/4   | 2-1/8  | 9/16  | 27/32  | 27/32  | 2-1/2   | 3/8-24               | 1-3/8   | 1/2          | 6.5                   | 6.6  |
| 1-15/16                            | 2-5/8   | 6-1/16  | 6-5/8   | 8-1/4   | 2-1/4  | 11/16 | 31/32  | 31/32  | 2-3/4   | 3/8-24               | 1-1/2   | 5/8          | 8.0                   | 8.1  |
| 2<br>2-3/16                        | 2-29/32 | 6-7/16  | 7-3/8   | 8-7/8   | 2-3/8  | 11/16 | 1-5/32 | 1-3/32 | 3       | 7/16-20              | 1-23/32 | 5/8          | 9.5                   | 10.0 |
| 2-1/4<br>2-7/16                    | 3-3/32  | 6-15/16 | 7-7/8   | 9-5/8   | 2-1/2  | 11/16 | 1-5/32 | 1-7/32 | 3-5/16  | 7/16-20              | 1-27/32 | 5/8          | 11.8                  | 11.9 |

For Load Ratings, see Engineering Section, Page 243.

# Mounted Ball Bearings

## SL/SH Series

Pillow Blocks – Standard Duty; Extended Inner Race – Setscrew Locking



**SL Series Low Backing**  
**SH Series High Backing**

### Features —

- One-piece, high grade cast iron housing.
- Deep groove ball bearings for high radial and thrust loads.
- Precision machined housing bore and spherical outer race for self-alignment.
- Synthetic lip type seals with steel flinger.
- Positive locking by setscrews through extended inner race.
- 1/4-28 threaded grease fitting and channel through outer race allow relubrication.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | Low Backing    |           | High Backing   |           |
|---------|----------------|-----------|----------------|-----------|
|         | Catalog Number | Item Code | Catalog Number | Item Code |
| 1/2     | SL-1/2*        | 64680     | SH-1/2*        | 64679     |
| 5/8     | SL-5/8*        | 64682     | SH-5/8*        | 64681     |
| 3/4     | SL-3/4         | 64684     | SH-3/4         | 64683     |
| 7/8     | SL-7/8         | 64686     | SH-7/8         | 64685     |
| 15/16   | SL-15/16       | 64688     | SH-15/16       | 65687     |
| 1       | SL-1           | 64690     | SH-1           | 64689     |
| 1-1/8   | SL-1-1/8       | 64692     | SH-1-1/8       | 64691     |
| 1-3/16  | SL-1-3/16      | 64694     | SH-1-3/16      | 64693     |
| 1-1/4S  | SL-1-1/4S      | 64696     | SH-1-1/4S      | 64695     |
| 1-1/4   | SL-1-1/4       | 64698     | SH-1-1/4       | 64697     |
| 1-5/16  | SL-1-5/16      | 64700     | SH-1-5/16      | 64699     |
| 1-3/8   | SL-1-3/8       | 64702     | SH-1-3/8       | 64701     |
| 1-7/16  | SL-1-7/16      | 64704     | SH-1-7/16      | 64703     |
| 1-1/2   | SL-1-1/2       | 64706     | SH-1-1/2       | 64705     |
| 1-5/8   | SL-1-5/8       | 64708     | SH-1-5/8       | 64707     |
| 1-11/16 | SL-1-11/16     | 64710     | SH-1-11/16     | 64709     |
| 1-3/4   | SL-1-3/4       | 64712     | SH-1-3/4       | 64711     |
| 1-15/16 | SL-1-15/16     | 64714     | SH-1-15/16     | 64713     |
| 2       | SL-2           | 64716     | SH-2           | 64715     |
| 2-3/16  | SL-2-3/16      | 64718     | SH-2-3/16      | 64717     |
| 2-1/4   | SL-2-1/4       | 64720     | SH-2-1/4       | 64719     |
| 2-7/16  | SL-2-7/16      | 64722     | SH-2-7/16      | 64721     |

\*Bearings not equipped with steel flinger.  
Replacement Bearings are shown on Page 214.

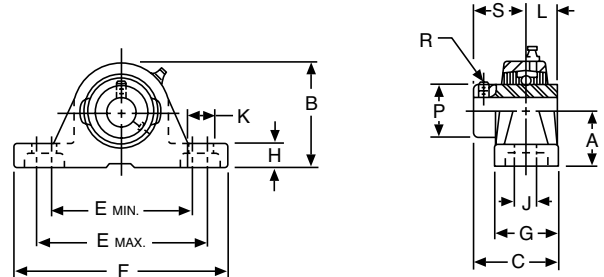
# Mounted Ball Bearings

## SL/SH Series

Pillow Blocks – Standard Duty; Extended Inner Race  
– Setscrew Locking

SHAFT HEIGHT DIMENSIONS IN INCHES

| Bore                               | Low Backing |         |       | High Backing |         |         |
|------------------------------------|-------------|---------|-------|--------------|---------|---------|
|                                    | A           | B       | H     | A            | B       | H       |
| 1/2<br>5/8                         | 1-1/16      | 2-5/32  | 1/2   | 1-3/16       | 2-9/32  | 5/8     |
| 3/4                                | 1-1/4       | 2-15/32 | 9/16  | 1-5/16       | 2-17/32 | 5/8     |
| 7/8<br>15/16<br>1                  | 1-5/16      | 2-21/32 | 5/8   | 1-7/16       | 2-25/32 | 3/4     |
| 1-1/8<br>1-3/16<br>1-1/4S          | 1-9/16      | 3-1/8   | 3/4   | 1-11/16      | 3-1/4   | 7/8     |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16 | 1-13/16     | 3-11/16 | 1     | 1-7/8        | 3-3/4   | 1-1/16  |
| 1-1/2                              | 1-15/16     | 4       | 1-1/8 | 2            | 4-1/16  | 1-3/16  |
| 1-5/8<br>1-11/16<br>1-3/4          | 2-1/16      | 4-1/4   | 1-1/4 | 2-1/8        | 4-5/16  | 1-5/16  |
| 1-15/16                            | 2-3/16      | 4-1/2   | 1-3/8 | 2-1/4        | 4-9/16  | 1-7/16  |
| 2<br>2-3/16                        | 2-7/16      | 4-15/16 | 1-1/2 | 2-1/2        | 5       | 1-9/16  |
| 2-1/4<br>2-7/16                    | 2-11/16     | 5-7/16  | 1-5/8 | 2-3/4        | 5-1/2   | 1-11/16 |



STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE          |
|------------|-----|--------------------|
| Bore       | All | +0.0012 to -0.0000 |

ALL DIMENSIONS IN INCHES

| Bore                               | C       | E       |         | F       | G      | J     | K      | L     | P       | R*<br>Setscrew<br>(UNF) | S      | Bolt<br>Size | Approx.<br>Wt. (Lbs.) |       |
|------------------------------------|---------|---------|---------|---------|--------|-------|--------|-------|---------|-------------------------|--------|--------------|-----------------------|-------|
|                                    |         | Min.    | Max.    |         |        |       |        |       |         |                         |        |              | L                     | H     |
| 1/2<br>5/8                         | 1-3/8   | 3-5/16  | 4       | 5-1/16  | 1-1/2  | 7/16  | 25/32  | 9/32  | 31/32   | 10-32                   | 5/8    | 3/8          | 1.25                  | 1.38  |
| 3/4                                | 1-1/2   | 3-7/16  | 4-1/8   | 5-1/4   | 1-9/16 | 7/16  | 25/32  | 1/2   | 1-11/64 | 10-32                   | 23/32  | 3/8          | 1.75                  | 1.75  |
| 7/8<br>15/16<br>1                  | 1-37/64 | 3-3/4   | 4-1/4   | 5-1/2   | 1-5/8  | 7/16  | 11/16  | 9/16  | 1-21/64 | 10-32                   | 25/32  | 3/8          | 2.00                  | 2.00  |
| 1-1/8<br>1-3/16<br>1-1/4S          | 1-3/4   | 4-5/16  | 4-15/16 | 6-1/4   | 1-3/4  | 9/16  | 7/8    | 5/8   | 1-39/64 | 1/4-28                  | 7/8    | 3/8          | 2.75                  | 2.88  |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16 | 1-15/16 | 4-3/4   | 5-3/8   | 6-11/16 | 1-7/8  | 9/16  | 7/8    | 11/16 | 1-27/32 | 1/4-28                  | 1      | 1/2          | 4.25                  | 4.50  |
| 1-1/2                              | 2-3/16  | 5-1/4   | 5-13/16 | 7-1/4   | 2      | 9/16  | 27/32  | 3/4   | 2-3/32  | 5/16-24                 | 1-3/16 | 1/2          | 5.63                  | 5.75  |
| 1-5/8<br>1-11/16<br>1-3/4          | 2-33/64 | 5-9/16  | 6-1/8   | 7-3/4   | 2-1/8  | 9/16  | 27/32  | 3/4   | 2-17/64 | 5/16-24                 | 1-3/16 | 1/2          | 6.63                  | 6.75  |
| 1-15/16                            | 2-13/32 | 6-1/16  | 6-5/8   | 8-1/4   | 2-1/4  | 11/16 | 31/32  | 3/4   | 2-29/64 | 5/16-24                 | 1-5/16 | 5/8          | 8.25                  | 8.25  |
| 2<br>2-3/16                        | 2-1/2   | 6-7/16  | 7-3/8   | 8-7/8   | 2-3/8  | 11/16 | 1-5/32 | 7/8   | 2-23/32 | 5/16-24                 | 1-5/16 | 5/8          | 10.00                 | 10.25 |
| 2-1/4<br>2-7/16                    | 2-13/16 | 6-15/16 | 7-7/8   | 9-5/8   | 2-1/2  | 11/16 | 1-5/32 | 1     | 3-1/32  | 3/8-24                  | 1-9/16 | 5/8          | 12.25                 | 12.38 |

\*2 at 120°

For Load Ratings, see Engineering Section, Page 243.

# Mounted Ball Bearings

## MB Series

### Pillow Blocks – Medium Duty; Extended Inner Race – Setscrew Locking

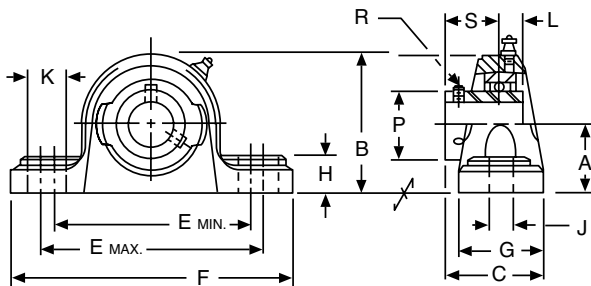


#### Features —

- One-piece high grade cast iron housing.
- Deep groove ball bearings for high radial and thrust loads.
- Precision machined housing bore and spherical race for full self-alignment.
- Synthetic lip type seal with steel flinger.
- Positive locking by setscrews through extended inner race.
- 1/4-28 threaded grease fitting and channel through outer race allow relubrication.

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | Catalog Number | Item Code |
|---------|----------------|-----------|
| 1-7/16  | MB-1-7/16      | 64573     |
| 1-1/2   | MB-1-1/2       | 64574     |
| 1-11/16 | MB-1-11/16     | 64575     |
| 1-3/4   | MB-1-3/4       | 64576     |
| 1-15/16 | MB-1-15/16     | 64577     |
| 2       | MB-2           | 64578     |
| 2-3/16  | MB-2-3/16      | 64579     |
| 2-1/4   | MB-2-1/4       | 64580     |
| 2-7/16  | MB-2-7/16      | 64581     |
| 2-1/2   | MB-2-1/2       | 64582     |
| 2-11/16 | MB-2-11/16     | 64583     |
| 2-15/16 | MB-2-15/16     | 64584     |
| 3       | MB-3           | 64585     |
| 3-3/16  | MB-3-3/16      | 64586     |
| 3-1/4   | MB-3-1/4       | 64587     |
| 3-7/16  | MB-3-7/16      | 64588     |
| 3-1/2   | MB-3-1/2       | 64589     |



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| Bore       | All | +.001 to -.000 |

#### ALL DIMENSIONS IN INCHES

| Bore             | A      | B       | C       | E Min.  | E Max.  | F      | G     | H      | J     | K      | L       | P       | R*<br>Setscrew<br>(UNF) | S       | Bolt<br>Size | Approx.<br>Weight<br>(Lbs.) |
|------------------|--------|---------|---------|---------|---------|--------|-------|--------|-------|--------|---------|---------|-------------------------|---------|--------------|-----------------------------|
| 1-7/16           | 2-1/8  | 4-3/16  | 2-17/64 | 5-1/16  | 6-5/16  | 6-1/2  | 2-1/4 | 3/4    | 9/16  | 1-3/16 | 3/4     | 1-27/32 | 5/16-24                 | 1-9/64  | 1/2          | 6.8                         |
| 1-1/2            | 2-5/16 | 4-9/16  | 2-1/2   | 5-9/16  | 6-11/16 | 8-1/4  | 2-5/8 | 13/16  | 11/16 | 1-1/4  | 3/4     | 2-3/32  | 5/16-24                 | 1-3/16  | 5/8          | 9.0                         |
| 1-11/16<br>1-3/4 | 2-5/16 | 4-5/8   | 2-19/32 | 5-1/2   | 6-3/4   | 8-1/4  | 2-5/8 | 13/16  | 11/16 | 1-5/16 | 3/4     | 2-17/64 | 5/16-24                 | 1-9/32  | 5/8          | 9.5                         |
| 1-15/16<br>2     | 2-1/2  | 5-1/16  | 2-3/4   | 6       | 7-1/2   | 8-7/8  | 2-7/8 | 7/8    | 11/16 | 1-7/16 | 7/8     | 2-23/32 | 5/16-24                 | 1-5/16  | 5/8          | 11.7                        |
| 2-3/16<br>2-1/4  | 2-3/4  | 5-5/8   | 3-1/8   | 6-5/8   | 7-7/8   | 9-5/8  | 3-1/8 | 1-1/16 | 13/16 | 1-7/16 | 1       | 3-1/32  | 3/8-24                  | 1-9/16  | 3/4          | 16.2                        |
| 2-7/16<br>2-1/2  | 3      | 6-3/16  | 3-3/8   | 7-3/16  | 8-13/16 | 10-3/8 | 3-1/4 | 1-1/16 | 13/16 | 1-5/8  | 1-3/16  | 3-27/64 | 3/8-24                  | 1-3/4   | 3/4          | 21.5                        |
| 2-11/16          | 3-1/2  | 6-15/16 | 3-3/8   | 7-15/16 | 10-1/16 | 11-7/8 | 3-1/2 | 1-1/8  | 15/16 | 2      | 1-5/16  | 3-43/64 | 3/8-24                  | 1-3/4   | 7/8          | 29.2                        |
| 2-15/16<br>3     | 3-1/2  | 7-1/8   | 3-11/16 | 7-15/16 | 10-1/16 | 11-7/8 | 3-1/2 | 1-1/4  | 15/16 | 2      | 1-5/16  | 3-7/8   | 1/2-20                  | 1-15/16 | 7/8          | 31.5                        |
| 3-3/16<br>3-1/4  | 4      | 8       | 4-1/32  | 9-3/4   | 12-1/2  | 15     | 4     | 1-1/4  | 15/16 | 2-5/16 | 1-11/32 | 4-3/16  | 1/2-20                  | 2-1/32  | 7/8          | 41.1                        |
| 3-7/16<br>3-1/2  | 4      | 8-1/4   | 4-13/32 | 9-11/16 | 12-9/16 | 15     | 4-3/8 | 1-5/16 | 15/16 | 2-3/8  | 1-9/16  | 4-25/64 | 1/2-20                  | 2-7/32  | 7/8          | 47.8                        |

\*2 at 120°

For Load Ratings, See Engineering Section, Page 243.

Replacement Bearings are shown on Page 214.

# Mounted Ball Bearings

## PS2/PS3 Series Pressed Steel Housing Flanged Units – Light Duty; Setscrew Locking

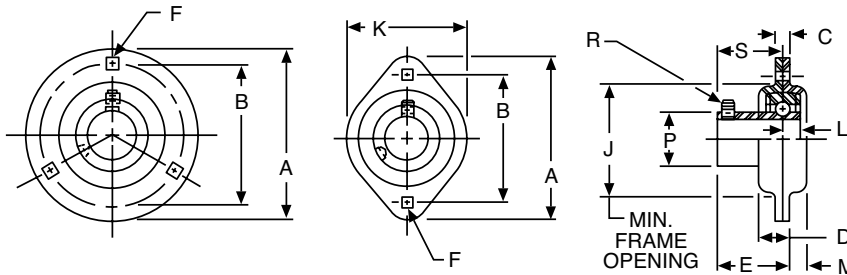
### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore   | 3-BOLT         |           | 2-BOLT         |           |
|--------|----------------|-----------|----------------|-----------|
|        | Catalog Number | Item Code | Catalog Number | Item Code |
| 1/2    | PS3-1/2        | 64520     | PS2-1/2        | 64510     |
| 5/8    | PS3-5/8        | 64521     | PS2-5/8        | 64511     |
| 3/4    | PS3-3/4        | 64522     | PS2-3/4        | 64512     |
| 7/8    | PS3-7/8        | 64523     | PS2-7/8        | 64513     |
| 15/16  | PS3-15/16      | 64524     | PS2-15/16      | 64514     |
| 1      | PS3-1          | 64525     | PS2-1          | 64515     |
| 1-1/16 | PS3-1-1/16     | 64526     | PS2-1-1/16     | 64516     |
| 1-1/8  | PS3-1-1/8      | 64527     | PS2-1-1/8      | 64517     |
| 1-3/16 | PS3-1-3/16     | 64528     | PS2-1-3/16     | 64518     |
| 1-1/4S | PS3-1-1/4S     | 64529     | PS2-1-1/4S     | 64519     |
| 1-1/4  | PS3-1-1/4      | 64530     | -----          | -----     |
| 1-3/8  | PS3-1-3/8      | 64532     | -----          | -----     |
| 1-7/16 | PS3-1-7/16     | 64533     | -----          | -----     |



### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE       |
|------------|-----|-----------------|
| Bore       | All | +.001 to -.0000 |



### ALL DIMENSIONS IN INCHES

| Bore   | A       | B       | C    | D     | E      | F<br>Sq. | J       | K       | L     | M     | P       | R*<br>Setscrew<br>UNF | S     | Bolt<br>Size | Approx.<br>Weight (Lbs.) |      |
|--------|---------|---------|------|-------|--------|----------|---------|---------|-------|-------|---------|-----------------------|-------|--------------|--------------------------|------|
|        |         |         |      |       |        |          |         |         |       |       |         |                       |       |              | PS3                      | PS2  |
| 1/2    | 3-3/16  | 2-1/2   | .150 | 23/64 | 45/64  | 9/32     | 1-15/16 | 2-5/16  | 15/64 | 13/64 | 31/32   | 10-32                 | 5/8   | 1/4          | .63                      | .51  |
| 5/8    | 3-9/16  | 2-13/16 | .166 | 25/64 | 25/32  | 11/32    | 2-3/16  | 2-5/8   | 9/32  | 7/32  | 1-11/64 | 10-32                 | 45/64 | 5/16         | .59                      | .47  |
| 3/4    | 3-3/4   | 3       | .166 | 27/64 | 27/32  | 11/32    | 2-3/8   | 2-51/64 | 19/64 | 1/4   | 1-11/32 | 10-32                 | 49/64 | 5/16         | .74                      | .60  |
| 7/8    | 4-7/16  | 3-9/16  | .208 | 29/64 | 15/16  | 13/32    | 2-13/16 | 3-5/16  | 5/16  | 1/4   | 1-39/64 | 1/4-28                | 53/64 | 3/8          | .87                      | .70  |
| 15/16  | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | .84                      | .67  |
| 1      | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | .81                      | .64  |
| 1-1/16 | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.42                     | 1.08 |
| 1-1/8  | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.37                     | 1.03 |
| 1-3/16 | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.32                     | .98  |
| 1-1/4S | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.27                     | .93  |
| 1-1/4  | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.93                     | —    |
| 1-3/8  | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.84                     | —    |
| 1-7/16 | 4-13/16 | 3-15/16 | .208 | 31/64 | 1-7/64 | 13/32    | 3-3/16  | —       | 11/32 | 9/32  | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.74                     | —    |

\*2 at 120°

Eccentric Locking Collar bearings are available to special order.

On 1-1/4" through 1-7/16" Hole Diameters, Eccentric Collar bearings will have extended inner races on both sides and will project beyond "M" dimension.

For Load Ratings, see Engineering Section, Page 242.

Replacement Bearings are shown on Page 214.

# Mounted Ball Bearings

## XL2/XL3 Series Cast Ductile Housing Flanged Units – Light Duty; Setscrew Locking

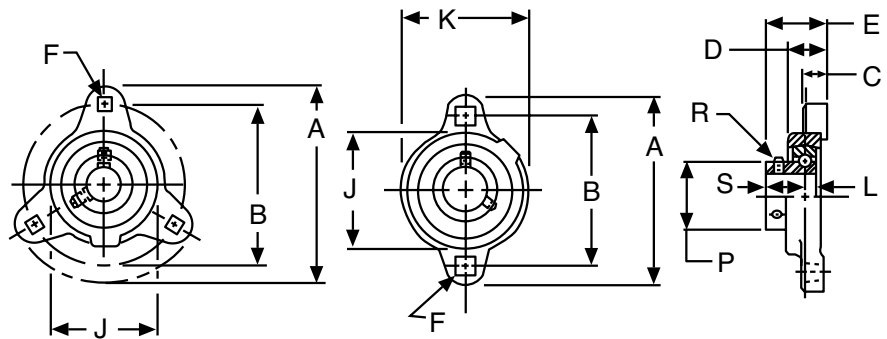


### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore   | 3-BOLT         |           | 2-BOLT         |           |
|--------|----------------|-----------|----------------|-----------|
|        | Catalog Number | Item Code | Catalog Number | Item Code |
| 1/2    | XL3-1/2        | 64560     | XL2-1/2        | 64547     |
| 5/8    | XL3-5/8        | 64561     | XL2-5/8        | 64548     |
| 3/4    | XL3-3/4        | 64562     | XL2-3/4        | 64549     |
| 7/8    | XL3-7/8        | 64563     | XL2-7/8        | 64550     |
| 15/16  | XL3-15/16      | 64564     | XL2-15/16      | 64551     |
| 1      | XL3-1          | 64565     | XL2-1          | 64552     |
| 1-1/16 | XL3-1-1/16     | 64566     | XL2-1-1/16     | 64553     |
| 1-1/8  | XL3-1-1/8      | 64567     | XL2-1-1/8      | 64554     |
| 1-3/16 | XL3-1-3/16     | 64568     | XL2-1-3/16     | 64555     |
| 1-1/4S | XL3-1-1/4S     | 64569     | XL2-1-1/4S     | 64556     |
| 1-3/8  | XL3-1-3/8      | 64571     | XL2-1-3/8      | 64558     |
| 1-7/16 | XL3-1-7/16     | 64572     | XL2-1-7/16     | 64559     |

### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| Bore       | All | +.001 to -.000 |



### ALL DIMENSIONS IN INCHES

| Bore                                | A       | B       | C     | D     | E       | F<br>Sq. | J       | K       | L     | P       | R*<br>Setscrew<br>UNF | S     | Bolt<br>Size | Approx.<br>Weight (Lbs.) |     |
|-------------------------------------|---------|---------|-------|-------|---------|----------|---------|---------|-------|---------|-----------------------|-------|--------------|--------------------------|-----|
|                                     |         |         |       |       |         |          |         |         |       |         |                       |       |              | XL3                      | XL2 |
| 1/2<br>5/8                          | 3-3/16  | 2-1/2   | 27/64 | 11/16 | 1       | 9/32     | 1-13/16 | 1-15/16 | 15/64 | 31/32   | 10-32                 | 5/8   | 1/4          | .6                       | .5  |
| 3/4                                 | 3-9/16  | 2-13/16 | 7/16  | 3/4   | 1-1/8   | 11/32    | 2-1/16  | 2-1/4   | 9/32  | 1-11/64 | 10-32                 | 45/64 | 3/16         | .7                       | .7  |
| 7/8<br>15/16<br>1                   | 3-3/4   | 3       | 7/16  | 3/4   | 1-1/8   | 11/32    | 2-5/16  | 2-1/2   | 19/64 | 1-11/32 | 10-32                 | 49/64 | 5/16         | .8                       | .8  |
| 1-1/16<br>1-1/8<br>1-3/16<br>1-1/4S | 4-7/16  | 3-9/16  | 15/32 | 27/32 | 1-19/64 | 13/32    | 2-13/16 | 2-15/16 | 5/16  | 1-39/64 | 1/4-28                | 53/64 | 3/8          | 1.2                      | 1.2 |
| 1-3/8<br>1-7/16                     | 4-13/16 | 3-15/16 | 1/2   | 29/32 | 1-1/2   | 13/32    | 3-3/16  | 3-3/8   | 11/32 | 1-27/32 | 1/4-28                | 1     | 3/8          | 1.6                      | 1.5 |

\*2 at 120°

These units also available with Eccentric Locking Collars on Special Order.

For Load Ratings, See Engineering Section, Page 243.

Replacement Bearings are shown on Page 214.

#### F Series 4-Bolt T Series 2-Bolt

#### Features —

Rigid one-piece high housing.  
Chrome alloy steel balls. Spherical outer race.  
Synthetic lip type seals.  
Eccentric locking collar.  
1/4-28 threaded grease fitting.



F

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | 4-BOLT FLANGES<br>F SERIES |           | 2-BOLT FLANGES<br>T SERIES |           |
|---------|----------------------------|-----------|----------------------------|-----------|
|         | Catalog Number             | Item Code | Catalog Number             | Item Code |
| 1/2     | 3F-1/2                     | 06938     | 3T-1/2                     | 06982     |
| 5/8     | 3F-5/8                     | 06940     | 3T-5/8                     | 06984     |
| 3/4     | 4F-3/4                     | 06942     | 4T-3/4                     | 06986     |
| 7/8     | 5F-7/8                     | 06944     | 5T-7/8                     | 06988     |
| 15/16   | 5F-15/16                   | 06946     | 5T-15/16                   | 06990     |
| 1       | 5F-1                       | 06948     | 5T-1                       | 06992     |
| 1-1/8   | 6F-1-1/8                   | 06950     | 6T-1-1/8                   | 06994     |
| 1-3/16  | 6F-1-3/16                  | 06952     | 6T-1-3/16                  | 06996     |
| 1-1/4S  | 6F-1-1/4S                  | 06954     | 6T-1-1/4S                  | 06998     |
| 1-1/4   | 7F-1-1/4*                  | 06956     | 7T-1-1/4*                  | 07000     |
| 1-5/16  | 7F-1-5/16*                 | 06958     | 7T-1-5/16*                 | 07002     |
| 1-3/8   | 7F-1-3/8*                  | 06960     | 7T-1-3/8*                  | 07004     |
| 1-7/16  | 7F-1-7/16*                 | 06962     | 7T-1-7/16*                 | 07006     |
| 1-1/2   | 8F-1-1/2*                  | 06964     | —                          | —         |
| 1-5/8   | 9F-1-5/8*                  | 06966     | —                          | —         |
| 1-11/16 | 9F-1-11/16*                | 06968     | —                          | —         |
| 1-3/4   | 9F-1-3/4*                  | 06970     | —                          | —         |
| 1-15/16 | 10F-1-15/16*               | 06972     | 10T-1-15/16*               | 50695     |
| 2       | 11F-2*                     | 06974     | —                          | —         |
| 2-3/16  | 11F-2-3/16*                | 06976     | —                          | —         |
| 2-1/4   | 12F-2-1/4*                 | 06978     | —                          | —         |
| 2-7/16  | 12F-2-7/16*                | 06980     | —                          | —         |

\*Bearings equipped with steel flinger.

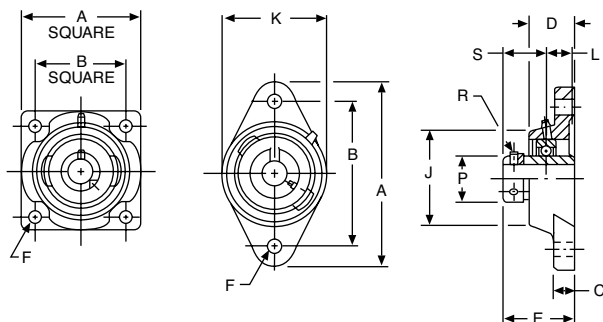
Replacement Bearings are shown on Page 213.

# Mounted Ball Bearings

## F/T Series

### Flanged Units – Standard Duty; Eccentric Locking Collar

F



#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE          |
|------------|-----|--------------------|
| Bore       | All | +0.0012 to -0.0000 |

#### ENVELOPE AND BOLT SPACING DIMENSIONS IN INCHES

| Bore    | 4-BOLT |       | 2-BOLT  |         |         |
|---------|--------|-------|---------|---------|---------|
|         | A      | B     | A       | B       | K       |
| 1/2     | 2-7/8  | 2-1/8 | 3-3/4   | 3       | 2-9/32  |
| 5/8     | 3-3/8  | 2-1/2 | 4-13/32 | 3-17/32 | 2-37/64 |
| 3/4     | 3-3/8  | 2-1/2 | 4-13/32 | 3-17/32 | 2-37/64 |
| 7/8     | 3-3/4  | 2-3/4 | 4-57/64 | 3-57/64 | 2-53/64 |
| 15/16   | 3-3/4  | 2-3/4 | 4-57/64 | 3-57/64 | 2-53/64 |
| 1       | 3-3/4  | 2-3/4 | 4-57/64 | 3-57/64 | 2-53/64 |
| 1-1/8   | 4-1/4  | 3-1/4 | 5-19/32 | 4-19/32 | 3-19/64 |
| 1-3/16  | 4-1/4  | 3-1/4 | 5-19/32 | 4-19/32 | 3-19/64 |
| 1-1/4S  | 4-1/4  | 3-1/4 | 5-19/32 | 4-19/32 | 3-19/64 |
| 1-1/4   | 4-5/8  | 3-5/8 | 6-1/8   | 5-1/8   | 3-11/64 |
| 1-5/16  | 4-5/8  | 3-5/8 | 6-1/8   | 5-1/8   | 3-11/64 |
| 1-3/8   | 4-5/8  | 3-5/8 | 6-1/8   | 5-1/8   | 3-11/64 |
| 1-7/16  | 4-5/8  | 3-5/8 | 6-1/8   | 5-1/8   | 3-11/64 |
| 1-1/2   | 5-1/8  | 4     | —       | —       | —       |
| 1-5/8   | 5-3/8  | 4-1/8 | —       | —       | —       |
| 1-11/16 | 5-3/8  | 4-1/8 | —       | —       | —       |
| 1-3/4   | 5-3/8  | 4-1/8 | —       | —       | —       |
| 1-15/16 | 5-5/8  | 4-3/8 | 7-7/16  | 6-3/16  | 4-9/16  |
| 2       | 6-3/8  | 5-1/8 | —       | —       | —       |
| 2-3/16  | 6-3/8  | 5-1/8 | —       | —       | —       |
| 2-1/4   | 6-7/8  | 5-5/8 | —       | —       | —       |
| 2-7/16  | 6-7/8  | 5-5/8 | —       | —       | —       |

#### ALL DIMENSIONS IN INCHES

| Bore    | C     | D       | E       | F Bolt | J       | L      | P       | R* Setscrew UNF | S       | Approx. Weight (Lbs.) |     |
|---------|-------|---------|---------|--------|---------|--------|---------|-----------------|---------|-----------------------|-----|
|         |       |         |         |        |         |        | F<br>T  |                 |         | F                     | T   |
| 1/2     | 7/16  | 1-1/16  | 1-37/64 | 3/8    | 2       | 1/4    | 1-9/64  | 1/4-28          | 7/8     | .9                    | .9  |
| 5/8     | 1/2   | 1-7/32  | 1-13/16 | 3/8    | 2-1/4   | 19/64  | 1-19/64 | 1/4-28          | 59/64   | 1.7                   | 1.2 |
| 3/4     | 1/2   | 1-7/32  | 1-13/16 | 3/8    | 2-1/4   | 19/64  | 1-19/64 | 1/4-28          | 59/64   | 1.7                   | 1.2 |
| 7/8     | 9/16  | 1-1/4   | 1-27/32 | 7/16   | 2-1/2   | 19/64  | 1-1/2   | 1/4-28          | 59/64   | 2.0                   | 1.6 |
| 15/16   | 9/16  | 1-1/4   | 1-27/32 | 7/16   | 2-1/2   | 19/64  | 1-1/2   | 1/4-28          | 59/64   | 2.0                   | 1.6 |
| 1       | 9/16  | 1-1/4   | 1-27/32 | 7/16   | 2-1/2   | 19/64  | 1-1/2   | 1/4-28          | 59/64   | 2.0                   | 1.6 |
| 1-1/8   | 9/16  | 1-11/32 | 2       | 7/16   | 2-15/16 | 23/64  | 1-3/4   | 5/16-24         | 1-3/64  | 2.7                   | 2.1 |
| 1-3/16  | 9/16  | 1-11/32 | 2       | 7/16   | 2-15/16 | 23/64  | 1-3/4   | 5/16-24         | 1-3/64  | 2.7                   | 2.1 |
| 1-1/4S  | 9/16  | 1-11/32 | 2       | 7/16   | 2-15/16 | 23/64  | 1-3/4   | 5/16-24         | 1-3/64  | 2.7                   | 2.1 |
| 1-1/4   | 5/8   | 1-3/8   | 2-1/8   | 1/2    | 3-1/4   | 47/64  | 2-3/16  | 3/8-24          | 1-17/64 | 3.7                   | 2.8 |
| 1-5/16  | 5/8   | 1-3/8   | 2-1/8   | 1/2    | 3-1/4   | 47/64  | 2-3/16  | 3/8-24          | 1-17/64 | 3.7                   | 2.8 |
| 1-3/8   | 5/8   | 1-3/8   | 2-1/8   | 1/2    | 3-1/4   | 47/64  | 2-3/16  | 3/8-24          | 1-17/64 | 3.7                   | 2.8 |
| 1-7/16  | 5/8   | 1-3/8   | 2-1/8   | 1/2    | 3-1/4   | 47/64  | 2-3/16  | 3/8-24          | 1-17/64 | 3.7                   | 2.8 |
| 1-1/2   | 11/16 | 1-37/64 | 2-11/32 | 1/2    | 3-3/4   | 27/32  | 2-23/64 | 3/8-24          | 1-3/8   | 5.0                   | —   |
| 1-5/8   | 11/16 | 1-39/64 | 2-11/32 | 9/16   | 3-7/8   | 27/32  | 2-1/2   | 3/8-24          | 1-3/8   | 5.4                   | —   |
| 1-11/16 | 11/16 | 1-39/64 | 2-11/32 | 9/16   | 3-7/8   | 27/32  | 2-1/2   | 3/8-24          | 1-3/8   | 5.4                   | —   |
| 1-3/4   | 11/16 | 1-51/64 | 2-19/32 | 9/16   | 4-1/8   | 31/32  | 2-3/4   | 3/8-24          | 1-1/2   | 6.0                   | 4.8 |
| 1-15/16 | 11/16 | 1-51/64 | 2-19/32 | 9/16   | 4-1/8   | 31/32  | 2-3/4   | 3/8-24          | 1-1/2   | 6.0                   | 4.8 |
| 2       | 3/4   | 1-31/32 | 2-15/16 | 5/8    | 4-1/2   | 1-3/32 | 3       | 7/16-20         | 1-23/32 | 8.4                   | —   |
| 2-3/16  | 3/4   | 1-31/32 | 2-15/16 | 5/8    | 4-1/2   | 1-3/32 | 3       | 7/16-20         | 1-23/32 | 8.4                   | —   |
| 2-1/4   | 3/4   | 2-1/8   | 3-3/16  | 5/8    | 4-7/8   | 1-7/32 | 3-5/16  | 7/16-20         | 1-27/32 | 10.0                  | —   |
| 2-7/16  | 3/4   | 2-1/8   | 3-3/16  | 5/8    | 4-7/8   | 1-7/32 | 3-5/16  | 7/16-20         | 1-27/32 | 10.0                  | —   |

\*2 at 120°.

For Load Ratings, See Engineering Section, Page 243.

## SF/ST Series

### Flanged Units – Standard Duty; Extended Inner Race – Setscrew Locking

#### SF Series 4-Bolt ST Series 2-Bolt

#### Features —

One-piece high grade cast iron housing.  
Deep groove ball bearings for high radial and thrust loads.  
Precision machined housing bore and spherical outer race for self-alignment.  
Synthetic lip type seal with steel flinger.  
Positive locking by setscrews through extended inner race.  
1/4-28 threaded grease fitting and channel through outer race allow relubrication.



F

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | 4-BOLT         |           | 2-BOLT         |           |
|---------|----------------|-----------|----------------|-----------|
|         | Catalog Number | Item Code | Catalog Number | Item Code |
| 1/2     | SF-1/2         | 64736     | ST-1/2         | 64723     |
| 5/8     | SF-5/8         | 64737     | ST-5/8         | 64724     |
| 3/4     | SF-3/4         | 64738     | ST-3/4         | 64725     |
| 7/8     | SF-7/8         | 64739     | ST-7/8         | 64726     |
| 15/16   | SF-15/16       | 64740     | ST-15/16       | 64727     |
| 1       | SF-1           | 64741     | ST-1           | 64728     |
| 1-1/8   | SF-1-1/8       | 64742     | ST-1-1/8       | 64729     |
| 1-3/16  | SF-1-3/16      | 64743     | ST-1-3/16      | 64730     |
| 1-1/4S  | SF-1-1/4S      | 64744     | ST-1-1/4S      | 64731     |
| 1-1/4   | SF-1-1/4       | 64745     | ST-1-1/4       | 64732     |
| 1-3/8   | SF-1-3/8       | 64747     | ST-1-3/8       | 64734     |
| 1-7/16  | SF-1-7/16      | 64748     | ST-1-7/16      | 64735     |
| 1-1/2   | SF-1-1/2       | 64749     | —              | —         |
| 1-5/8   | SF-1-5/8       | 64750     | —              | —         |
| 1-11/16 | SF-1-11/16     | 64751     | —              | —         |
| 1-3/4   | SF-1-3/4       | 64752     | —              | —         |
| 1-15/16 | SF-1-15/16     | 64753     | ST-1-15/16     | 50696     |
| 2       | SF-2           | 64754     | —              | —         |
| 2-3/16  | SF-2-3/16      | 64755     | —              | —         |
| 2-1/4   | SF-2-1/4       | 64756     | —              | —         |
| 2-7/16  | SF-2-7/16      | 64757     | —              | —         |

Replacement Bearings are shown on Page 214.

# Mounted Ball Bearings

## SF/ST Series

### Flanged Units – Standard Duty; Extended Inner Race – Setscrew Locking

ENVELOPE AND BOLT SPACING DIMENSIONS IN INCHES

| Bore                               | 4-BOLT |       | 2-BOLT  |         |         |
|------------------------------------|--------|-------|---------|---------|---------|
|                                    | A      | B     | A       | B       | K       |
| 1/2<br>5/8                         | 2-7/8  | 2-1/8 | 3-3/4   | 3       | 2-9/32  |
| 3/4                                | 3-3/8  | 2-1/2 | 4-13/32 | 3-17/32 | 2-37/64 |
| 7/8<br>15/16<br>1                  | 3-3/4  | 2-3/4 | 4-57/64 | 3-57/64 | 2-53/64 |
| 1-1/8<br>1-3/16<br>1-1/4S          | 4-1/4  | 3-1/4 | 5-19/32 | 4-19/32 | 3-19/64 |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16 | 4-5/8  | 3-5/8 | 6-1/8   | 5-1/8   | 3-11/64 |
| 1-1/2                              | 5-1/8  | 4     | —       | —       | —       |
| 1-5/8<br>1-11/16<br>1-3/4          | 5-3/8  | 4-1/8 | —       | —       | —       |
| 1-15/16<br>2                       | 5-5/8  | 4-3/8 | 7-7/16  | 6-3/16  | 4-9/16  |
| 2-3/16                             | 6-3/8  | 5-1/8 | —       | —       | —       |
| 2-1/4<br>2-7/16                    | 6-7/8  | 5-5/8 | —       | —       | —       |

STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE          |
|------------|-----|--------------------|
| Bore       | All | +0.0012 to -0.0000 |

ALL DIMENSIONS IN INCHES

| Bore                               | C     | D       | E       | F Bolt | J       | L     | P       | R* Setscrew UNF | S      | Approx. Weight (Lbs.) |     |
|------------------------------------|-------|---------|---------|--------|---------|-------|---------|-----------------|--------|-----------------------|-----|
|                                    |       |         |         |        |         |       |         |                 |        | SF                    | ST  |
| 1/2<br>5/8                         | 7/16  | 1-1/16  | 1-17/64 | 3/8    | 2       | 9/32  | 31/32   | 10-32           | 5/8    | .9                    | .9  |
| 3/4                                | 1/2   | 1-7/32  | 1-31/64 | 3/8    | 2-1/4   | 1/2   | 1-11/64 | 10-32           | 23/32  | 1.7                   | 1.2 |
| 7/8<br>15/16<br>1                  | 9/16  | 1-1/4   | 1-9/16  | 7/16   | 2-1/2   | 9/16  | 1-11/32 | 10-32           | 25/32  | 2.0                   | 1.6 |
| 1-1/8<br>1-3/16<br>1-1/4S          | 9/16  | 1-11/32 | 1-11/16 | 7/16   | 2-15/16 | 5/8   | 1-39/64 | 1/4-28          | 7/8    | 2.7                   | 2.1 |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16 | 5/8   | 1-3/8   | 1-27/32 | 1/2    | 3-5/16  | 11/16 | 1-27/32 | 1/4-28          | 1      | 3.7                   | 2.8 |
| 1-1/2                              | 11/16 | 1-37/64 | 2-1/64  | 1/2    | 3-3/4   | 3/4   | 2-3/32  | 5/16-24         | 1-3/16 | 5.0                   | —   |
| 1-5/8<br>1-11/16<br>1-3/4          | 11/16 | 1-39/64 | 2-1/64  | 9/16   | 3-7/8   | 3/4   | 2-17/64 | 5/16-24         | 1-3/16 | 5.4                   | —   |
| 1-15/16<br>2                       | 11/16 | 1-51/64 | 2-3/8   | 9/16   | 4-1/8   | 3/4   | 2-29/64 | 5/16-24         | 1-9/32 | 6.0                   | 4.8 |
| 2-3/16                             | 3/4   | 1-31/32 | 2-17/32 | 5/8    | 4-1/2   | 7/8   | 2-23/32 | 5/16-24         | 1-5/16 | 8.4                   | —   |
| 2-1/4<br>2-7/16                    | 3/4   | 2-1/8   | 2-29/32 | 5/8    | 4-7/8   | 1     | 3-1/32  | 3/8-24          | 1-9/16 | 10.0                  | —   |

\*2 AT 120°

For Load Ratings, See Engineering Section, Page 243.

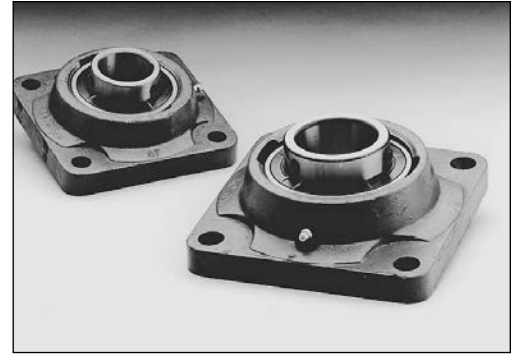
# Mounted Ball Bearings

## MBF Series

### Flanged Units – Medium Duty; Extended Inner Race – Setscrew Locking

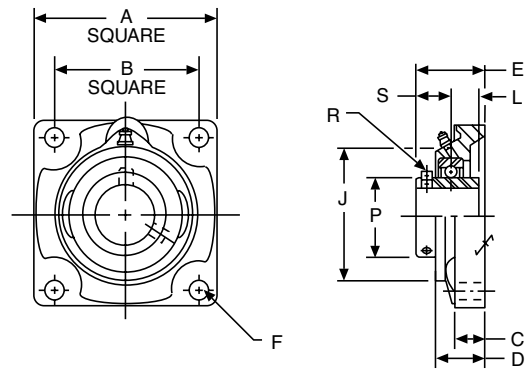
#### Features —

One-piece high grade cast iron housing.  
 Deep groove ball bearings for high radial and thrust loads.  
 Precision machined housing bore and spherical outer race for full self-alignment.  
 Synthetic lip type seal with steel flinger.  
 Positive locking by setscrews through extended inner race.  
 1/4-28 threaded grease fitting and channel through outer race allow relubrication.



#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | Catalog Number | Item Code |
|---------|----------------|-----------|
| 1-7/16  | MBF-1-7/16     | 64590     |
| 1-1/2   | MBF-1-1/2      | 64591     |
| 1-11/16 | MBF-1-11/16    | 64592     |
| 1-3/4   | MBF-1-3/4      | 64593     |
| 1-15/16 | MBF-1-15/16    | 64594     |
| 2       | MBF-2          | 64595     |
| 2-3/16  | MBF-2-3/16     | 64596     |
| 2-1/4   | MBF-2-1/4      | 64597     |
| 2-7/16  | MBF-2-7/16     | 64598     |
| 2-1/2   | MBF-2-1/2      | 64599     |
| 2-11/16 | MBF-2-11/16    | 64600     |
| 2-15/16 | MBF-2-15/16    | 64601     |
| 3       | MBF-3          | 64602     |
| 3-3/16  | MBF-3-3/16     | 64603     |
| 3-1/4   | MBF-3-1/4      | 64604     |
| 3-7/16  | MBF-3-7/16     | 64605     |
| 3-1/2   | MBF-3-1/2      | 64606     |



#### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE          |
|------------|---------------|--------------------|
| Bore       | 1-7/16-1-3/4  | +0.0010 to -0.0000 |
|            | 1-15/16-3-1/2 | +0.0012 to -0.0000 |

#### ALL DIMENSIONS IN INCHES

| Bore    | A     | B     | C     | D       | E       | F Bolt | J     | L       | P       | R* Setscrew UNF | S       | Approx. Weight (Lbs.) |
|---------|-------|-------|-------|---------|---------|--------|-------|---------|---------|-----------------|---------|-----------------------|
| 1-7/16  | 5-1/8 | 4     | 11/16 | 1-37/64 | 2-5/32  | 1/2    | 3-3/4 | 3/4     | 1-27/32 | 5/16-24         | 1-9/64  | 5.5                   |
| 1-1/2   | 5-3/8 | 4-1/8 | 11/16 | 1-39/64 | 2-5/32  | 9/16   | 3-7/8 | 3/4     | 2-3/32  | 5/16-24         | 1-3/16  | 6.0                   |
| 1-11/16 | 5-5/8 | 4-3/8 | 11/16 | 1-51/64 | 2-3/8   | 9/16   | 4-1/8 | 3/4     | 2-17/64 | 5/16-24         | 1-9/32  | 6.8                   |
| 1-15/16 | 6-3/8 | 5-1/8 | 3/4   | 1-31/32 | 2-17/32 | 5/8    | 4-1/2 | 7/8     | 2-23/32 | 5/16-24         | 1-5/16  | 10.5                  |
| 2       | 6-7/8 | 5-5/8 | 3/4   | 2-1/8   | 2-29/32 | 5/8    | 4-7/8 | 1       | 3-1/32  | 3/8-24          | 1-9/16  | 12.1                  |
| 2-3/16  | 7-1/8 | 5-7/8 | 3/4   | 2-5/32  | 3-1/16  | 5/8    | 5-3/4 | 1-3/16  | 3-27/64 | 3/8-24          | 1-3/4   | 16.4                  |
| 2-1/4   | 7-5/8 | 6     | 3/4   | 2-5/16  | 3-3/16  | 3/4    | 5-3/4 | 1-5/16  | 3-43/64 | 3/8-24          | 1-3/4   | 20.6                  |
| 2-7/16  | 7-5/8 | 6     | 13/16 | 2-7/16  | 3-1/2   | 3/4    | 6-1/4 | 1-5/16  | 3-7/8   | 1/2-20          | 1-15/16 | 21.4                  |
| 2-1/2   | 8-3/8 | 6-3/4 | 15/16 | 2-13/32 | 3-17/32 | 3/4    | 6-7/8 | 1-11/32 | 4-3/16  | 1/2-20          | 2-1/32  | 26.7                  |
| 2-11/16 | 8-3/8 | 6-3/4 | 15/16 | 2-11/16 | 3-31/32 | 3/4    | 7     | 1-9/16  | 4-25/64 | 1/2-20          | 2-7/32  | 20.0                  |

\*2 AT 120°

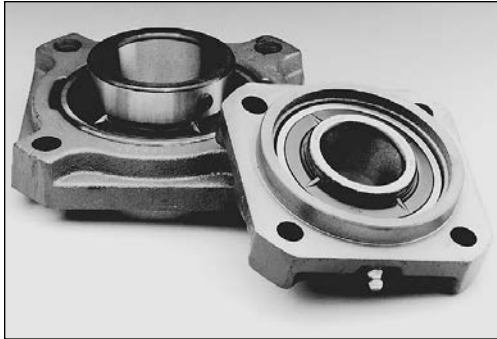
For Load Ratings, See Engineering Section, Page 243.  
 Replacement Bearings are shown on Page 214.

# Mounted Ball Bearings

## MBP Series

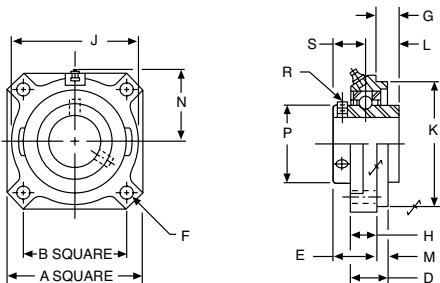
### Piloted Flanged Units – Medium Duty; Extended Inner Race – Setscrew Locking

F



#### Features —

One-piece high grade cast iron housing.  
 Deep groove ball bearings for high radial and thrust loads.  
 Precision machined housing bore and spherical outer race for full self-alignment.  
 Synthetic lip type seal with steel flinger.  
 Positive locking by setscrews through extended inner race.  
 1/4-28 threaded grease fitting and channel through outer race allow relubrication.



#### STANDARD TOLERANCES

| DIMENSIONS |               | TOLERANCE          |
|------------|---------------|--------------------|
| Bore       | 1-7/16-1-3/4  | +0.0010 to -0.0000 |
|            | 1-15/16-3-1/2 | +0.0012 to -0.0000 |
| K          | All           | +0.000 to -0.002   |

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore    | Catalog Number | Item Code |
|---------|----------------|-----------|
| 1-7/16  | MBP-1-7/16     | 64607     |
| 1-1/2   | MBP-1-1/2      | 64608     |
| 1-11/16 | MBP-1-11/16    | 64609     |
| 1-3/4   | MBP-1-3/4      | 64610     |
| 1-15/16 | MBP-1-15/16    | 64611     |
| 2       | MBP-2          | 64612     |
| 2-3/16  | MBP-2-3/16     | 64613     |
| 2-1/4   | MBP-2-1/4      | 64614     |
| 2-7/16  | MBP-2-7/16     | 64615     |
| 2-1/2   | MBP-2-1/2      | 64616     |
| 2-11/16 | MBP-2-11/16    | 64617     |
| 2-15/16 | MBP-2-15/16    | 64618     |
| 3       | MBP-3          | 64619     |
| 3-7/16  | MBP-3-7/16     | 64620     |
| 3-1/2   | MBP-3-1/2      | 64621     |

#### ALL DIMENSIONS IN INCHES

| Bore    | A       | B       | D       | E       | F Bolt | G     | H       | J      | K     | L      | M    | N       | P       | R* Setscrew UNF | S       | Approx. Weight (Lbs.) |
|---------|---------|---------|---------|---------|--------|-------|---------|--------|-------|--------|------|---------|---------|-----------------|---------|-----------------------|
| 1-7/16  | 4-1/4   | 3-3/32  | 1-5/16  | 1-17/32 | 7/16   | 13/32 | 7/8     | 4      | 3-5/8 | 3/4    | 7/16 | 2-1/4   | 1-27/32 | 5/16-24         | 1-9/64  | 5.5                   |
| 1-1/2   | 4-1/4   | 3-3/32  | 1-11/32 | 1-9/16  | 7/16   | 3/8   | 29/32   | 4      | 3-5/8 | 3/4    | 7/16 | 2-9/32  | 2-3/32  | 5/16-24         | 1-3/16  | 6.0                   |
| 1-11/16 | 4-15/16 | 3-5/8   | 1-3/8   | 1-11/16 | 1/2    | 11/32 | 15/16   | 4-1/2  | 4-1/4 | 3/4    | 7/16 | 2-9/16  | 2-17/64 | 5/16-24         | 1-9/32  | 6.8                   |
| 1-3/4   | 4-15/16 | 3-5/8   | 1-3/8   | 1-11/16 | 1/2    | 11/32 | 15/16   | 4-3/4  | 4-1/2 | 7/8    | 7/16 | 2-3/4   | 2-23/32 | 5/16-24         | 1-5/16  | 10.5                  |
| 1-15/16 | 5-3/16  | 3-13/16 | 1-3/8   | 1-21/32 | 1/2    | 17/32 | 15/16   | 4-3/4  | 4-1/2 | 7/8    | 7/16 | 2-3/4   | 2-23/32 | 5/16-24         | 1-5/16  | 10.5                  |
| 2       | 5-13/16 | 4-1/4   | 1-15/32 | 1-7/8   | 1/2    | 11/16 | 31/32   | 5-3/8  | 5     | 1      | 1/2  | 3-1/16  | 3-1/32  | 3/8-24          | 1-9/16  | 12.1                  |
| 2-3/16  | 5-13/16 | 4-1/4   | 1-15/32 | 1-7/8   | 1/2    | 11/16 | 31/32   | 5-3/8  | 5     | 1      | 1/2  | 3-1/16  | 3-1/32  | 3/8-24          | 1-9/16  | 12.1                  |
| 2-1/4   | 6-1/4   | 4-19/32 | 1-5/8   | 2-1/8   | 1/2    | 13/16 | 1-1/8   | 5-3/4  | 5-1/2 | 1-3/16 | 1/2  | 3-9/32  | 3-27/64 | 3/8-24          | 1-3/4   | 16.4                  |
| 2-7/16  | 6-1/4   | 4-19/32 | 1-5/8   | 2-1/8   | 1/2    | 13/16 | 1-1/8   | 5-3/4  | 5-1/2 | 1-3/16 | 1/2  | 3-9/32  | 3-27/64 | 3/8-24          | 1-3/4   | 16.4                  |
| 2-1/2   | 7-1/8   | 5-5/16  | 1-21/32 | 2-5/32  | 5/8    | 29/32 | 1-5/32  | 6-9/16 | 6-3/8 | 1-5/16 | 1/2  | 3-11/32 | 3-43/64 | 3/8-24          | 1-3/4   | 20.6                  |
| 2-11/16 | 7-1/8   | 5-5/16  | 1-21/32 | 2-5/32  | 5/8    | 29/32 | 1-5/32  | 6-9/16 | 6-3/8 | 1-5/16 | 1/2  | 3-11/32 | 3-43/64 | 3/8-24          | 1-3/4   | 20.6                  |
| 2-15/16 | 7-1/8   | 5-5/16  | 1-7/8   | 2-3/8   | 5/8    | 7/8   | 1-1/4   | 6-9/16 | 6-3/8 | 1-5/6  | 5/8  | 3-23/32 | 3-7/8   | 1/2-20          | 1-15/16 | 21.4                  |
| 3       | 7-1/8   | 5-5/16  | 1-7/8   | 2-3/8   | 5/8    | 7/8   | 1-1/4   | 6-9/16 | 6-3/8 | 1-5/6  | 5/8  | 3-23/32 | 3-7/8   | 1/2-20          | 1-15/16 | 21.4                  |
| 3-7/16  | 8-3/8   | 6-3/32  | 1-31/32 | 2-21/32 | 3/4    | 1-1/8 | 1-11/32 | 7-3/4  | 7-3/8 | 1-9/16 | 5/8  | 4-5/16  | 4-25/64 | 1/2-20          | 2-7/32  | 30.0                  |
| 3-1/2   | 8-3/8   | 6-3/32  | 1-31/32 | 2-21/32 | 3/4    | 1-1/8 | 1-11/32 | 7-3/4  | 7-3/8 | 1-9/16 | 5/8  | 4-5/16  | 4-25/64 | 1/2-20          | 2-7/32  | 30.0                  |

\*2 AT 120°

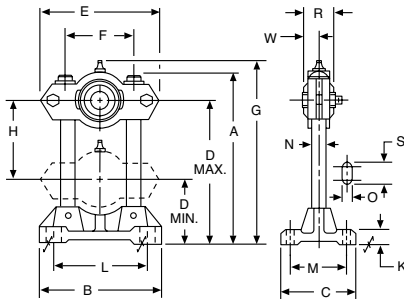
For Load Ratings, See Engineering Section, Page 243.

Replacement Bearings are shown on Page 214.

# Mounted Ball Bearings

## A Series

### Adjustable Shaft Supports – Standard Duty; Eccentric Locking Collar



#### Features —

Rigid one piece housing.  
Chrome alloy steel balls.  
Spherical outer race.  
Synthetic lip type seals.  
Eccentric locking collar.  
1/4-28 threaded grease fitting.



#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore   | Catalog Number | Item Code |
|--------|----------------|-----------|
| 1/2    | 3A-1/2         | 07008     |
| 5/8    | 3A-5/8         | 07010     |
| 3/4    | 4A-3/4         | 07012     |
| 7/8    | 5A-7/8         | 07016     |
| 15/16  | 5A-15/16       | 07018     |
| 1      | 5A-1           | 07020     |
| 1-1/8  | 6A-1-1/8       | 07024     |
| 1-3/16 | 6A-1-3/16      | 07026     |
| 1-1/4S | 6A-1-1/4S      | 07028     |

#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE       |
|------------|-----|-----------------|
| Bore       | All | +.001 to -.0000 |

#### ALL DIMENSIONS IN INCHES

| Bore   | A      | B     | C     | D       |         | E       | F     | G<br>Max. | H       |          |
|--------|--------|-------|-------|---------|---------|---------|-------|-----------|---------|----------|
|        |        |       |       | Min.    | Max.    |         |       |           | Min.    | Max.     |
| 1/2    | 7-1/8  | 5-1/8 | 3-1/8 | 2-13/32 | 6-1/16  | 4-7/8   | 2-3/4 | 7-7/16    | 2-1/2   | 3-21/32  |
| 5/8    | 7-1/8  | 5-1/8 | 3-1/8 | 2-17/32 | 6-1/16  | 4-7/8   | 2-3/4 | 7-9/16    | 2-13/16 | 3-17.32' |
| 3/4    | 8-1/4  | 6-1/4 | 3-3/4 | 2-25/32 | 7-1/16  | 5-11/16 | 3-1/8 | 8-11/16   | 3       | 4-9/32   |
| 7/8    |        |       |       |         |         |         |       |           |         |          |
| 15/16  |        |       |       |         |         |         |       |           |         |          |
| 1      |        |       |       |         |         |         |       |           |         |          |
| 1-1/8  | 11-1/4 | 8-1/8 | 4-1/2 | 3-1/2   | 9-15/16 | 7-11/16 | 4-3/8 | 11-25/32  | 3-7/16  | 6-7/16   |
| 1-3/16 |        |       |       |         |         |         |       |           |         |          |
| 1-1/4S |        |       |       |         |         |         |       |           |         |          |

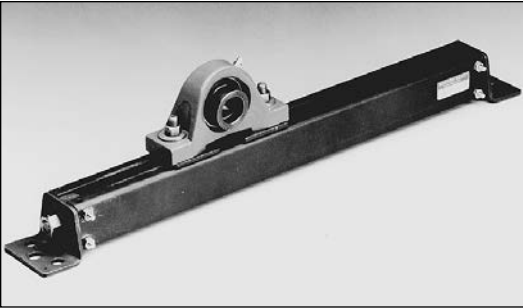
| Bore   | K   | L       | M     | N     | O   | R       | S     | W      | Bolt Size |
|--------|-----|---------|-------|-------|-----|---------|-------|--------|-----------|
| 1/2    | 5/8 | 3-15/16 | 2-1/4 | 5/8   | 3/8 | 1-9/16  | 11/16 | 15/16  | 5/16      |
| 5/8    | 5/8 | 3-15/16 | 2-1/4 | 5/8   | 3/8 | 1-23/32 | 11/16 | 1-3/64 | 5/16      |
| 3/4    | 5/8 | 3-15/16 | 2-1/4 | 5/8   | 3/8 | 1-23/32 | 11/16 | 1-3/64 | 5/16      |
| 7/8    | 3/4 | 4-13/16 | 2-3/4 | 3/4   | 1/2 | 1-3/4   | 15/16 | 1-1/16 | 7/16      |
| 15/16  |     |         |       |       |     |         |       |        |           |
| 1      |     |         |       |       |     |         |       |        |           |
| 1-1/8  | 1   | 6-3/8   | 3-1/4 | 1-1/4 | 5/8 | 2-5/16  | 1-1/8 | 1-3/16 | 9/16      |
| 1-3/16 |     |         |       |       |     |         |       |        |           |
| 1-1/4S |     |         |       |       |     |         |       |        |           |

NOTE: For applications where direction of radial bearing load is away from base, it is recommended that a hole be drilled near the end of each post and a suitable size pin inserted, as a safety precaution.

Replacement Bearings are shown on Page 213.

# Mounted Bearings

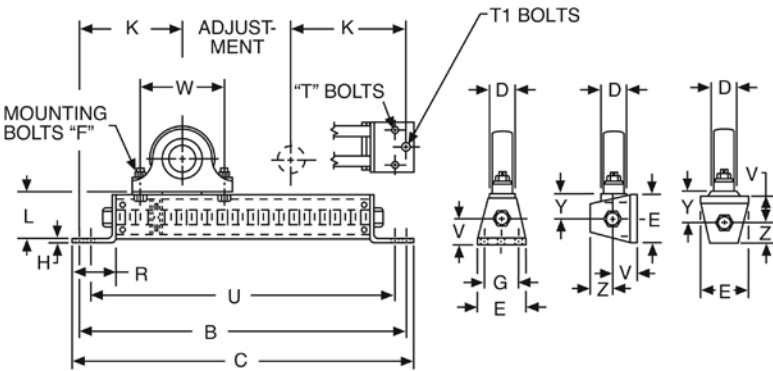
## TU Series Take-Up Frames



Boston Gear Take-up Frames are designed for use with Boston's Standard Duty Pillow Blocks. Pillow Block units are not included.

### Features —

- Bolted steel frame
- 3 or 4 bolt frame mounting
- Bolt hole centers adjustable



### ALL DIMENSIONS IN INCHES

| Pillow Block Bore | Adjustment | B       | C       | D     | E     | F Bolts | G     | H    | K      | L       | R      |
|-------------------|------------|---------|---------|-------|-------|---------|-------|------|--------|---------|--------|
| 1/2-1             | 6          | 16      | 17      | 1-3/4 | 2-5/8 | 3/8     | 1-5/8 | 3/16 | 5      | 2-1/8   | 1-3/4  |
|                   | 9          | 19      | 20      |       |       |         |       |      |        |         |        |
|                   | 12         | 22      | 23      |       |       |         |       |      |        |         |        |
| 1-1/8-1-3/4       | 6          | 19-1/8  | 20-1/4  | 2-3/8 | 3-1/8 | 1/2     | 2-1/8 | 1/4  | 6-9/16 | 2-11/16 | 2-3/16 |
|                   | 9          | 22-1/8  | 23-1/4  |       |       |         |       |      |        |         |        |
|                   | 12         | 25-1/8  | 26-1/4  |       |       |         |       |      |        |         |        |
| 1-15/16-2-7/16    | 18         | 31-1/8  | 32-1/4  | 3     | 4     | 5/8     | 2-3/4 | 5/16 | 8-5/32 | 3-5/16  | 2-3/4  |
|                   | 9          | 25-5/16 | 26-9/16 |       |       |         |       |      |        |         |        |
|                   | 12         | 28-5/16 | 29-9/16 |       |       |         |       |      |        |         |        |
|                   | 18         | 34-5/16 | 35-9/16 |       |       |         |       |      |        |         |        |
|                   | 24         | 40-5/16 | 41-9/16 |       |       |         |       |      |        |         |        |
|                   |            |         |         |       |       |         |       |      |        |         |        |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Pillow Block Bore | Adjustment | Bolts |     | U       | V       | W     |       | Y       | Z       | Catalog Number | Item Code |
|-------------------|------------|-------|-----|---------|---------|-------|-------|---------|---------|----------------|-----------|
|                   |            | T     | T1  |         |         | Min.  | Max.  |         |         |                |           |
| 1/2-1             | 6          | 5/16  | 3/8 | 15-1/4  | 1-1/16  | 3     | 5     | 1-1/16  | 15/16   | TU816-6        | 29827     |
|                   | 9          |       |     | 18-1/4  |         |       |       |         |         | TU816-9        | 29828     |
|                   | 12         |       |     | 21-1/4  |         |       |       |         |         | TU816-12       | 29829     |
| 1-1/8-1-3/4       | 6          | 3/8   | 1/2 | 18-1/8  | 1-11/32 | 3-3/4 | 7-1/4 | 1-11/32 | 1-3/32  | TU1828-6       | 29830     |
|                   | 9          |       |     | 21-1/8  |         |       |       |         |         | TU1828-9       | 29831     |
|                   | 12         |       |     | 24-1/8  |         |       |       |         |         | TU1828-12      | 19832     |
| 1-15/16-2-7/16    | 18         | 1/2   | 5/8 | 30-1/8  | 1-5/8   | 4-1/4 | 9     | 1-11/16 | 1-13/16 | TU1828-18      | 29833     |
|                   | 9          |       |     | 24-1/16 |         |       |       |         |         | TU3139-9       | 29834     |
|                   | 12         |       |     | 27-1/16 |         |       |       |         |         | TU3139-12      | 29835     |
|                   | 18         |       |     | 33-1/16 |         |       |       |         |         | TU3139-18      | 29836     |
|                   | 24         |       |     | 39-1/16 |         |       |       |         |         | TU3139-24      | 29837     |
|                   |            |       |     |         |         |       |       |         |         |                |           |

# Stainless Mounted Bearings

## Pillow Blocks – Setscrew Locking 2 Bolt Pillow Block – Setscrew Locking; Extended Inner Race

### Features —

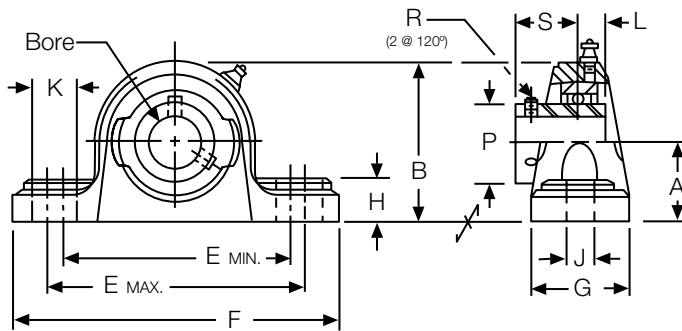
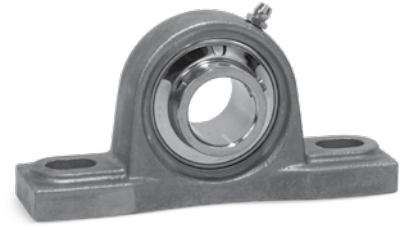
Synthetic lip seal with stainless steel flinger provides superior protection for high pressure washdown conditions.

Pre-filled with NSF H1 food grade grease.

Cast stainless steel housing.

Laser marked.

M6 grease fitting.



| Stainless Steel Material              |                         |
|---------------------------------------|-------------------------|
| AISI 304                              | AISI 440                |
| Housing, cage, shield, setscrew, seal | Balls, inner/outer ring |

### ALL DIMENSIONS IN INCHES

| Catalog Number | Bore Size | Dimensions (in) |         |                  |                  |        |       |       |       |       |       |       |         |       |           | Load Rating* (lbf) |       |
|----------------|-----------|-----------------|---------|------------------|------------------|--------|-------|-------|-------|-------|-------|-------|---------|-------|-----------|--------------------|-------|
|                |           | A               | B       | E <sub>max</sub> | E <sub>min</sub> | F      | G     | H     | J     | K     | L     | P     | R (UNF) | S     | Bolt Size | CR                 | CO    |
| SSUP4-3/4      | 3/4       | 1-5/16          | 2-9/16  | 4-1/8            | 3-3/8            | 5      | 1-1/2 | 9/16  | 1/2   | 3/4   | 0.500 | 1.142 | 1/4-28  | 0.721 | 3/8       | 2,901              | 1,507 |
| SSUP5-1        | 1         | 1-7/16          | 2-25/32 | 4-1/2            | 3-3/4            | 5-1/2  | 1-1/2 | 19/32 | 1/2   | 3/4   | 0.563 | 1.339 | 1/4-28  | 0.780 | 3/8       | 3,175              | 1,782 |
| SSUP6-1-3/16   | 1-3/16    | 1-11/16         | 3-1/4   | 5-1/32           | 4-15/32          | 6-1/2  | 1-7/8 | 21/32 | 43/64 | 25/32 | 0.626 | 1.591 | 1/4-28  | 0.874 | 1/2       | 4,431              | 2,558 |
| SSUP7-1-1/4    | 1-1/4     | 1-7/8           | 3-21/32 | 5-9/32           | 4-23/32          | 6-9/16 | 1-7/8 | 45/64 | 43/64 | 25/32 | 0.689 | 1.866 | 5/16-24 | 1.000 | 1/2       | 5,847              | 3,472 |
| SSUP7-1-7/16   | 1-7/16    | 1-7/8           | 3-21/32 | 5-9/32           | 4-23/32          | 6-9/16 | 1-7/8 | 45/64 | 43/64 | 25/32 | 0.689 | 1.866 | 5/16-24 | 1.000 | 1/2       | 5,847              | 3,472 |
| SSUP8-1-1/2    | 1-1/2     | 1-15/16         | 3-15/16 | 5-11/16          | 5-1/8            | 7-1/4  | 2-1/8 | 45/64 | 43/64 | 25/32 | 0.748 | 2.075 | 5/16-24 | 1.189 | 1/2       | 6,632              | 4,069 |
| SSUP10-1-15/16 | 1-15/16   | 2-1/4           | 4-29/64 | 6-17/32          | 5-31/32          | 8-1/8  | 2-3/8 | 53/64 | 25/32 | 29/32 | 0.748 | 2.465 | 3/8-24  | 1.284 | 5/8       | 7,868              | 5,216 |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore Size | Mounted Bearing |           | Bearing Insert |           |
|-----------|-----------------|-----------|----------------|-----------|
|           | Catalog Number  | Item Code | Catalog Number | Item Code |
| 3/4       | SSUP4-3/4       | G01140    | SSUC204-12     | G01171    |
| 1         | SSUP5-1         | G01141    | SSUC205-16     | G01172    |
| 1-3/16    | SSUP6-1-3/16    | G01142    | SSUC206-19     | G01173    |
| 1-1/4     | SSUP7-1-1/4     | G01143    | SSUC207-20     | G01174    |
| 1-7/16    | SSUP7-1-7/16    | G01144    | SSUC207-23     | G01175    |
| 1-1/2     | SSUP8-1-1/2     | G05900    | SSUC208-24     | G05922    |
| 1-15/16   | SSUP10-1-15/16  | G05901    | SSUC210-31     | G05923    |

NOTES: Bore tolerance: +.001"/-.000".

Recommended shaft tolerance: Nominal +.000"/-.001".

Max recommended speed is 5000 RPM.

\*CR=dynamic load rating, CO=static load rating.

# Stainless Mounted Bearings

## Pillow Blocks – Eccentric Locking Collar

### 2 Bolt Pillow Block – Eccentric Locking Collar; For Superior Shaft Holding Power

F



#### Features —

Synthetic lip seal with stainless steel flinger provides superior protection for high pressure washdown conditions.

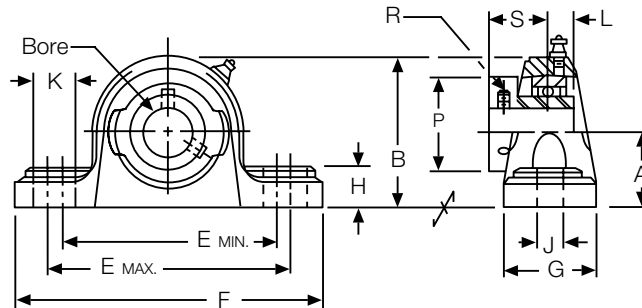
Pre-filled with NSF H1 food grade grease.

Cast stainless steel housing.

Laser marked.

M6 grease fitting.

| Stainless Steel Material                      |                         |
|-----------------------------------------------|-------------------------|
| AISI 304                                      | AISI 440                |
| Housing, cage, shield, setscrew, seal, collar | Balls, inner/outer ring |



#### ALL DIMENSIONS IN INCHES

| Catalog Number | Bore Size | Dimensions (in) |         |                  |                  |        |       |       |       |       |       |       |         |       |           | Load Rating* (lbf) |       |
|----------------|-----------|-----------------|---------|------------------|------------------|--------|-------|-------|-------|-------|-------|-------|---------|-------|-----------|--------------------|-------|
|                |           | A               | B       | E <sub>max</sub> | E <sub>min</sub> | F      | G     | H     | J     | K     | L     | P     | R (UNF) | S     | Bolt Size | CR                 | CO    |
| SSHP4-3/4      | 3/4       | 1-5/16          | 2-9/16  | 4-1/8            | 3-3/8            | 5      | 1-1/2 | 9/16  | 1/2   | 3/4   | 0.673 | 1.311 | 1/4-28  | 1.047 | 3/8       | 2,901              | 1,507 |
| SSHP5-1        | 1         | 1-7/16          | 2-25/32 | 4-1/2            | 3-3/4            | 5-1/2  | 1-1/2 | 19/32 | 1/2   | 3/4   | 0.689 | 1.500 | 1/4-28  | 1.059 | 3/8       | 3,175              | 1,782 |
| SSHP6-1-3/16   | 1-3/16    | 1-11/16         | 3-1/4   | 5-1/32           | 4-15/32          | 6-1/2  | 1-7/8 | 21/32 | 43/64 | 25/32 | 0.720 | 1.713 | 1/4-28  | 1.186 | 1/2       | 4,431              | 2,558 |
| SSHP7-1-1/4    | 1-1/4     | 1-7/8           | 3-21/32 | 5-9/32           | 4-23/32          | 6-9/16 | 1-7/8 | 45/64 | 43/64 | 25/32 | 0.740 | 2.087 | 5/16-24 | 1.272 | 1/2       | 5,847              | 3,472 |
| SSHP7-1-7/16   | 1-7/16    | 1-7/8           | 3-21/32 | 5-9/32           | 4-23/32          | 6-9/16 | 1-7/8 | 45/64 | 43/64 | 25/32 | 0.740 | 2.087 | 5/16-24 | 1.272 | 1/2       | 5,847              | 3,472 |
| SSHP8-1-1/2    | 1-1/2     | 1-15/16         | 3-15/16 | 5-11/16          | 5-1/8            | 7-1/4  | 2-1/8 | 45/64 | 43/64 | 25/32 | 0.748 | 2.283 | 5/16-24 | 1.378 | 1/2       | 6,632              | 4,069 |
| SSHP10-1-15/16 | 1-15/16   | 2-1/4           | 4-29/64 | 6-17/32          | 5-31/32          | 8-1/8  | 2-3/8 | 53/64 | 25/32 | 29/32 | 0.969 | 2.697 | 3/8-24  | 1.500 | 5/8       | 7,868              | 5,216 |

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore Size | Mounted Bearing |           | Bearing Insert |           |
|-----------|-----------------|-----------|----------------|-----------|
|           | Catalog Number  | Item Code | Catalog Number | Item Code |
| 3/4       | SSHP4-3/4       | G01145    | SSHC204-12     | G01176    |
| 1         | SSHP5-1         | G01146    | SSHC205-16     | G01177    |
| 1-3/16    | SSHP6-1-3/16    | G01147    | SSHC206-19     | G01178    |
| 1-1/4     | SSHP7-1-1/4     | G01148    | SSHC207-20     | G01179    |
| 1-7/16    | SSHP7-1-7/16    | G01149    | SSHC207-23     | G01180    |
| 1-1/2     | SSHP8-1-1/2     | G05902    | SSHC208-24     | G05924    |
| 1-15/16   | SSHP10-1-15/16  | G05903    | SSHC210-31     | G05925    |

NOTES: Bore tolerance: +.001"/-.000".

Recommended shaft tolerance: Nominal +.000"/-.001".

Max recommended speed is 5000 RPM.

\*CR=dynamic load rating, CO=static load rating.

# Stainless Mounted Bearings

## Flanged Units – Setscrew Locking 2 Bolt Flange – Setscrew Locking; Extended Inner Race

### Features —

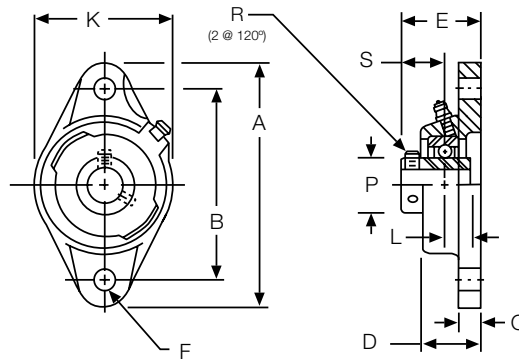
Synthetic lip seal with stainless steel flinger provides superior protection for high pressure washdown conditions.

Pre-filled with NSF H1 food grade grease.

Cast stainless steel housing.

Laser marked.

M6 grease fitting.



| Stainless Steel Material             |                         |
|--------------------------------------|-------------------------|
| AISI 304                             | AISI 440                |
| Flange, cage, shield, setscrew, seal | Balls, inner/outer ring |

### ALL DIMENSIONS IN INCHES

| Catalog Number  | Bore Size | Dimensions (in) |         |       |       |         |               |         |       |       |         |       | Load Rating* (lbf) |       |
|-----------------|-----------|-----------------|---------|-------|-------|---------|---------------|---------|-------|-------|---------|-------|--------------------|-------|
|                 |           | A               | B       | C     | D     | E       | Bolt Size F** | K       | L     | P     | R (UNF) | S     | CR                 | CO    |
| SSUFL4-3/4      | 3/4       | 4-7/16          | 3-35/64 | 7/16  | 1.000 | 1-5/16  | 3/8           | 2-3/8   | 0.500 | 1.142 | 1/4-28  | 0.721 | 2,901              | 1,507 |
| SSUFL5-1        | 1         | 5-1/8           | 3-57/64 | 1/2   | 1.063 | 1-13/32 | 1/2           | 2-11/16 | 0.563 | 1.339 | 1/4-28  | 0.780 | 3,175              | 1,782 |
| SSUFL6-1-3/16   | 1-3/16    | 5-13/16         | 4-39/64 | 1/2   | 1.219 | 1-19/32 | 1/2           | 3-5/32  | 0.626 | 1.591 | 1/4-28  | 0.874 | 4,431              | 2,558 |
| SSUFL7-1-1/4    | 1-1/4     | 6-11/32         | 5-1/8   | 35/64 | 1.344 | 1-3/4   | 1/2           | 3-35/64 | 0.689 | 1.866 | 5/16-24 | 1.000 | 5,847              | 3,472 |
| SSUFL7-1-7/16   | 1-7/16    | 6-11/32         | 5-1/8   | 35/64 | 1.344 | 1-3/4   | 1/2           | 3-35/64 | 0.689 | 1.866 | 5/16-24 | 1.000 | 5,847              | 3,472 |
| SSUFL8-1-1/2    | 1-1/2     | 6-7/8           | 5-43/64 | 35/64 | 1.422 | 2-1/64  | 1/2           | 3-15/16 | 0.748 | 2.075 | 5/16-24 | 1.189 | 6,632              | 4,069 |
| SSUFL10-1-15/16 | 1-15/16   | 7-3/4           | 6-3/16  | 19/32 | 1.578 | 2-5/32  | 5/8           | 4-17/32 | 0.748 | 2.465 | 3/8-24  | 1.284 | 7,868              | 5,216 |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore Size | Mounted Bearing |           | Bearing Insert |           |
|-----------|-----------------|-----------|----------------|-----------|
|           | Catalog Number  | Item Code | Catalog Number | Item Code |
| 3/4       | SSUFL4-3/4      | G01150    | SSUC204-12     | G01171    |
| 1         | SSUFL5-1        | G01151    | SSUC205-16     | G01172    |
| 1-3/16    | SSUFL6-1-3/16   | G01152    | SSUC206-19     | G01173    |
| 1-1/4     | SSUFL7-1-1/4    | G01153    | SSUC207-20     | G01174    |
| 1-7/16    | SSUFL7-1-7/16   | G01154    | SSUC207-23     | G01175    |
| 1-1/2     | SSUFL8-1-1/2    | G05904    | SSUC208-24     | G05922    |
| 1-15/16   | SSUFL10-1-15/16 | G05905    | SSUC210-31     | G05923    |

NOTES: Bore tolerance: +.001"/-.000".

Recommended shaft tolerance: Nominal +.000"/-.001".

Max recommended speed is 5000 RPM.

\*CR=dynamic load rating, CO=static load rating.

\*\* Smaller bolt sizes are acceptable with the use of flat washers

# Stainless Mounted Bearings

## Flanged Units – Setscrew Locking

### 4 Bolt Flange – Setscrew Locking; Extended Inner Race

F



#### Features —

Synthetic lip seal with stainless steel flinger provides superior protection for high pressure washdown conditions.

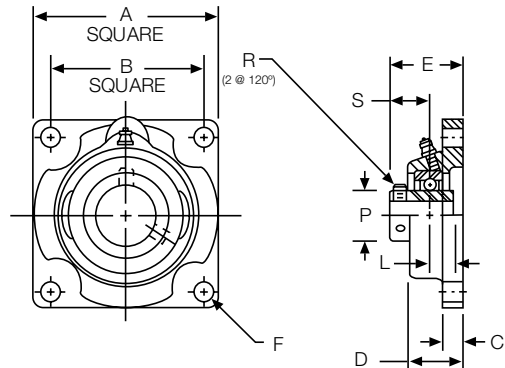
Pre-filled with NSF H1 food grade grease.

Cast stainless steel housing.

Laser marked.

M6 grease fitting.

| Stainless Steel Material             |                         |
|--------------------------------------|-------------------------|
| AISI 304                             | AISI 440                |
| Flange, cage, shield, setscrew, seal | Balls, inner/outer ring |



#### ALL DIMENSIONS IN INCHES

| Catalog Number | Bore Size | Dimensions (in) |         |       |       |         |               |       |       |         |       | Load Rating* (lbf) |       |
|----------------|-----------|-----------------|---------|-------|-------|---------|---------------|-------|-------|---------|-------|--------------------|-------|
|                |           | A               | B       | C     | D     | E       | Bolt Size F** | L     | P     | R (UNF) | S     | CR                 | Co    |
| SSUF4-3/4      | 3/4       | 3-3/8           | 2-33/64 | 15/32 | 1.000 | 1-5/16  | 3/8           | 0.500 | 1.142 | 1/4-28  | 0.721 | 2,901              | 1,507 |
| SSUF5-1        | 1         | 3-3/4           | 2-3/4   | 35/64 | 1.063 | 1-13/32 | 3/8           | 0.563 | 1.339 | 1/4-28  | 0.780 | 3,175              | 1,782 |
| SSUF6-1-3/16   | 1-3/16    | 4-1/4           | 3-17/64 | 35/64 | 1.219 | 1-19/32 | 3/8           | 0.626 | 1.591 | 1/4-28  | 0.874 | 4,431              | 2,558 |
| SSUF7-1-1/4    | 1-1/4     | 4-39/64         | 3-5/8   | 5/8   | 1.344 | 1-3/4   | 7/16          | 0.689 | 1.866 | 5/16-24 | 1.000 | 5,847              | 3,472 |
| SSUF7-1-7/16   | 1-7/16    | 4-39/64         | 3-5/8   | 5/8   | 1.344 | 1-3/4   | 7/16          | 0.689 | 1.866 | 5/16-24 | 1.000 | 5,847              | 3,472 |
| SSUF8-1-1/2    | 1-1/2     | 5-1/8           | 4-1/64  | 5/8   | 1.422 | 2-1/64  | 1/2           | 0.748 | 2.075 | 5/16-24 | 1.189 | 6,632              | 4,069 |
| SSUF10-1-15/16 | 1-15/16   | 5-13/32         | 4-3/8   | 23/32 | 1.578 | 2-5/32  | 1/2           | 0.748 | 2.465 | 3/8-24  | 1.284 | 7,868              | 5,216 |

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore Size | Mounted Bearing |           | Bearing Insert |           |
|-----------|-----------------|-----------|----------------|-----------|
|           | Catalog Number  | Item Code | Catalog Number | Item Code |
| 3/4       | SSUF4-3/4       | G01155    | SSUC204-12     | G01171    |
| 1         | SSUF5-1         | G01156    | SSUC205-16     | G01172    |
| 1-3/16    | SSUF6-1-3/16    | G01157    | SSUC206-19     | G01173    |
| 1-1/4     | SSUF7-1-1/4     | G01158    | SSUC207-20     | G01174    |
| 1-7/16    | SSUF7-1-7/16    | G01159    | SSUC207-23     | G01175    |
| 1-1/2     | SSUF8-1-1/2     | G05906    | SSUC208-24     | G05922    |
| 1-15/16   | SSUF10-1-15/16  | G05907    | SSUC210-31     | G05923    |

NOTES: Bore tolerance: +.001"/-.000".

Recommended shaft tolerance: Nominal +.000"/-.001".

Max recommended speed is 5000 RPM.

\*CR=dynamic load rating, Co=static load rating.

\*\* Smaller bolt sizes are acceptable with the use of flat washers

# Stainless Mounted Bearings

## Flanged Units – Setscrew Locking 3 Bolt Flange – Setscrew Locking; Extended Inner Race

### Features —

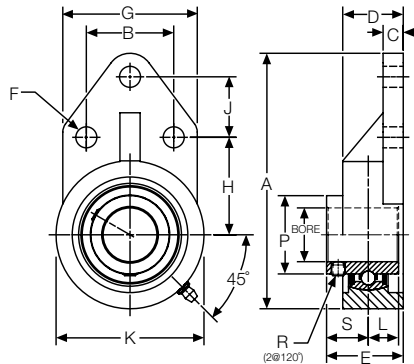
Synthetic lip seal with stainless steel flinger provides superior protection for high pressure washdown conditions.

Pre-filled with NSF H1 food grade grease.

Cast stainless steel housing.

Laser marked.

M6 grease fitting.



| Stainless Steel Material             |                         |
|--------------------------------------|-------------------------|
| AISI 304                             | AISI 440                |
| Flange, cage, shield, setscrew, seal | Balls, inner/outer ring |

### ALL DIMENSIONS IN INCHES

| Catalog Number  | Bore Size | Dimensions (in) |         |      |         |         |               |        |         |       |         |       |       |         |       | Load Rating* (lbf) |       |
|-----------------|-----------|-----------------|---------|------|---------|---------|---------------|--------|---------|-------|---------|-------|-------|---------|-------|--------------------|-------|
|                 |           | A               | B       | C    | D       | E       | Bolt Size F** | G      | H       | J     | K       | L     | P     | R (UNF) | S     | CR                 | Co    |
| SSUFB4-3/4      | 3/4       | 4-1/4           | 1-1/2   | 5/16 | 1       | 1.35    | 5/16          | 2-3/8  | 1-11/16 | 7/8   | 2-1/2   | 0.500 | 1.142 | 1/4-28  | 0.850 | 2,901              | 1,507 |
| SSUFB5-1        | 1         | 4-3/4           | 1-5/8   | 3/8  | 1-5/64  | 1.43    | 5/16          | 2-1/2  | 1-13/16 | 1-1/8 | 2-3/4   | 0.563 | 1.339 | 1/4-28  | 0.867 | 3,175              | 1,782 |
| SSUFB6-1-3/16   | 1-3/16    | 5-3/8           | 1-7/8   | 3/8  | 1-7/64  | 1-19/32 | 5/16          | 2-3/4  | 2-1/16  | 1-1/4 | 3-1/4   | 0.626 | 1.591 | 1/4-28  | 0.968 | 4,431              | 2,558 |
| SSUFB7-1-1/4    | 1-1/4     | 6-1/8           | 2       | 1/2  | 1-1/4   | 1-3/4   | 7/16          | 3-1/4  | 2-3/8   | 1-1/4 | 3-3/4   | 0.689 | 1.866 | 5/16-24 | 1.061 | 5,847              | 3,472 |
| SSUFB7-1-7/16   | 1-7/16    | 6-1/8           | 2       | 1/2  | 1-1/4   | 1-3/4   | 7/16          | 3-1/4  | 2-3/8   | 1-1/4 | 3-3/4   | 0.689 | 1.866 | 5/16-24 | 1.061 | 5,847              | 3,472 |
| SSUFB8-1-1/2    | 1-1/2     | 6-15/32         | 1-31/32 | 5/8  | 1-13/32 | 2-1/64  | 3/8           | 3-1/16 | 2-3/8   | 1-5/8 | 3-15/16 | 0.748 | 2.075 | 5/16-24 | 1.267 | 6,632              | 4,069 |
| SSUFB10-1-15/16 | 1-15/16   | 7-1/2           | 2-3/4   | 1/2  | 1-1/2   | 2-5/32  | 7/16          | 4      | 2-15/16 | 1-5/8 | 4-5/8   | 0.748 | 2.465 | 3/8-24  | 1.408 | 7,868              | 5,216 |

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore Size | Mounted Bearing |           | Bearing Insert |           |
|-----------|-----------------|-----------|----------------|-----------|
|           | Catalog Number  | Item Code | Catalog Number | Item Code |
| 3/4       | SSUFB4-3/4      | G05908    | SSUC204-12     | G01171    |
| 1         | SSUFB5-1        | G05909    | SSUC205-16     | G01172    |
| 1-3/16    | SSUFB6-1-3/16   | G05910    | SSUC206-19     | G01173    |
| 1-1/4     | SSUFB7-1-1/4    | G05911    | SSUC207-20     | G01174    |
| 1-7/16    | SSUFB7-1-7/16   | G05912    | SSUC207-23     | G01175    |
| 1-1/2     | SSUFB8-1-1/2    | G05913    | SSUC208-24     | G05922    |
| 1-15/16   | SSUFB10-1-15/16 | G05914    | SSUC210-31     | G05923    |

NOTES: Bore tolerance: +.001"/-.000".

Recommended shaft tolerance: Nominal +.000"/-.001".

Max recommended speed is 5000 RPM.

\*CR=dynamic load rating, Co=static load rating.

\*\* Smaller bolt sizes are acceptable with the use of flat washers

# Stainless Mounted Bearings

## Take Up Units – Setscrew Locking

### Wide Slot Take Up Unit – Setscrew Locking; Extended Inner Race

F



#### Features —

Synthetic lip seal with stainless steel flinger provides superior protection for high pressure washdown conditions.

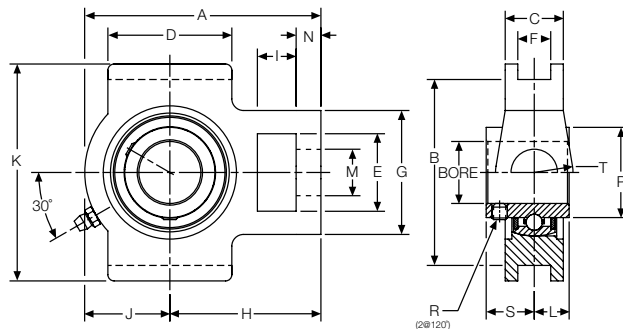
Pre-filled with NSF H1 food grade grease.

Cast stainless steel housing.

Laser marked.

M6 grease fitting.

| Stainless Steel Material             |                         |
|--------------------------------------|-------------------------|
| AISI 304                             | AISI 440                |
| Flange, cage, shield, setscrew, seal | Balls, inner/outer ring |



#### ALL DIMENSIONS IN INCHES

| Catalog Number | Bore Size | Dimensions (in) |         |         |         |       |       |         |         |       |         |         |       |       |       |       |         |       | Load Rating* (lb) |       |
|----------------|-----------|-----------------|---------|---------|---------|-------|-------|---------|---------|-------|---------|---------|-------|-------|-------|-------|---------|-------|-------------------|-------|
|                |           | A               | B       | C       | D       | E     | F     | G       | H       | I     | J       | K       | L     | M     | N     | P     | R (UNF) | S     | CR                | CO    |
| SSUT4-3/4      | 3/4       | 3-11/16         | 2-63/64 | 13/16   | 2-1/64  | 1.250 | 0.469 | 2-1/64  | 2-13/32 | 0.625 | 1-9/32  | 3-1/2   | 0.500 | 0.750 | 0.391 | 1.142 | 1/4-28  | 0.721 | 2,901             | 1,507 |
| SSUT5-1        | 1         | 3-13/16         | 2-63/64 | 15/16   | 2-1/64  | 1.250 | 0.469 | 2-1/64  | 2-7/16  | 0.625 | 1-3/8   | 3-1/2   | 0.563 | 0.750 | 0.391 | 1.339 | 1/4-28  | 0.780 | 3,175             | 1,782 |
| SSUT6-1-3/16   | 1-3/16    | 4-29/64         | 3-1/2   | 1-3/32  | 2-1/4   | 1.453 | 0.469 | 2-7/32  | 2-3/4   | 0.625 | 1-45/64 | 4-1/64  | 0.626 | 0.859 | 0.391 | 1.591 | 1/4-28  | 0.874 | 4,431             | 2,558 |
| SSUT7-1-1/4    | 1-1/4     | 5-5/64          | 3-1/2   | 1-3/16  | 2-33/64 | 1.453 | 0.469 | 2-33/64 | 3-5/64  | 0.625 | 2       | 4-1/64  | 0.689 | 0.859 | 0.516 | 1.866 | 5/16-24 | 1.000 | 5,847             | 3,472 |
| SSUT7-1-7/16   | 1-7/16    | 5-5/64          | 3-1/2   | 1-3/16  | 2-33/64 | 1.453 | 0.469 | 2-33/64 | 3-5/64  | 0.625 | 2       | 4-1/64  | 0.689 | 0.859 | 0.516 | 1.866 | 5/16-24 | 1.000 | 5,847             | 3,472 |
| SSUT8-1-1/2    | 1-1/2     | 5-43/64         | 4-1/64  | 1-5/16  | 3-17/64 | 1.938 | 0.625 | 3-17/64 | 3-1/2   | 0.750 | 2-11/64 | 4-31/64 | 0.748 | 1.141 | 0.625 | 2.075 | 5/16-24 | 1.189 | 6,632             | 4,069 |
| SSUT10-1-15/16 | 1-15/16   | 5-55/64         | 4-1/64  | 1-15/32 | 3-17/64 | 1.938 | 0.625 | 3-17/64 | 3-35/64 | 0.750 | 2-5/16  | 4-39/64 | 0.748 | 1.141 | 0.625 | 2.465 | 3/8-24  | 1.284 | 7,868             | 5,216 |

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Bore Size | Mounted Bearing |           | Bearing Insert |           |
|-----------|-----------------|-----------|----------------|-----------|
|           | Catalog Number  | Item Code | Catalog Number | Item Code |
| 3/4       | SSUT4-3/4       | G05915    | SSUC204-12     | G01171    |
| 1         | SSUT5-1         | G05916    | SSUC205-16     | G01172    |
| 1-3/16    | SSUT6-1-3/16    | G05917    | SSUC206-19     | G01173    |
| 1-1/4     | SSUT7-1-1/4     | G05918    | SSUC207-20     | G01174    |
| 1-7/16    | SSUT7-1-7/16    | G05919    | SSUC207-23     | G01175    |
| 1-1/2     | SSUT8-1-1/2     | G05920    | SSUC208-24     | G05922    |
| 1-15/16   | SSUT10-1-15/16  | G05921    | SSUC210-31     | G05923    |

NOTES: Bore tolerance: +.001"/-.000".

Recommended shaft tolerance: Nominal +.000"/-.001".

Max recommended speed is 5000 RPM.

\*CR=dynamic load rating, CO=static load rating.

## Analysis of Radial Bearing Loads for Unmounted and Mounted Rolling Elements

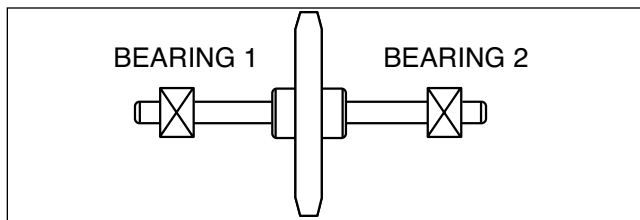
### Radial Load

Radial bearing loads are determined by analysis of all the forces applied to a shaft. In many instances this becomes a complex analysis and should be performed with expertise. However, many applications involve simple loading and may be calculated with basic information.

Many shafts are supported by two bearings, with a load "L" applied either between two bearings, as in Figure 1; or with load overhung, as in Figure 2. In either case, the reaction on the bearing is dependent upon:

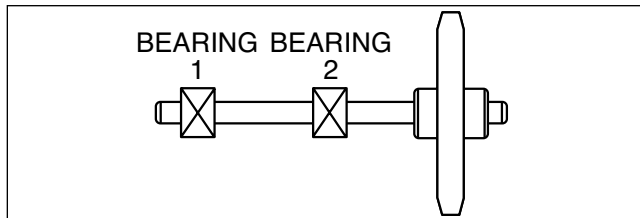
- The point of load application
- The magnitude of the load.
- The distance between the bearing centers.

With the above information known, the reactions, due to the loads, on the bearings, may be calculated.



**FIGURE 1.**

When the applied load is located between the two bearings, it is commonly referred to as "Straddle" loading.



**FIGURE 2.**

When the applied load is located outside the two bearings, it is commonly referred to as "Overhung" loading.

The loading of a shaft usually is the result of forces generated by gearing, sprockets or pulleys, the weight of these parts and friction.

Normally the weight of the parts and friction are ignored. However, if the weight of these parts is large, they should be considered.

In this text we are mainly considering radial loading of the shaft. Each load should be calculated individually as the sum of these will be used to calculate the load imposed on the bearings.

### Load Connection Factor

Loads applied by various types of drives may be calculated with use of the following load connection factors and formula:

$$L = \frac{2TK}{D}$$

L = Load (Lbs.)

$$T = \text{Torque (Lb-In.)} \quad T = \frac{(63025)(\text{H.P.})}{\text{RPM}}$$

K = Load Connection Factor

D = P.D. of Sprocket, Pinion, or Pulley (In.)

### Load Connection Factors (K)

|                                  |      |
|----------------------------------|------|
| Sprocket or Timing Belt .....    | 1.00 |
| Pinion and Gear Drive .....      | 1.25 |
| Pulley and V-Belt Drive .....    | 1.50 |
| Pulley and Flat-Belt Drive ..... | 2.50 |

### Example "A"

Load smooth and steady 8 hours per day.

#40 Chain Drive  
30 Tooth Sprocket  
4.783 Sprocket P.D.  
2 HP  
500 RPM  
5/8 Shaft Dia.

With the above information the load can be calculated as follows:

$$L = \frac{2TK}{D}$$

$$T = \frac{63025 \times 2}{\text{RPM}} = 252 \text{ In. Lbs.}$$

K = 1.0 From Load Connection Factor Table

D = 4.783

$$L = \frac{2 \times 252 \times 1.0}{4.783}$$

L = 105 lbs. Radial Load

# Engineering Information

## Analysis of Radial Bearing Loads for Unmounted and Mounted Rolling Elements (Cont'd)

F

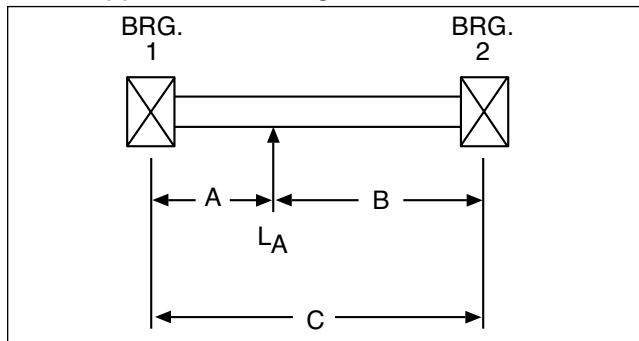
### Magnitude of Load Acting on Bearings

Once the applied load or loads that act on the shaft is determined, we may now apply it to the bearings.

There are many types of loadings that can be imposed on a bearing:

### Straddle Loaded Bearings

Radial Applied Load Acting On Shaft



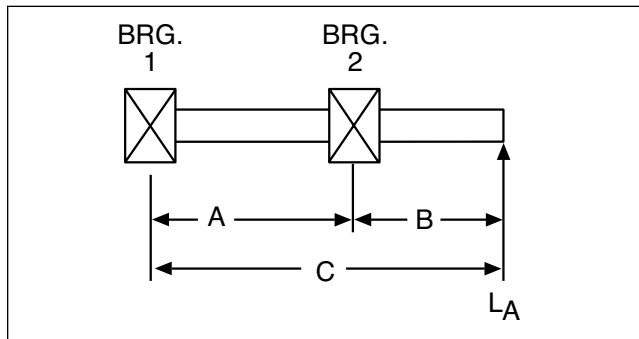
$$\text{Load Bearing I} = L_I = \frac{L_A \times B}{C}$$

$$\text{Load Bearing II} = L_{II} = \frac{L_A \times A}{C}$$

$$\text{Check } L_I + L_{II} = L_A$$

### Overhung Loaded Bearings

Radial Applied Load Acting On Shaft



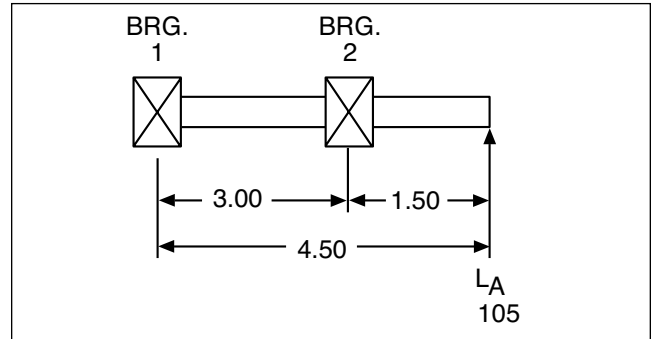
$$\text{Load Bearing I} = L_I = \frac{L_A \times B}{A}$$

$$\text{Load Bearing II} = L_{II} = \frac{L_A \times C}{A}$$

$$\text{Check } L_{II} - L_I = L_A$$

### Example "B"

Load given in Example "A" = 105 lbs. is in overhung condition, as shown.



#### LOAD BEARING I

$$L_I = \frac{L_A \times B}{A}$$

$$L_I = \frac{105 \times 1.50}{3.00}$$

$$L_I = 52.5 \text{ lbs.}$$

#### LOAD BEARING II

$$L_2 = \frac{L_A \times C}{A}$$

$$L_2 = \frac{105 \times 4.5}{3.0}$$

$$L_2 = 157.5 \text{ lbs.}$$

#### CHECK

$$L_{II} - L_I = L_A$$

$$157.5 - 52.5 = 105$$

$$105 = 105$$

## Ball and Mounted Ball Bearing Selection

F

Bearing selection for the majority of applications can be made directly from the Load Rating Tables. Mounted bearings are listed individually on each page. The mounted bearings tables are located on Pages 108-109.

The following procedure may be followed:

1. Determine the actual radial load to be supported by the bearing. For applications involving heavy shock loads or severe vibration, actual load should be multiplied by a service factor from 1.1 to 1.5 depending on the severity of these conditions.

2. Select a bearing from the table that has a radial load rating equal to or greater than the actual radial load determined in Step 1, for the life desired at the required operating speed.

Ball bearing rating tables are based on an "Average" bearing life of 2500 hours. Average or medium life ( $L_{50}$ ) is the life that may be expected from 50% or more of a given group of bearings operating under an identical steady load condition. The minimum life ( $L_{10}$ ) is the life expectancy of at least 90% of a group of bearings and is approximately 1/5 average.

### Example "C"

Using loading from Example "B," select a mounted bearing suitable to give an average life ( $L_{50}$ ) of 15,000 hours.

Known—

Load Bearing I = 52.5

Load Bearing II = 157.5

Shaft Diameter 5/8 (From Example "A")

Service Factor 1 (From Example "A")

500 RPM (From Example "A")

From the Rating Table, Page 243, as shown, a standard duty bearing (either eccentric collar or extended set screw inner race) may be selected.

| Service Factor | Operating Conditions                                                                               |
|----------------|----------------------------------------------------------------------------------------------------|
| .8             | Uniform — not more than 15 minutes in 2 hours.                                                     |
| 1.0            | Moderate Shock — not more than 15 minutes in 2 hours.<br>Uniform — not more than 10 hours per day  |
| 1.25           | Moderate Shock — not more than 10 hours per day.<br>Uniform — more than 10 hours per day.          |
| 1.50           | Heavy Shock — not more than 15 minutes in 2 hours.<br>Moderate Shock — more than 10 hours per day. |
| 1.75           | Heavy Shock — not more than 10 hours per day.                                                      |
| 2.0            | Heavy Shock — more than 10 hours per day.                                                          |

# Engineering Information

## Mounted Ball Bearing Radial Load Capacities Light Duty

### PS Series Pillow Blocks

| Shaft Sizes                        | Average Life (L <sub>50</sub> ) Hours | Speed (R.P.M.)       |     |     |      |      |      |      |      |
|------------------------------------|---------------------------------------|----------------------|-----|-----|------|------|------|------|------|
|                                    |                                       | Radial Load (Pounds) |     |     |      |      |      |      |      |
|                                    |                                       | 50                   | 100 | 500 | 1000 | 1500 | 1800 | 2000 | 2500 |
| 1/2<br>5/8                         | 2,500                                 | 300                  | 300 | 300 | 300  | 300  | 300  | 300  | 300  |
|                                    | 5,000                                 | 300                  | 300 | 300 | 300  | 300  | 300  | 300  | 300  |
|                                    | 7,500                                 | 300                  | 300 | 300 | 245  | 215  | 200  | 195  | 180  |
|                                    | 15,000                                | 300                  | 300 | 280 | 220  | 195  | 180  | 175  | 165  |
|                                    | 75,000                                | 300                  | 300 | 245 | 195  | 170  | 160  | 155  | 140  |
| 3/4                                | 2,500                                 | 350                  | 350 | 350 | 350  | 350  | 350  | 350  | 350  |
|                                    | 5,000                                 | 350                  | 350 | 350 | 350  | 350  | 350  | 350  | 350  |
|                                    | 7,500                                 | 350                  | 350 | 350 | 330  | 285  | 270  | 260  | 240  |
|                                    | 15,000                                | 350                  | 350 | 350 | 300  | 260  | 245  | 235  | 220  |
|                                    | 75,000                                | 350                  | 350 | 350 | 260  | 225  | 215  | 205  | 190  |
| 7/8<br>15/16<br>1                  | 2,500                                 | 400                  | 400 | 400 | 400  | 400  | 400  | 400  | 400  |
|                                    | 5,000                                 | 400                  | 400 | 400 | 400  | 400  | 400  | 400  | 400  |
|                                    | 7,500                                 | 400                  | 400 | 400 | 360  | 315  | 295  | 285  | 265  |
|                                    | 15,000                                | 400                  | 400 | 400 | 325  | 285  | 270  | 260  | 240  |
|                                    | 75,000                                | 400                  | 400 | 360 | 285  | 250  | 235  | 225  | 210  |
| 1-1/16<br>1-1/8<br>1-3/16<br>1-1/4 | 2,500                                 | 600                  | 600 | 600 | 600  | 600  | 600  | 600  | 600  |
|                                    | 5,000                                 | 600                  | 600 | 600 | 600  | 600  | 600  | 600  | 600  |
|                                    | 7,500                                 | 600                  | 600 | 600 | 500  | 435  | 410  | 395  | 370  |
|                                    | 15,000                                | 600                  | 600 | 570 | 455  | 395  | 375  | 360  | 335  |
|                                    | 75,000                                | 600                  | 600 | 500 | 395  | 345  | 325  | 315  | 295  |

### PS2 and PS3 Series Flanged Units

| Shaft Sizes                         | Average Life (L <sub>50</sub> ) Hours | Speed (R.P.M.)       |      |      |      |      |      |      |      |
|-------------------------------------|---------------------------------------|----------------------|------|------|------|------|------|------|------|
|                                     |                                       | Radial Load (Pounds) |      |      |      |      |      |      |      |
|                                     |                                       | 50                   | 100  | 500  | 1000 | 1500 | 1800 | 2000 | 2500 |
| 1/2<br>5/8                          | 2,500                                 | 600                  | 600  | 600  | 530  | 460  | 435  | 420  | 390  |
|                                     | 5,000                                 | 600                  | 600  | 530  | 420  | 365  | 385  | 330  | 310  |
|                                     | 7,500                                 | 600                  | 530  | 310  | 245  | 215  | 200  | 195  | 180  |
|                                     | 15,000                                | 600                  | 480  | 280  | 220  | 195  | 180  | 175  | 165  |
|                                     | 75,000                                | 530                  | 420  | 245  | 195  | 170  | 160  | 155  | 140  |
| 3/4                                 | 2,500                                 | 700                  | 700  | 700  | 700  | 620  | 585  | 560  | 520  |
|                                     | 5,000                                 | 700                  | 700  | 700  | 560  | 490  | 460  | 445  | 415  |
|                                     | 7,500                                 | 700                  | 700  | 415  | 330  | 285  | 270  | 260  | 240  |
|                                     | 15,000                                | 700                  | 645  | 375  | 300  | 260  | 245  | 235  | 220  |
|                                     | 75,000                                | 700                  | 560  | 330  | 260  | 225  | 215  | 205  | 190  |
| 7/8<br>15/16<br>1                   | 2,500                                 | 800                  | 800  | 800  | 775  | 680  | 640  | 615  | 570  |
|                                     | 5,000                                 | 800                  | 800  | 775  | 615  | 540  | 505  | 490  | 455  |
|                                     | 7,500                                 | 800                  | 775  | 455  | 360  | 315  | 295  | 285  | 265  |
|                                     | 15,000                                | 800                  | 705  | 410  | 325  | 285  | 270  | 260  | 240  |
|                                     | 75,000                                | 775                  | 615  | 360  | 285  | 250  | 235  | 225  | 210  |
| 1-1/16<br>1-1/8<br>1-3/16<br>1-1/4S | 2,500                                 | 1100                 | 1100 | 1100 | 1080 | 940  | 885  | 855  | 795  |
|                                     | 5,000                                 | 1100                 | 1100 | 1080 | 855  | 750  | 700  | 680  | 630  |
|                                     | 7,500                                 | 1100                 | 1080 | 630  | 500  | 435  | 410  | 395  | 370  |
|                                     | 15,000                                | 1100                 | 980  | 570  | 455  | 395  | 375  | 360  | 335  |
|                                     | 75,000                                | 1080                 | 855  | 500  | 395  | 345  | 325  | 315  | 295  |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16  | 2,500                                 | 1400                 | 1400 | 1400 | 1400 | 1245 | 1175 | 1130 | 1050 |
|                                     | 5,000                                 | 1400                 | 1400 | 1400 | 1130 | 990  | 930  | 895  | 835  |
|                                     | 7,500                                 | 1400                 | 1400 | 835  | 660  | 580  | 545  | 525  | 485  |
|                                     | 15,000                                | 1400                 | 1295 | 755  | 600  | 525  | 495  | 475  | 440  |
|                                     | 75,000                                | 1400                 | 1130 | 660  | 525  | 460  | 430  | 415  | 385  |

## Mounted Ball Bearing Radial Load Capacities

XL, S, H, L, F, T and MB Series

| Series                                        |                              | Average<br>Life (L <sup>50</sup> )<br>Hours | Speed (R.P.M.)       |       |      |      |      |      |      |      |                                                                                                                                                                                                                  |      |      |      |      |
|-----------------------------------------------|------------------------------|---------------------------------------------|----------------------|-------|------|------|------|------|------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| XL All<br>S (All)<br>H-L-F-T<br>Shaft<br>Size | MB<br>(All)<br>Shaft<br>Size |                                             | Radial Load (Pounds) |       |      |      |      |      |      |      |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              |                                             | 50                   | 100   | 500  | 1000 | 1500 | 1800 | 2000 | 2500 | 3000                                                                                                                                                                                                             | 3600 | 4000 | 4500 | 5000 |
| 1/2<br>5/8                                    | —                            | 2,500                                       | 1580                 | 1255  | 730  | 580  | 505  | 475  | 460  | 425  | 400                                                                                                                                                                                                              | 375  | 365  | 350  | 340  |
|                                               |                              | 5,000                                       | 1255                 | 995   | 580  | 460  | 400  | 375  | 365  | 340  | 320                                                                                                                                                                                                              | 300  | 290  | 275  | 270  |
|                                               |                              | 7,500                                       | 730                  | 580   | 340  | 270  | 235  | 220  | 210  | 195  | 185                                                                                                                                                                                                              | 175  | 170  | 160  | 155  |
|                                               |                              | 15,000                                      | 665                  | 525   | 305  | 245  | 210  | 200  | 195  | 180  | 170                                                                                                                                                                                                              | 160  | 155  | 145  | 140  |
|                                               |                              | 75,000                                      | 580                  | 460   | 270  | 210  | 185  | 175  | 170  | 155  | 150                                                                                                                                                                                                              | 140  | 135  | 130  | 125  |
| 3/4                                           | —                            | 2,500                                       | 1930                 | 1530  | 895  | 710  | 620  | 585  | 560  | 520  | 490                                                                                                                                                                                                              | 460  | 445  | 430  | 415  |
|                                               |                              | 5,000                                       | 1530                 | 1215  | 710  | 560  | 490  | 460  | 445  | 415  | 390                                                                                                                                                                                                              | 365  | 355  | 335  | 330  |
|                                               |                              | 7,500                                       | 895                  | 710   | 415  | 330  | 285  | 270  | 260  | 240  | 225                                                                                                                                                                                                              | 215  | 205  | 200  | 190  |
|                                               |                              | 15,000                                      | 810                  | 645   | 375  | 300  | 260  | 245  | 235  | 220  | 205                                                                                                                                                                                                              | 195  | 185  | 180  | 175  |
|                                               |                              | 75,000                                      | 710                  | 560   | 330  | 260  | 225  | 215  | 205  | 190  | 180                                                                                                                                                                                                              | 170  | 165  | 155  | 150  |
| 7/8<br>15/16<br>1                             | —                            | 2,500                                       | 2115                 | 1675  | 980  | 775  | 680  | 640  | 615  | 570  | 540                                                                                                                                                                                                              | 505  | 490  | 470  | 455  |
|                                               |                              | 5,000                                       | 1675                 | 1330  | 775  | 615  | 540  | 505  | 490  | 455  | 425                                                                                                                                                                                                              | 400  | 385  | 370  | 360  |
|                                               |                              | 7,500                                       | 980                  | 775   | 455  | 360  | 315  | 295  | 285  | 265  | 250                                                                                                                                                                                                              | 235  | 225  | 215  | 210  |
|                                               |                              | 15,000                                      | 890                  | 705   | 410  | 325  | 285  | 270  | 260  | 240  | 225                                                                                                                                                                                                              | 210  | 205  | 195  | 190  |
|                                               |                              | 75,000                                      | 775                  | 615   | 360  | 285  | 250  | 235  | 225  | 190  | 200                                                                                                                                                                                                              | 185  | 180  | 170  | 165  |
| 1-1/8<br>1-5/16<br>1-1/4S                     | —                            | 2,500                                       | 2955                 | 2340  | 1370 | 1085 | 945  | 890  | 860  | 800  | 750                                                                                                                                                                                                              | 705  | 685  | 655  |      |
|                                               |                              | 5,000                                       | 2340                 | 1855  | 1085 | 860  | 750  | 705  | 680  | 635  | 595                                                                                                                                                                                                              | 560  | 540  | 515  |      |
|                                               |                              | 7,500                                       | 1370                 | 1085  | 635  | 505  | 440  | 415  | 400  | 370  | 350                                                                                                                                                                                                              | 325  | 315  | 305  |      |
|                                               |                              | 15,000                                      | 1245                 | 985   | 575  | 455  | 400  | 375  | 360  | 335  | 315                                                                                                                                                                                                              | 295  | 285  | 275  |      |
|                                               |                              | 75,000                                      | 1085                 | 860   | 505  | 400  | 350  | 325  | 315  | 295  | 275                                                                                                                                                                                                              | 260  | 250  | 240  |      |
| 1-1/4<br>1-5/16<br>1-3/8<br>1-7/16            | —                            | 2,500                                       | 3890                 | 3085  | 1805 | 1430 | 1250 | 1175 | 1135 | 1055 | 990                                                                                                                                                                                                              | 930  | 900  |      |      |
|                                               |                              | 5,000                                       | 3085                 | 2445  | 1430 | 1135 | 990  | 930  | 900  | 835  | 785                                                                                                                                                                                                              | 740  | 715  |      |      |
|                                               |                              | 7,500                                       | 1805                 | 1430  | 835  | 665  | 580  | 545  | 525  | 490  | 460                                                                                                                                                                                                              | 430  | 415  |      |      |
|                                               |                              | 15,000                                      | 1635                 | 1300  | 760  | 600  | 525  | 495  | 475  | 445  | 415                                                                                                                                                                                                              | 390  | 380  |      |      |
|                                               |                              | 75,000                                      | 1430                 | 1135  | 665  | 525  | 460  | 430  | 415  | 385  | 365                                                                                                                                                                                                              | 340  | 330  |      |      |
| 1-1/2                                         | 1-7/16                       | 2,500                                       | 4935                 | 3915  | 2290 | 1815 | 1585 | 1495 | 1440 | 1335 | 1260                                                                                                                                                                                                             | 1180 |      |      |      |
|                                               |                              | 5,000                                       | 3915                 | 3105  | 1815 | 1440 | 1260 | 1180 | 1140 | 1060 | 1000                                                                                                                                                                                                             | 940  |      |      |      |
|                                               |                              | 7,500                                       | 2290                 | 1815  | 1060 | 845  | 735  | 690  | 665  | 620  | 585                                                                                                                                                                                                              | 550  |      |      |      |
|                                               |                              | 15,000                                      | 2080                 | 1605  | 965  | 765  | 665  | 630  | 605  | 565  | 530                                                                                                                                                                                                              | 500  |      |      |      |
|                                               |                              | 75,000                                      | 1815                 | 1440  | 845  | 665  | 585  | 550  | 530  | 490  | 465                                                                                                                                                                                                              | 435  |      |      |      |
| 1-5/8<br>1-11/16<br>1-3/4                     | 1-1/2                        | 2,500                                       | 5295                 | 4200  | 2455 | 1950 | 1700 | 1600 | 1545 | 1435 | 1350                                                                                                                                                                                                             |      |      |      |      |
|                                               |                              | 5,000                                       | 4200                 | 3330  | 1950 | 1545 | 1350 | 1270 | 1225 | 1140 | 1070                                                                                                                                                                                                             |      |      |      |      |
|                                               |                              | 7,500                                       | 2455                 | 1950  | 1140 | 905  | 790  | 740  | 715  | 665  | 625                                                                                                                                                                                                              |      |      |      |      |
|                                               |                              | 15,000                                      | 2230                 | 1770  | 1035 | 820  | 715  | 675  | 650  | 605  | 570                                                                                                                                                                                                              |      |      |      |      |
|                                               |                              | 75,000                                      | 1950                 | 1545  | 905  | 715  | 625  | 590  | 570  | 530  | 500                                                                                                                                                                                                              |      |      |      |      |
| 1-15/16                                       | 1-11/16<br>1-3/4             | 2,500                                       | 5295                 | 4200  | 2455 | 1950 | 1700 | 1600 | 1545 | 1435 | 1350                                                                                                                                                                                                             |      |      |      |      |
|                                               |                              | 5,000                                       | 4200                 | 3330  | 1950 | 1545 | 1350 | 1270 | 1225 | 1140 | 1070                                                                                                                                                                                                             |      |      |      |      |
|                                               |                              | 7,500                                       | 2455                 | 1950  | 1140 | 905  | 790  | 740  | 715  | 665  | 625                                                                                                                                                                                                              |      |      |      |      |
|                                               |                              | 15,000                                      | 2230                 | 1770  | 1035 | 820  | 715  | 675  | 650  | 605  | 570                                                                                                                                                                                                              |      |      |      |      |
|                                               |                              | 75,000                                      | 1950                 | 1545  | 905  | 715  | 625  | 590  | 570  | 530  | 500                                                                                                                                                                                                              |      |      |      |      |
| 2<br>2-3/16                                   | 1-15/16<br>2                 | 2,500                                       | 6545                 | 5190  | 3035 | 2410 | 2100 | 1980 | 1910 | 1775 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 5,000                                       | 5190                 | 4120  | 2410 | 1910 | 1670 | 1570 | 1515 | 1410 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 7,500                                       | 3035                 | 2410  | 1410 | 1120 | 975  | 915  | 885  | 825  |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 15,000                                      | 2755                 | 2190  | 1280 | 1015 | 885  | 835  | 805  | 745  |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 75,000                                      | 2410                 | 1910  | 1120 | 885  | 775  | 725  | 705  | 655  |                                                                                                                                                                                                                  |      |      |      |      |
| 2-1/4<br>2-7/16                               | 2-3/16<br>2-1/4              | 2,500                                       | 7910                 | 6275  | 3670 | 2910 | 2540 | 2390 | 2310 | 2145 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 5,000                                       | 6275                 | 4975  | 2910 | 2310 | 2020 | 1805 | 1830 | 1700 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 7,500                                       | 3670                 | 2910  | 1700 | 1350 | 1180 | 1110 | 1070 | 995  |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 15,000                                      | 3330                 | 2645  | 1545 | 1225 | 1070 | 1010 | 970  | 905  |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 75,000                                      | 2910                 | 2310  | 1350 | 1070 | 935  | 880  | 850  | 790  |                                                                                                                                                                                                                  |      |      |      |      |
| —                                             | 2-7/16<br>2-1/2              | 2,500                                       | 9395                 | 7455  | 4360 | 3455 | 3020 | 2840 | 2740 | 2545 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 5,000                                       | 7455                 | 5910  | 3455 | 2740 | 2400 | 2250 | 2175 | 2020 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 7,500                                       | 4630                 | 3455  | 2020 | 1605 | 1400 | 1315 | 1270 | 1180 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 15,000                                      | 3955                 | 3140  | 1835 | 1455 | 1270 | 1200 | 1155 | 1075 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 75,000                                      | 3455                 | 2740  | 1605 | 1270 | 1110 | 1045 | 1010 | 940  |                                                                                                                                                                                                                  |      |      |      |      |
| —                                             | 2-11/16                      | 2,500                                       | 9990                 | 7925  | 4635 | 3675 | 3210 | 3020 | 2915 | 2705 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 5,000                                       | 7925                 | 6285  | 3675 | 2915 | 2550 | 2395 | 2310 | 2150 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 7,500                                       | 4635                 | 3675  | 2150 | 1705 | 1490 | 1400 | 1350 | 1255 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 15,000                                      | 4210                 | 3340  | 1950 | 1550 | 1350 | 1275 | 1230 | 1140 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 75,000                                      | 3675                 | 2915  | 1705 | 1350 | 1180 | 1110 | 1075 | 995  |                                                                                                                                                                                                                  |      |      |      |      |
| —                                             | 2-15/16<br>3                 | 2,500                                       | 11720                | 9300  | 5440 | 4315 | 3765 | 3545 | 3420 | 3175 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 5,000                                       | 9300                 | 7375  | 4315 | 3420 | 2990 | 2810 | 2715 | 2525 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 7,500                                       | 5400                 | 4315  | 2525 | 2000 | 1750 | 1645 | 1585 | 1475 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 15,000                                      | 4935                 | 3920  | 2290 | 1820 | 1585 | 1495 | 1440 | 1340 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 75,000                                      | 4315                 | 3420  | 2000 | 1585 | 1385 | 1305 | 1260 | 1170 |                                                                                                                                                                                                                  |      |      |      |      |
| —                                             | 3-3/16<br>3-1/4              | 2,500                                       | 12630                | 10020 | 5860 | 4645 | 4055 | 3820 | 3685 | 3420 | These ball bearings will also accommodate thrust loads of up to 50% of the radial load ratings listed with no resultant decrease in the radial load capacity. For ratings higher than 5000 RPM, consult Factory. |      |      |      |      |
|                                               |                              | 5,000                                       | 10020                | 7945  | 4645 | 3685 | 3225 | 3025 | 2925 | 2720 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 7,500                                       | 5860                 | 4645  | 2720 | 2160 | 1885 | 1770 | 1710 | 1590 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 15,000                                      | 5320                 | 4225  | 2470 | 1960 | 1710 | 1610 | 1555 | 1445 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 75,000                                      | 4645                 | 3685  | 2160 | 1710 | 1495 | 1405 | 1360 | 1260 |                                                                                                                                                                                                                  |      |      |      |      |
| —                                             | 3-7/16<br>3-1/2              | 2,500                                       | 14500                | 11505 | 6730 | 5335 | 4660 | 4385 | 4235 | 3930 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 5,000                                       | 11505                | 9125  | 5335 | 4235 | 3700 | 3475 | 3355 | 3120 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 7,500                                       | 6730                 | 5335  | 3120 | 2480 | 2165 | 2035 | 1965 | 1825 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 15,000                                      | 6110                 | 4850  | 2835 | 2250 | 1965 | 1850 | 1785 | 1655 |                                                                                                                                                                                                                  |      |      |      |      |
|                                               |                              | 75,000                                      | 5335                 | 4235  | 2480 | 1965 | 1715 | 1615 | 1560 | 1450 |                                                                                                                                                                                                                  |      |      |      |      |

These ball bearings will also accommodate thrust loads of up to 50% of the radial load ratings listed with no resultant decrease in the radial load capacity. For ratings higher than 5000 RPM, consult Factory.

## Application Data – Unmounted Bearings

### Lubrication

Either oil or grease can be used for lubricating bearings. Boston bearings are supplied slushed (open bearings) with a rust inhibiting oil, or prepacked with grease (sealed or shielded bearings) at the factory. However, special purpose lubricants can be used when required. It is recommended that bearing selection include consideration of the lubricant specifications and whether the lubricant will be applied in service or prepacked at the factory. Good lubrication adds measurably to the life of a bearing.

### Precautions

1. Keep bearings clean and protected with covering until ready to install.
2. Make preliminary examination of shaft and housing for correct window size. Also check for chips, filings and burrs.
3. Press inner race on shaft or outer race in housing preferably by use of arbor press. Never transmit mounting press forces through balls from one race to the other.
4. Avoid hammer blows.

### Recommended Shaft Fits — 1600-3000-7500-7600 Series

| Bearing Bore |        | Shaft Rotating |        |                 |       | Shaft Stationary |        |                 |       |
|--------------|--------|----------------|--------|-----------------|-------|------------------|--------|-----------------|-------|
|              |        | Shaft Diameter |        | Theoretical Fit |       | Shaft Diameter   |        | Theoretical Fit |       |
| Max.         | Min.   | Max.           | Min.   | Tight           | Loose | Max.             | Min.   | Tight           | Loose |
| .2500        | .2495  | .2500          | .2495  | .0005           | .0005 | .2495            | .2490  | .0000           | .0010 |
| .3125        | .3120  | .3125          | .3120  | .0005           | .0005 | .3120            | .3115  | .0000           | .0010 |
| .3750        | .3745  | .3750          | .3745  | .0005           | .0005 | .3745            | .3740  | .0000           | .0010 |
| .4375        | .4370  | .4375          | .4370  | .0005           | .0005 | .4370            | .4365  | .0000           | .0010 |
| .5000        | .4995  | .5000          | .4995  | .0005           | .0005 | .4995            | .4990  | .0000           | .0010 |
| .6250        | .6245  | .6250          | .6245  | .0005           | .0005 | .6245            | .6240  | .0000           | .0010 |
| .7500        | .7495  | .7500          | .7495  | .0005           | .0005 | .7495            | .7490  | .0000           | .0010 |
| .8750        | .8745  | .8752          | .8747  | .0007           | .0003 | .8745            | .8740  | .0000           | .0010 |
| 1.0000       | .9995  | 1.0002         | .9997  | .0007           | .0003 | .9995            | .9990  | .0000           | .0010 |
| 1.1250       | 1.1245 | 1.1252         | 1.1247 | .0007           | .0003 | 1.1245           | 1.1240 | .0000           | .0010 |
| 1.2500       | 1.2405 | 1.2502         | 1.2497 | .0007           | .0003 | 1.2495           | 1.2490 | .0000           | .0010 |

### Recommended Housing Fits — 1600-3000-7500-7600 Series

| Bearing Outside Diameter |        | Housing Rotating        |        |                 |       | Housing Stationary      |        |                 |       |
|--------------------------|--------|-------------------------|--------|-----------------|-------|-------------------------|--------|-----------------|-------|
|                          |        | Housing Inside Diameter |        | Theoretical Fit |       | Housing Inside Diameter |        | Theoretical Fit |       |
| Max.                     | Min.   | Max.                    | Min.   | Tight           | Loose | Max.                    | Min.   | Tight           | Loose |
| .6875                    | .6870  | .6877                   | .6870  | .0005           | .0007 | .6880                   | .6875  | .0000           | .0010 |
| .8750                    | .8745  | .8752                   | .8745  | .0005           | .0007 | .8755                   | .8750  | .0000           | .0010 |
| .9063                    | .9058  | .9065                   | .9058  | .0005           | .0007 | .9068                   | .9063  | .0000           | .0010 |
| 1.1250                   | 1.1245 | 1.1252                  | 1.1242 | .0008           | .0007 | 1.1255                  | 1.1250 | .0000           | .0010 |
| 1.3750                   | 1.3745 | 1.3752                  | 1.3742 | .0008           | .0007 | 1.3755                  | 1.3750 | .0000           | .0010 |
| 1.6250                   | 1.6245 | 1.6252                  | 1.6242 | .0008           | .0007 | 1.6258                  | 1.6250 | .0000           | .0013 |
| 1.7500                   | 1.7495 | 1.7502                  | 1.7492 | .0008           | .0007 | 1.7508                  | 1.7500 | .0000           | .0013 |
| 2.0000                   | 1.9994 | 2.0002                  | 1.9990 | .0010           | .0008 | 2.0010                  | 2.0000 | .0000           | .0016 |
| 2.5000                   | 2.4994 | 2.5002                  | 2.4990 | .0010           | .0008 | 2.5010                  | 2.5000 | .0000           | .0016 |
| 2.5625                   | 2.5619 | 2.5627                  | 2.5615 | .0010           | .0008 | 2.5635                  | 2.5625 | .0000           | .0016 |

Note: 3000 Series Dim Are Nom. +.0005  
7600 Series Dim Are Nom. +.0008

## Application Data – Mounted Bearings

### Lubrication

Boston Gear ball and tapered roller bearing Pillow Blocks and Flanged Cartridges are factory lubricated prior to shipping. Those designed with the relubrication feature periodically require grease during operation. The interval between relubrication and the amount necessary to insure a long operational life are determined by the specific application.

Loading, speed, and environmental conditions must be considered when determining the proper interval between relubrication.

| Hours<br>Operated<br>Per Day | Weeks            |                    |                    |                     |                      |                      |                      |                      |
|------------------------------|------------------|--------------------|--------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
|                              | 1-<br>250<br>RPM | 251-<br>500<br>RPM | 501-<br>750<br>RPM | 751-<br>1000<br>RPM | 1001-<br>1500<br>RPM | 1501-<br>2000<br>RPM | 2001-<br>2500<br>RPM | 2501-<br>3000<br>RPM |
| 8                            | 12               | 12                 | 10                 | 7                   | 5                    | 4                    | 3                    | 2                    |
| 16                           | 12               | 7                  | 5                  | 4                   | 2                    | 2                    | 1                    | 1                    |
| 24                           | 10               | 5                  | 3                  | 2                   | 1                    | 1                    | 1                    | 1                    |

The table above may be used as a guide for establishing lubrication intervals for applications where contamination is not present.

For unusual operating conditions not covered by the table, consult the factory for our recommendations. Normal bearing operation temperatures range from “cool-to-the-touch” to “too-hot-to-touch” for more than a few seconds, depending on the load, speed, and ambient temperature.

The type of grease used in Boston bearing units allows satisfactory operation at temperatures to 225°F and speeds to 6500 RPM.

Bearings are prelubricated with a No. 2 consistency lithium base grease, and it is recommended that the Lith EP-2 or an equivalent grease be used when relubrication is required. When relubricating bearings, it is preferable that the shaft be rotating. This rotation of the shaft will aid in preventing excessive filling and insure proper distribution of the grease.

Grease should be added slowly to the bearing. When a slight bead appears from under the seal, the bearing will usually contain the proper amount of lubricant.

### Precautions

The shaft must be clean, straight and free from nicks and burns and should fit the bearing as snugly as possible. Recommended shaft tolerance — Low Speed (or Light Load) +.0 to -.002; Normal Speed (or Load) +.0 to -.001; High Speed (or Heavy Load) a light press fit is desirable.

The use of flats at setscrew locations will permit ease of shaft removal.

### Mounting

#### Setscrew Locking Type

Housing should be fastened to the mounting structure. Back out setscrews to clear shaft. After lubricating the shaft, slide it through the bearings and tighten setscrews to recommended torque, see Table below.

#### Eccentric Locking Collar Type

When sliding the shaft through the bore bearing inner ring, be sure that the counterbore of eccentric collar “A” is toward eccentric boss “B” on inner ring.

Turn eccentric collar “A” in the direction in which the shaft will rotate. Hand tight is often sufficient but a spanner wrench or drift pin may be inserted in spanner wrench hole “C” and used to set the collar (Note: DO NOT USE A DIRECT HAMMER BLOW to set the collar as such a blow may fracture the inner ring.) Not recommended for severe reversing applications.

Tighten set screw in eccentric collar firmly against shaft to recommended torque, see Table below.

| Set<br>Screw<br>Diameter | Hex Width<br>Across<br>Flats | Tightening<br>Torque<br>(In.-Lbs.) |
|--------------------------|------------------------------|------------------------------------|
| 1/4                      | 1/8                          | 70                                 |
| 5/16                     | 5/32                         | 140                                |
| 3/8                      | 5/16                         | 220                                |
| 7/16                     | 7/32                         | 350                                |
| 1/2                      | 1/4                          | 515                                |
| 5/8                      | 5/16                         | 1200                               |



NOTE: PS, PS2 and PS3 series: It is particularly important on these units that shaft be in place before the housing is secured to the mounting structure. The self-aligning steel stampings clamp the outer race when bolts are tightened making further shaft alignment impossible.

## Notes

F



## Notes

F



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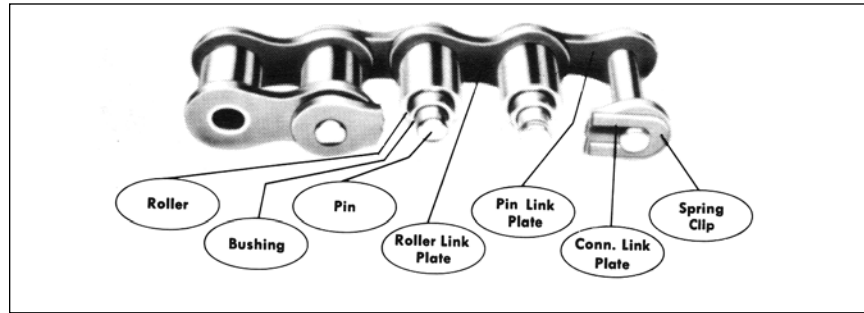
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# Roller Chains

## Description of Roller Chain Parts



### Chain Dimensions

Principal dimensions of roller chain which identify the chain definitely are pitch, roller width, roller diameter and pin diameter.

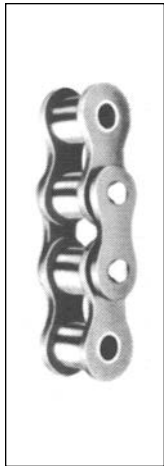
**PITCH** is the linear distance from center to center of adjacent pins or rivets.

**WIDTH** is the distance between inside plates or length of roller.

**DIAMETER** is the actual outside diameter of roller (or pin).

### Chain Types

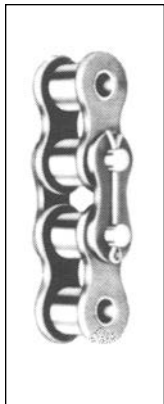
Boston Roller chains can be furnished in two types — RIVETED and DETACHABLE.



#### RIVETED TYPE

Riveted type chains are recommended for high speed drives, as a greater rigidity of the pins and side plates is secured from this construction.

Riveted type is considered standard on the smaller sizes up to and including 3/4 " pitch and will be supplied unless Detachable type is specified. Detachable type chain is not recommended up to and including 5/8" pitch, but is available in cotter pin construction in 3/4" pitch.

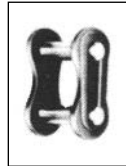


#### DETACHABLE (Cottered) TYPE

Detachable type chains are recommended for slower speed drives, especially in the larger pitches where ease of assembly and disassembly becomes an important factor.

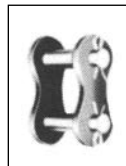
Detachable type with cotter pins is considered standard on all sizes 1" pitch and above and will be supplied unless riveted type is specified. Both types are available.

### Chain Links



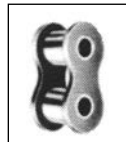
#### CONNECTING LINK (Spring Clip)

Standard for Nos. 25, 35, 40, 41, 50 and 60 single and multiple-width chains.



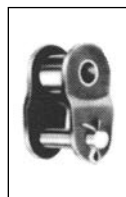
#### CONNECTING LINK (Cotter Pin)

Standard for Nos. 80, 100, 120, 140, and 160, 200 and 240 single and multiple-width chains.



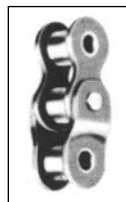
#### ROLLER LINK

Furnished as complete assemblies, roller links are standard for all chain sizes. The same roller links are used for single and multiple-width chains.



#### ONE PITCH OFFSET LINK (For standard service)

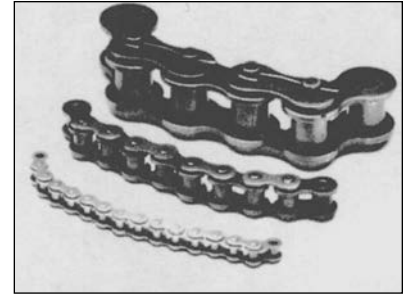
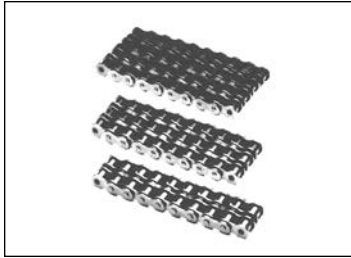
For use whenever chain length contains an odd number of pitches. These links are standard for all chain sizes in single or multiple-widths. (Not available for 25 pitch.)



#### TWO PITCH OFFSET LINK (For severe service)

Consists of a roller link and an offset link riveted together. Two pitch offset assemblies should be specified for severe service.

## Ordering Information



### STEEL – SINGLE STRAND

| Chain Pitch & Number | Standard Package Quantities | Catalog Number      | Item Code |
|----------------------|-----------------------------|---------------------|-----------|
| 1/4" - 25*           | 10' PKG.                    | 25 - 10'            | 68948     |
|                      | 100' REEL                   | 25 100'             | 69010     |
|                      | 250' REEL                   | 25 - 250'           | 68950     |
|                      | 500' REEL                   | 25 - 500'           | 68951     |
| 3/8" - 35*           | 10' PKG.                    | 35 - 10'            | 68953     |
|                      | 100' REEL                   | 35 - 100'           | 68954     |
|                      | 250' REEL                   | 35 - 250'           | 68955     |
|                      | 500' REEL                   | 35 - 500'           | 68956     |
| 1/2" - 40            | 10' PKG                     | 40 - 10'            | 68959     |
|                      | 100' REEL                   | 40 - 100'           | 68960     |
|                      | 250' REEL                   | 40 - 250'           | 68961     |
|                      |                             |                     |           |
| 1/2" - 41            | 10' PKG                     | 41 - 10'            | 68964     |
|                      | 100' REEL                   | 41 - 100'           | 68965     |
|                      | 250' REEL                   | 41 - 250'           | 68966     |
|                      | 500' REEL                   | 41 - 500'           | 68967     |
| 1/2" - 43            | 10' PKG                     | 43 - 10'            | 68947     |
|                      |                             |                     |           |
| 5/8" - 50            | 10' PKG                     | 50 - 10'            | 68984     |
|                      | 100' REEL                   | 50 - 100'           | 68985     |
|                      | 250' REEL                   | 50 - 250'           | 68986     |
|                      |                             |                     |           |
| 3/4" - 60            | 10' PKG                     | 60 RIV - 10'        | 68989     |
|                      | 100' REEL                   | 60 RIV - 100'       | 68990     |
|                      | 10' PKG                     | 60 DET - 10'        | 68991     |
|                      |                             |                     |           |
| 1" - 80              | 10' PKG                     | 80 RIV - 10'        | 68808     |
|                      | 50' REEL                    | 80 RIV - 50'        | 29948     |
|                      | 10' PKG                     | 80 DET - 10'        | 68812     |
|                      |                             |                     |           |
| 1-1/4" - 100         | 10' PKG                     | 100 RIV - 10'       | 68936     |
|                      |                             | 100 DET - 10'       | 68937     |
| 1-1/2" - 120         | 10' PKG                     | 120 RIV - 10'       | 68940     |
|                      |                             | 120 DET - 10'       | 68941     |
| 1-3/4" - 140         | 10'2-1/2" PKG               | 140 RIV - 10'2-1/2" | 30440     |
|                      |                             | 140 DET - 10'2-1/2" | 30438     |
| 2" - 160             | 10' PKG                     | 160 RIV - 10'       | 30462     |
|                      |                             | 160 DET - 10'       | 30460     |
| 2-1/4" - 180         | 10' PKG                     | 180 RIV - 10'       | 50219     |
|                      |                             | 180 DET - 10'       | 30478     |
| 2-1/2" - 200         | 10' PKG                     | 200 RIV - 10'       | 31066     |
|                      |                             | 200 DET - 10'       | 30488     |
| 3" - 240             | 5' PKG                      | 240 RIV - 5'        | 50210     |

### STEEL – DOUBLE STRAND

|                |               |                    |       |
|----------------|---------------|--------------------|-------|
| 1/4" - 25-2*   | 10' PKG       | 25-2-10'           | 45886 |
| 3/8" - 35-2"   | 10' PKG       | 35-2-10'           | 69011 |
| 1/2" - 40-2    | 10' PKG       | 40-2-10'           | 69014 |
| 5/8" - 50-2    | 10' PKG       | 50-2-10'           | 69017 |
| 3/4" - 60-2    | 10' PKG       | 60-2 RIV - 10'     | 69020 |
|                |               | 60-2- DET - 10'    | 68935 |
| 1" - 80-2      | 10' PKG       | 80-2 RIV - 10'     | 68813 |
|                |               | 80-2 DET - 10'     | 68816 |
| 1-1/4" - 100-2 | 10' PKG       | 100-2 RIV - 10'    | 68938 |
|                |               | 100-2 DET - 10'    | 68939 |
| 1-1/2" - 120-2 | 10' PKG       | 120-2 RIV - 10'    | 68942 |
|                |               | 120-2 DET - 10'    | 68943 |
| 1-3/4" - 140-2 | 10'2-1/2" PKG | 140-2RIV-10'2-1/2" | 06085 |
|                |               | 140-2DET-10'2-1/2" | 30448 |
| 2" - 160-2     | 10' PKG       | 160-2 RIV - 10'    | 50209 |
|                |               | 160-2 DET - 10'    | 30470 |
| 2-1/4" - 180-2 | 10' PKG       | 180-2 DET-10'      | 31014 |
| 2-1/2" - 200-2 | 5' PKG        | 200-2 RIV-5'       | 50220 |
|                |               | 200-2 DET-5'       | 30496 |
| 3" - 240-2     | 5' PKG        | 240-2 DET-5'       | 58301 |

### STEEL – TRIPLE STRAND

|                |               |                    |       |
|----------------|---------------|--------------------|-------|
| 1/4" - 25-3*   | 10' PKG       | 25-3-10'           | 45890 |
| 3/8" - 35-3*   | 10' PKG       | 35-3-10'           | 69057 |
| 1/2" - 40-3    | 10' PKG       | 40-3-10'           | 69060 |
| 5/8" - 50-3    | 10' PKG       | 50-3-10'           | 69063 |
| 3/4" - 60-3    | 10' PKG       | 60-3- RIV - 10'    | 69066 |
|                |               | 60-3 DET - 10'     | 68934 |
| 1" - 80-3      | 10' PKG       | 80-3 RIV - 10'     | 68818 |
|                |               | 80-3 DET - 10'     | 68822 |
| 1-1/4" - 100-3 | 10' PKG       | 100-3 RIV - 10'    | 69081 |
|                |               | 100-3 DET - 10'    | 69082 |
| 1-1/2" - 120-3 | 10' PKG       | 120-3 RIV - 10'    | 69083 |
|                |               | 120-3 DET - 10'    | 69087 |
| 1-3/4" - 140-3 | 10'2-1/2" PKG | 140-3DET-10'2-1/2" | 31142 |
| 2" - 160-3     | 5' PKG        | 160-3 DET-5'       | 31148 |
| 2-1/4" - 180-3 | 5' PKG        | 180-3 DET-5'       | 31160 |
| 2-1/2" - 200-3 | 5' PKG        | 200-3 DET-5'       | 30966 |
| 3" - 240-3     | 5' PKG        | 240-3 DET-5'       | 58304 |

### STEEL - QUAD STRAND

|                |         |                 |       |
|----------------|---------|-----------------|-------|
| 3/8" - 35-4*   | 10' PKG | 35-4-10'        | 68839 |
| 1/2" - 40-4    | 10' PKG | 40-4-10'        | 68842 |
| 5/8" - 50-4    | 10' PKG | 50-4-10'        | 68843 |
| 3/4" - 60-4    | 10' PKG | 60-4 RIV - 10'  | 68932 |
|                |         | 60-4 DET - 10'  | 68933 |
| 1" - 80-4      | 10' PKG | 100-4 RIV - 10' | 50216 |
| 1-1/2" - 120-4 | 10' PKG | 120-4 DET - 10' | 31184 |
| 1-3/4" - 140-4 | 5' PKG  | 140-4 DET - 5'  | 31190 |
| 2" - 160-4     | 5' PKG  | 160-4 DET - 5'  | 31154 |
| 2-1/2" - 200-4 | 5' PKG  | 200-4 DET - 5'  | 31172 |

### STAINLESS STEEL

|            |           |                |       |
|------------|-----------|----------------|-------|
| 1/4" - 25* | 10' PKG   | 25SS - 10'     | 58285 |
|            | 100' REEL | 25SS - 100'    | 69056 |
| 3/8" - 35* | 10' PKG   | 35SS - 10'     | 30078 |
| 1/2" - 40  | 10' PKG   | 40SS - 10'     | 30134 |
| 5/8" - 50  | 10' PKG   | 50SS - 10'     | 30272 |
| 3/4" - 60  | 10' PKG   | 60SS - 10'     | 30328 |
| 1" - 80    | 10' PKG   | 80SS RIV - 10' | 13493 |

### NICKEL PLATED

|            |           |             |       |
|------------|-----------|-------------|-------|
| 1/4" - 25* | 10' PKG   | 25NP - 10'  | 68709 |
|            | 100' REEL | 25NP - 100' | 68710 |
|            | 10' PKG   | 35NP - 10'  | 68713 |
| 3/8" - 35* | 100' PKG  | 35NP - 100' | 68714 |
|            |           |             |       |
| 1/2" - 40  | 10' PKG   | 40NP - 10'  | 68718 |
|            | 100' REEL | 40NP - 100' | 68719 |
|            | 10' PKG   | 50NP - 10'  | 68723 |
| 5/8" - 50  | 100' REEL | 50NP - 100' | 68724 |
|            | 250' REEL | 50NP - 250' | 68725 |
|            |           |             |       |
| 3/4" - 60  | 10' PKG   | 60NP - 10'  | 68728 |
|            | 100' REEL | 60NP - 100' | 68729 |
| 1" - 80    | 10' PKG   | 80NP - 10'  | 68732 |

\* Non Roller

‡ Heavy Series chain has thicker link plates to resist shock from pulsating loads.

DET → Cottered

# Roller Chains

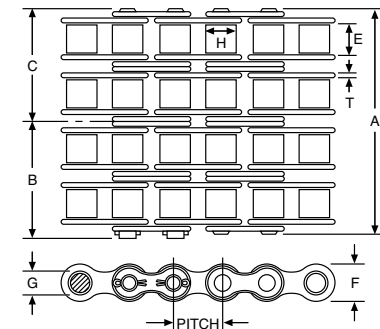
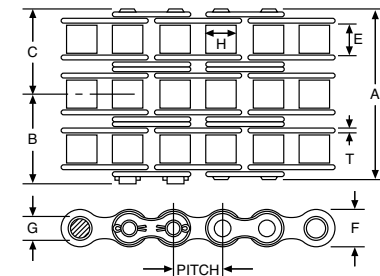
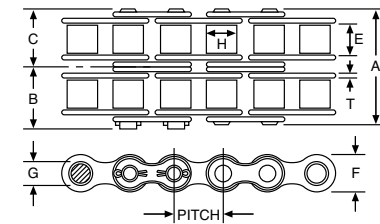
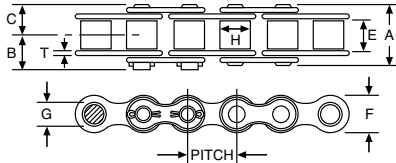
## ANSI Standard

### Double, Triple and Quadruple Widths Dimensions

#### ALL DIMENSIONS IN INCHES

| Chain Number           | Pitch | E     | H<br>Roller<br>Diam. | A     | B    | C    | T    | F    | Pin<br>Diam.<br>G | Average<br>Ultimate<br>Strength<br>Lbs. | Avg.<br>Weight<br>Per Ft.<br>Lbs. |
|------------------------|-------|-------|----------------------|-------|------|------|------|------|-------------------|-----------------------------------------|-----------------------------------|
| <b>SINGLE WIDTH</b>    |       |       |                      |       |      |      |      |      |                   |                                         |                                   |
| 25*                    | 1/4   | .125  | .130                 | .31   | .19  | .15  | .030 | .23  | .0905             | 930                                     | .104                              |
| 35*                    | 3/8   | .187  | .200                 | .47   | .34  | .23  | .050 | .36  | .141              | 2,300                                   | .21                               |
| 40                     | 1/2   | .312  | .312                 | .65   | .42  | .32  | .060 | .46  | .156              | 3,700                                   | .41                               |
| S41                    | 1/2   | .250  | .306                 | .51   | .37  | .26  | .050 | .39  | .141              | 2,580                                   | .28                               |
| 50                     | 5/8   | .375  | .400                 | .79   | .56  | .40  | .080 | .59  | .200              | 6,400                                   | .69                               |
| 60                     | 3/4   | .500  | .468                 | .98   | .64  | .49  | .094 | .70  | .234              | 8,700                                   | .96                               |
| 80                     | 1     | .625  | .625                 | 1.28  | .74  | .64  | .125 | .93  | .312              | 15,500                                  | 1.60                              |
| 100                    | 1 1/4 | .750  | .750                 | 1.54  | .91  | .77  | .156 | 1.16 | .375              | 24,000                                  | 2.56                              |
| 120                    | 1-1/2 | 1.000 | .875                 | 1.94  | 1.14 | .97  | .187 | 1.38 | .437              | 34,000                                  | 3.60                              |
| 140                    | 1-3/4 | 1.000 | 1.000                | 2.08  | 1.22 | 1.04 | .218 | 1.63 | .500              | 46,000                                  | 4.90                              |
| 160                    | 2     | 1.250 | 1.125                | 2.48  | 1.46 | 1.24 | .250 | 1.88 | .562              | 58,000                                  | 6.40                              |
| 180                    | 2-1/4 | 1.406 | 1.406                | 2.81  | 1.74 | 1.40 | .281 | 2.13 | .687              | 80,000                                  | 8.70                              |
| 200                    | 2-1/2 | 1.500 | 1.562                | 3.02  | 1.86 | 1.51 | .312 | 2.32 | .781              | 95,000                                  | 10.30                             |
| 240                    | 3     | 1.875 | 1.875                | 3.76  | 2.27 | 1.88 | .375 | 2.80 | .937              | 130,000                                 | 16.90                             |
| <b>DOUBLE WIDTH</b>    |       |       |                      |       |      |      |      |      |                   |                                         |                                   |
| 25-2*                  | 1/4   | .125  | .130                 | .56   | .31  | .28  | .030 | .23  | .0905             | 1,860                                   | .20                               |
| 35-2*                  | 3/8   | .187  | .200                 | .86   | .50  | .43  | .050 | .36  | .141              | 4,600                                   | .41                               |
| 40-2                   | 1/2   | .312  | .312                 | 1.20  | .67  | .60  | .060 | .46  | .156              | 7,400                                   | .81                               |
| 50-2                   | 5/8   | .375  | .400                 | 1.49  | .82  | .75  | .080 | .59  | .200              | 12,800                                  | 1.35                              |
| 60-2                   | 3/4   | .500  | .468                 | 1.87  | 1.02 | .93  | .094 | .70  | .234              | 17,400                                  | 1.90                              |
| 80-2                   | 1     | .625  | .625                 | 2.42  | 1.32 | 1.21 | .125 | .93  | .312              | 31,000                                  | 3.15                              |
| 100-2                  | 1-1/4 | .750  | .750                 | 2.94  | 1.62 | 1.47 | .156 | 1.16 | .375              | 48,000                                  | 5.00                              |
| 120-2                  | 1-1/2 | 1.000 | .875                 | 3.72  | 2.04 | 1.86 | .187 | 1.38 | .437              | 68,000                                  | 7.10                              |
| 140-2                  | 1-3/4 | 1.000 | 1.000                | 4.00  | 2.19 | 2.00 | .218 | 1.63 | .500              | 92,000                                  | 9.50                              |
| 160-2                  | 2     | 1.250 | 1.125                | 4.80  | 2.63 | 2.40 | .250 | 1.88 | .562              | 116,000                                 | 17.60                             |
| 180-2                  | 2-1/4 | 1.406 | 1.406                | 5.40  | 2.94 | 2.70 | .281 | 2.13 | .687              | 160,000                                 | 17.60                             |
| 200-2                  | 2-1/2 | 1.500 | 1.562                | 5.86  | 3.28 | 2.93 | .312 | 2.32 | .781              | 190,000                                 | 21.00                             |
| 240-2                  | 3     | 1.875 | 1.875                | 7.22  | 4.00 | 3.61 | .375 | 2.80 | .937              | 260,000                                 | 33.10                             |
| <b>TRIPLE WIDTH</b>    |       |       |                      |       |      |      |      |      |                   |                                         |                                   |
| 25-3*                  | 1/4   | .125  | .130                 | .81   | .44  | .41  | .030 | .23  | .0905             | 2,790                                   | .30                               |
| 35-3*                  | 3/8   | .187  | .200                 | 1.26  | .70  | .63  | .050 | .36  | .141              | 6,900                                   | .60                               |
| 40-3                   | 1/2   | .312  | .312                 | 1.78  | .96  | .89  | .060 | .46  | .156              | 11,100                                  | 1.20                              |
| 50-3                   | 5/8   | .375  | .400                 | 2.20  | 1.17 | 1.10 | .080 | .59  | .200              | 19,200                                  | 2.05                              |
| 60-3                   | 3/4   | .500  | .468                 | 2.75  | 1.46 | 1.37 | .094 | .70  | .234              | 26,100                                  | 2.75                              |
| 80-3                   | 1     | .625  | .625                 | 3.58  | 1.90 | 1.79 | .125 | .93  | .312              | 46,500                                  | 4.80                              |
| 100-3                  | 1-1/4 | .750  | .750                 | 4.35  | 2.33 | 2.18 | .156 | 1.16 | .375              | 72,000                                  | 7.30                              |
| 120-3                  | 1-1/2 | 1.000 | .875                 | 5.52  | 2.94 | 2.76 | .187 | 1.38 | .437              | 102,000                                 | 10.70                             |
| 140-3                  | 1-3/4 | 1.000 | 1.000                | 5.94  | 3.16 | 2.97 | .218 | 1.63 | .500              | 138,000                                 | 15.00                             |
| 160-3                  | 2     | 1.250 | 1.125                | 7.10  | 3.78 | 3.55 | .250 | 1.88 | .562              | 174,000                                 | 19.40                             |
| 180-3                  | 2-1/4 | 1.406 | 1.406                | 8.00  | 4.22 | 4.00 | .281 | 2.13 | .687              | 240,000                                 | 26.50                             |
| 200-3                  | 2-1/2 | 1.500 | 1.562                | 8.68  | 4.70 | 4.34 | .312 | 2.32 | .781              | 285,000                                 | 31.00                             |
| 240-3                  | 3     | 1.875 | 1.875                | 10.70 | 5.74 | 5.35 | .375 | 2.80 | .937              | 390,000                                 | 49.20                             |
| <b>QUADRUPLE WIDTH</b> |       |       |                      |       |      |      |      |      |                   |                                         |                                   |
| 25-4*                  | 1/4   | .125  | .130                 | 1.06  | .56  | .53  | .030 | .23  | .0905             | 3,720                                   | .45                               |
| 35-4*                  | 3/8   | .187  | .200                 | 1.65  | .90  | .83  | .050 | .36  | .141              | 9,200                                   | .82                               |
| 40-4                   | 1/2   | .312  | .312                 | 2.33  | 1.24 | 1.17 | .060 | .46  | .156              | 14,800                                  | 1.60                              |
| 50-4                   | 5/8   | .375  | .400                 | 2.91  | 1.53 | 1.45 | .080 | .59  | .200              | 25,600                                  | 2.75                              |
| 60-4                   | 3/4   | .500  | .468                 | 3.64  | 1.90 | 1.82 | .094 | .70  | .234              | 34,800                                  | 3.70                              |
| 80-4                   | 1     | .625  | .625                 | 4.73  | 2.47 | 2.37 | .125 | .93  | .312              | 62,000                                  | 6.40                              |
| 100-4                  | 1-1/4 | .750  | .750                 | 5.76  | 3.03 | 2.88 | .156 | 1.16 | .375              | 96,000                                  | 9.80                              |
| 120-4                  | 1-1/2 | 1.000 | .875                 | 7.30  | 3.83 | 3.65 | .187 | 1.38 | .437              | 136,000                                 | 14.20                             |
| 140-4                  | 1-3/4 | 1.000 | 1.000                | 7.86  | 4.12 | 3.93 | .218 | 1.63 | .500              | 184,000                                 | 20.00                             |
| 160-4                  | 2     | 1.250 | 1.125                | 9.40  | 4.93 | 4.70 | .250 | 1.88 | .562              | 232,000                                 | 25.00                             |
| 180-4                  | 2-1/4 | 1.406 | 1.406                | 10.58 | 5.52 | 5.29 | .281 | 2.13 | .687              | 320,000                                 | 35.00                             |
| 200-4                  | 2-1/2 | 1.500 | 1.562                | 11.50 | 6.10 | 5.75 | .312 | 2.32 | .781              | 380,000                                 | 41.50                             |
| 240-4                  | 3     | 1.875 | 1.875                | 14.14 | 7.47 | 7.07 | .375 | 2.80 | .937              | 520,000                                 | 65.00                             |

\*Non-Roller



# Roller Chains

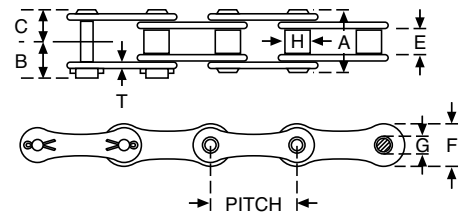
## Transmission/Conveyor/Heavy Series

### Double Pitch Dimensions

### Transmission Series

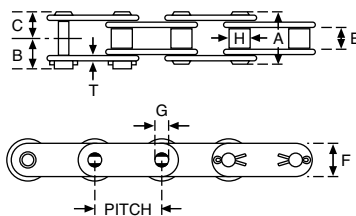
ALL DIMENSIONS IN INCHES

| Chain Number | Pitch | E Width | H Dia. | A    | B   | C   | T Thickness | F    | G Pin Dia. | Avg. Ultimate Strgth. (Lbs.) | Avg. Wgt. Per Foot Lbs. |
|--------------|-------|---------|--------|------|-----|-----|-------------|------|------------|------------------------------|-------------------------|
| 2040         | 1     | .312    | .312   | .65  | .42 | .32 | .060        | .46  | .156       | 3,700                        | .30                     |
| 2050         | 1-1/4 | .375    | .400   | .79  | .56 | .40 | .080        | .59  | .200       | 6,100                        | .45                     |
| 2060         | 1-1/2 | .500    | .468   | .98  | .64 | .49 | .094        | .69  | .234       | 8,500                        | .68                     |
| 2080         | 2     | .625    | .625   | 1.28 | .74 | .64 | .125        | .88  | .312       | 14,500                       | 1.11                    |
| 2100         | 2-1/2 | .750    | .750   | 1.54 | .91 | .77 | .156        | 1.16 | .375       | 24,000                       | 1.94                    |

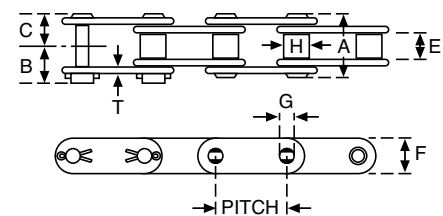


### Conveyor Series

#### OVERSIZE ROLLERS



#### STANDARD ROLLERS



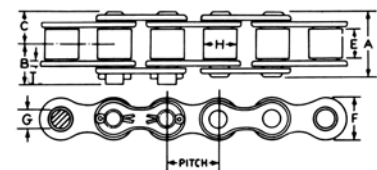
ALL DIMENSIONS IN INCHES

| Chain Number | Pitch | E     | H           |                  | A    | B    | C    | T    | F    | G    | Avg. Ultimate Strgth. (Lbs.) | Avg. weight per foot (Lbs.) |                  |                       |
|--------------|-------|-------|-------------|------------------|------|------|------|------|------|------|------------------------------|-----------------------------|------------------|-----------------------|
|              |       |       | Std. Roller | Over-Size Roller |      |      |      |      |      |      |                              | Std. Roller                 | Over-size Roller | Thermo-plastic Roller |
| C2040        | 1     | .312  | .312        | .625             | .65  | .42  | .32  | .060 | .46  | .156 | 3,700                        | .32                         | .55              | .33                   |
| C2050        | 1-1/4 | .375  | .400        | .750             | .79  | .56  | .40  | .080 | .59  | .200 | 6,100                        | .53                         | .84              | .54                   |
| C2060H       | 1-1/2 | .500  | .468        | .875             | 1.11 | .65  | .55  | .125 | .69  | .234 | 8,500                        | .92                         | 1.40             | .94                   |
| C2080H       | 2     | .625  | .625        | 1.125            | 1.41 | .80  | .70  | .156 | .88  | .312 | 14,500                       | 1.52                        | 2.21             | 1.52                  |
| C2100H       | 2-1/2 | .750  | .750        | 1.562            | 1.67 | .98  | .83  | .187 | 1.15 | .375 | 24,000                       | 2.30                        | 3.75             | —                     |
| C2120H       | 3     | 1.000 | .875        | 1.750            | 2.07 | 1.21 | 1.03 | .218 | 1.37 | .437 | 34,000                       | 3.70                        | 5.71             | —                     |
| C2160H       | 4     | 1.250 | 1.125       | 2.250            | 2.60 | 1.52 | 1.30 | .281 | 1.87 | .562 | 58,000                       | 5.85                        | 8.93             | —                     |

### Heavy Series

ALL DIMENSIONS IN INCHES

| Chain Number | Pitch | E     | H     | A    | B    | C    | T    | F     | G    | Avg. Ultimate Strgth. (Lbs.) | Avg. Wgt. Per Foot Lbs. |
|--------------|-------|-------|-------|------|------|------|------|-------|------|------------------------------|-------------------------|
| 60H          | 3/4   | .500  | .468  | 1.11 | .65  | .55  | .125 | .680  | .234 | 8,500                        | 1.14                    |
| 80H          | 1     | .625  | .625  | 1.41 | .80  | .70  | .156 | .930  | .312 | 14,500                       | 1.93                    |
| 100H         | 1-1/4 | .750  | .750  | 1.67 | .98  | .83  | .187 | 1.156 | .375 | 24,000                       | 3.06                    |
| 120H         | 1-1/2 | 1.000 | .875  | 2.07 | 1.21 | 1.03 | .218 | 1.375 | .437 | 34,000                       | 4.45                    |
| 140H         | 1-3/4 | 1.000 | 1.000 | 2.20 | 1.28 | 1.10 | .250 | 1.625 | .500 | 46,000                       | 5.68                    |
| 160H         | 2     | 1.250 | 1.125 | 2.60 | 1.52 | 1.30 | .281 | 1.875 | .562 | 58,000                       | 7.33                    |
| 180H         | 2-1/4 | 1.406 | 1.406 | 2.95 | 1.75 | 1.48 | .312 | 2.130 | .687 | 80,000                       | 9.10                    |
| 200H         | 2-1/2 | 1.500 | 1.562 | 3.63 | 2.02 | 1.66 | .375 | 2.312 | .781 | 95,000                       | 13.50                   |



## Conveyor Chain Selection

### Single or Double Pitch, Flat-Top and Hollow Pin Chain

In order to select a chain for a conveyor application, the Velocity and maximum Chain Pull must be established. The total pull may be obtained if the Torque and Sprocket PD are known, or if the Horsepower and Velocity can be determined.

$$\text{Chain Pull, } W = \frac{2T}{D}$$

$$W = \frac{33000 P}{V}$$

$$W = \frac{126050 P}{nD}$$

{

W = Chain Pull, Lbs.  
 T = Torque, In. Lbs.  
 D = Sprocket PD, Inches  
 P = Horsepower  
 V = Chain Velocity, FPM  
 n = Sprocket Speed, RPM

If a pair of chains are used, the pull on each chain will be half of the total chain pull.

Having determine the Chain Pull, refer to Chain Load Rating Charts on Page 247 and select a chain with a capacity equal to or greater than the Chain Pull Required.

To Calculate Chain Length (L):

For Single Pitch Chain  
 $L = 2C + N$   
 For Double Pitch & Flat-Top Chain  
 $L = 2C + \frac{N}{2}$

where:

L = Chain Length, Pitches  
 C = Center Distance, Pitches  
 N = Number of Teeth in One Sprocket\*

The computed value of L must be rounded out to a larger whole number of pitches (links) for each complete chain. Any whole number of links is satisfactory for Hinge-Top Chain but an even number should be selected for Single or Double Pitch or Flat-Top Chains.

To obtain the center distance or chain length in inches, the value in pitches should be multiplied by the chain pitch.

**Example 1.** Selecting a Double Pitch Conveying Chain. The power required to move material at 50 FPM is 1 Horsepower on a Conveyor with a Center Distance of 10 ft.

Step I: Determine Chain Pull:

$$W = \frac{33,000 P}{V} = \frac{33000 \times 1}{50} = 660 \text{ Lbs.}$$

Step II: Refer to Conveyor Chain Load Rating Chart, page 165. Select a double pitch chain with a Working Load equal to or greater than 660 lbs. at 50 FPM. Selection — C2050 (1.25" Pitch) with 5/8 pitch sprockets 50B25 (or larger).

Step III: Determine Chain Length in Pitches. Convert Center Distance (10 feet) to pitches.

$$C = \frac{10 \times 12}{1.25} = 96 \text{ Pitches}$$

$$\text{Chain Length (L)} = 2C + \frac{N}{2}$$

$$\text{Chain Length (L)} = 2 \times 96 + \frac{25}{2} = 204.5$$

Adjust to next larger even whole number.  
 Chain Length (L) = 206 Pitches

\*Assuming same size Driver and Driven Sprockets.

### Single Pitch & Double Pitch Chain

For horizontal conveyor applications where the HP or Torque data is not available, the approximate Chain Pull can be calculated from the Weight to be moved (product and chain) and the Coefficient of Friction (between sliding surfaces of chain and supporting ways).

For Normal operation:

Chain Pull  
 $W = (M + 2m) Cf$   
 W = Chain Pull Lbs.  
 M = Product Weight, Lbs. per Ft.  
 m = Chain Weight, Lbs. per Ft.  
 C = Conveyor Length (between Centers), Ft.  
 f = Coefficient of Friction (see Table).

For trial purposes,

let m = 1.0 for other conveyor chains.

**Note:** The estimated weight of pins and/or attachments (per foot of chain) should be included in chain weight.

Whenever the product becomes stalled on a moving conveyor, the chain pull is increased. The Added Pull depends on the Stalled Weight (of product) and the Coefficient of Friction (between surfaces of product and chain).

For stalled product:

Added Chain Pull,  
 $w = Mlf$   
 w = Added Chain Pull, Lbs.  
 M = Product Weight, Lbs. per Ft.  
 l = Length of Stalled Product, Ft.  
 f = Coefficient of Friction (see Table).

For Stalled condition:

Total Chain Pull = W + w, Lbs.

If a pair is used, the pull on each chain will be half of the total chain pull.

## Conveyor Chain Selection (Continued)

**Example 2.** A horizontal conveyor 25 Ft. long is to move a product weighing 200 Lbs. per Ft. at 20 FPM. Two FT2060 Flat-Top chains will be used, if possible, with the thermoplastic plates supported on metal ways without lubrication.

Chain Pull,

$$W = (M + 2m) Cf$$

$$M = 200 \text{ Lbs. per Ft.}$$

$$m = 1.41 \times 2 = 2.82 \text{ (two chains)}$$

$$C = 25 \text{ Ft.}$$

$$f = .25 + .15 = .40 \text{ (for starting with load)}$$

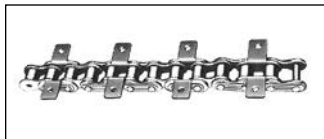
$$W = (200 + 5.64) 25 \times .40 = 2056 \text{ Lbs.}$$

The maximum working load of FT2060 chain at 20 FPM is 1170 Lbs. (see table) and this will be adequate if the product cannot become stalled.

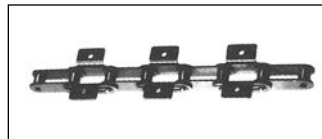
**Note:** Whenever two strands of chain are used, the total chain weight will be double the single strand weight, (per foot).

### COEFFICIENT OF FRICTION FOR CONVEYOR CHAIN

| Plate Material | Stainless Steel | Carbon Steel | Delrin | Nylon | High Density Polyethylene | Impregnated Wood |
|----------------|-----------------|--------------|--------|-------|---------------------------|------------------|
| Dry            | .41             | .41          | .30    | .35   | .15                       | .11              |
| Water          | .35             | .35          | .25    | .30   | .12                       | .11              |
| Soap & Water   | .20             | .20          | .25    | .20   | .08                       | .11              |
| Carbon Steel   |                 |              |        |       |                           |                  |
| Dry            | .41             | .39          | .30    | .35   | .15                       | .11              |
| Water          | .35             | .35          | .25    | .30   | .12                       | .11              |
| Soap           | .20             | .20          | .15    | .20   | .08                       | .11              |
| Acetal Plastic |                 |              |        |       |                           |                  |
| Dry            | .30             | .30          |        |       |                           | .20              |
| Water          | .25             | .25          |        |       |                           | .20              |
| Soap & Water   | .15             | .15          |        |       |                           | .10              |
| Nylon          |                 |              |        |       |                           |                  |
| Dry            | .35             | .35          |        |       |                           | .25              |
| Water          | .30             | .30          |        |       |                           | .25              |
| Soap & Water   | .20             | .20          |        |       |                           | .12              |



**SINGLE PITCH  
ROLLER CHAIN WITH  
ATTACHMENTS**



**DOUBLE PITCH  
ROLLER CHAIN WITH  
ATTACHMENTS**

To select the proper chain, the working load or chain pull and the chain speed in feet per minute must be known. Using this information find the proper chain in the chart.† These load ratings are based on proper installation, lubrication and steady load conditions.

The minimum permissible number of sprocket teeth is 15 for single pitch, and 24 for double pitch chain. For smoother operation, sprockets with greater numbers of teeth than the minimum are recommended.

### CHAIN LOAD RATING CHART

| Single Pitch                                                | Chain Numbers                             |       |       |       |       |        |        |       |
|-------------------------------------------------------------|-------------------------------------------|-------|-------|-------|-------|--------|--------|-------|
|                                                             | 35*                                       | 40    | 50    | 60    | 80    | 100    | 120    | 160   |
| Double Pitch                                                |                                           | C2040 | C2050 | C2060 | C2080 | C2100  | C2120  | C2160 |
| Velocity of Chain (FPM)                                     | Maximum Working Load or Chain Pull (Lbs.) |       |       |       |       |        |        |       |
| 25                                                          | 250                                       | 443   | 690   | 995   | 1770  | 2760   | 3990   | 7100  |
| 50                                                          | 243                                       | 432   | 675   | 970   | 1730  | 2690   | 3880   | 6900  |
| 75                                                          | 233                                       | 414   | 645   | 930   | 1660  | 2580   | 3720   | 6630  |
| 100                                                         | 220                                       | 391   | 610   | 880   | 1570  | 2440   | 3520   | 6250  |
| 125                                                         | 206                                       | 366   | 570   | 820   | 1460  | 2280   | 3290   | 5850  |
| 150                                                         | 190                                       | 338   | 528   | 760   | 1350  | 2110   | 3040   | 5400  |
| 175                                                         | 175                                       | 311   | 485   | 700   | 1240  | 1940   | 2800   | 4970  |
| 200                                                         | 160                                       | 284   | 444   | 640   | 1140  | 1770   | 2560   | 4550  |
| 225                                                         | 146                                       | 259   | 405   | 584   | 1040  | 1620   | 2340   | 4150  |
| 250                                                         | 133                                       | 236   | 368   | 530   | 940   | 1470   | 2120   | 3770  |
| 275                                                         | 120                                       | 214   | 333   | 480   | 855   | 1330   | 1920   | 3310  |
| 300                                                         | 110                                       | 195   | 305   | 440   | 780   | 1220   | 1760   | 3120  |
| Standard Pitch Boston Sprockets To Operate With Above Chain |                                           |       |       |       |       |        |        |       |
| Pitch                                                       | 3/8"                                      | 1/2"  | 5/8"  | 3/4"  | 1"    | 1-1/4" | 1-1/2" | 2"    |

\*No. 35 Chain is a Rollerless Chain.

†For Hollow Pin chains, the working load (chain pull) should be multiplied by 1.3 to obtain the proper value for use in selecting the chain pitch required.

### Flat Top Conveyor Chain

#### MAXIMUM WORKING LOAD OR CHAIN PULL (LBS.)

| Chain Type | Chain Velocity — Feet Per Minute |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|
|            | 0-10                             | 20   | 30   | 40   | 50   | 70   |
| FT2060     | 1070                             | 1045 | 1035 | 1030 | 1025 | 1015 |

#### MAXIMUM WORKING LOAD OR CHAIN PULL (LBS.)

| Chain Type | Chain Velocity — Feet Per Minute |     |     |     |     |     |
|------------|----------------------------------|-----|-----|-----|-----|-----|
|            | 100                              | 150 | 200 | 250 | 300 | 400 |
| FT2060     | 1005                             | 960 | 915 | 855 | 670 | 435 |

**LUBRICATION** - To assure maximum chain life, carbon and stainless steel chains should be lubricated wherever possible. Soap lubrication is recommended. Several detergent and nonalkali fluid types are on the market. Water lubrication should be used when no other lubricant can be tolerated. Drip-type systems and wheel-type and sponge-type applicators are on the market. Delrin chain tends to be self-lubricating, although wear life can be extended with the use of a lubricant, such as soap and water.

## Conveyor Chain Working Load

At speeds of normal conveyor operation (less than 500 feet per minute), chains are selected on the basis of safe working load, rather than horsepower capacity. Working load or chain pull of conveyor series chains is calculated by multiplying the total combined weight of the chain, plus the conveyed material in any run, by the appropriate coefficient of friction. In general, the maximum working load for a conveyor chain will be higher than that

determined for similar chains from a horsepower rating table. The higher load is permitted because there are usually fewer load cycles on a conveyor chain, compared to a power transmission drive. In order to minimize wear, permissible working loads of conveyor chains are reduced as speeds increase. See the working load table below.

### COEFFICIENT OF FRICTION—DOUBLE PITCH ROLLER CHAINS

| Chain Number     | Chain with Large Size Rollers and Rolling Friction |            |         |            | Chain with Standard Size Rollers and Sliding Friction |            |         |            |
|------------------|----------------------------------------------------|------------|---------|------------|-------------------------------------------------------|------------|---------|------------|
|                  | *Static                                            |            | Rolling |            | *Static                                               |            | Sliding |            |
|                  | Dry                                                | Lubricated | Dry     | Lubricated | Dry                                                   | Lubricated | Dry     | Lubricated |
| C-2040, C-2042   | 0.17                                               | 0.12       | 0.14    | 0.10       | .33                                                   | .24        | .27     | .21        |
| C-2050, C-2052   | 0.16                                               | 0.11       | 0.13    | 0.09       |                                                       |            |         |            |
| C-2060H, C-2062H | 0.16                                               | 0.11       | 0.13    | 0.09       |                                                       |            |         |            |
| C-2080H, C-2082H | 0.15                                               | 0.10       | 0.12    | 0.08       |                                                       |            |         |            |
| C-2100H, C-2102H | 0.14                                               | 0.09       | 0.11    | 0.07       | .33                                                   | .24        | .27     | .21        |
| C-2120H, C-2122H | 0.14                                               | 0.09       | 0.11    | 0.07       |                                                       |            |         |            |
| C-2160H, C-2162H | 0.13                                               | 0.08       | 0.10    | 0.07       |                                                       |            |         |            |

\*For chain speed of 3 feet per minute or less

### RECOMMENDED MAXIMUM WORKING LOADS

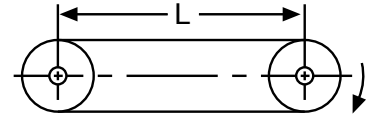
| Chain Number     | Pitch in Inches | Chain Speed, feet per minute |      |      |      |      |      |      |      |      |
|------------------|-----------------|------------------------------|------|------|------|------|------|------|------|------|
|                  |                 | 5                            | 25   | 50   | 75   | 100  | 200  | 300  | 400  | 500  |
|                  |                 | Maximum Working Load, Lbs.   |      |      |      |      |      |      |      |      |
| C-2040, C-2042   | 1               | 530                          | 525  | 510  | 490  | 465  | 335  | 230  | 160  | 115  |
| C-2050, C-2052   | 1 1/4           | 870                          | 865  | 840  | 805  | 765  | 555  | 380  | 265  | 190  |
| C-2060H, C-2062H | 1 1/2           | 1215                         | 1205 | 1170 | 1125 | 1065 | 775  | 530  | 370  | 265  |
| C-2080H, C-2082H | 2               | 2070                         | 2055 | 2000 | 1915 | 1815 | 1320 | 905  | 630  | 455  |
| C-2100H, C-2102H | 2 1/2           | 3425                         | 3400 | 3310 | 3175 | 3000 | 2180 | 1500 | 1040 | 750  |
| C-2120H, C-2122H | 3               | 4855                         | 4815 | 4690 | 4495 | 4250 | 3090 | 2125 | 1480 | 1065 |
| C-2160H, C-2162H | 4               | 8585                         | 8210 | 8000 | 7670 | 7250 | 5275 | 3625 | 2520 | 1815 |

Calculate the working load for horizontal, inclined, vertical and carousel conveyors, substituting the following values in the appropriate formulas:

- P = Chain pull or working load
- S = Speed in feet per minute
- L = Length of conveyor in feet between sprocket centers
- T = Total chain length in feet
- V = Vertical rise in feet
- F<sub>1</sub> = Coefficient of friction, sliding
- F<sub>2</sub> = Coefficient of friction, rolling
- W = Weight of chain and attachments per foot in pounds
- M = Weight of conveyed product per foot in pounds
- N = Number of chain strands

### Horizontal Conveyor

$$P = \frac{LF(2W + M)}{N}$$

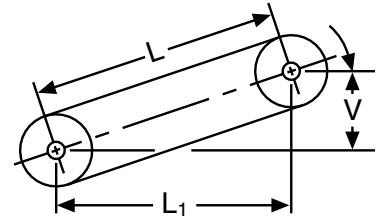


### Inclined Conveyor

A factor must be added to or subtracted from the chain load to compensate for raising or lowering the conveyed load on an inclined installation. This factor may be calculated by multiplying the weight of conveyed load by the vertical change in feet, and dividing by the horizontal run of the conveyor in feet.

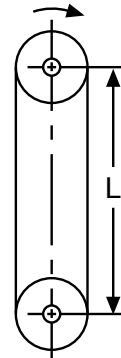
$$P = \frac{LF(2W + M) \cos \phi \div LM \sin \phi}{N}$$

$$\phi = \text{ARC tan } \frac{V}{L_1}$$

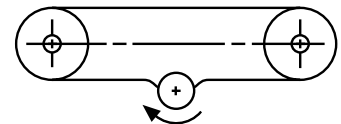


### Vertical Conveyor

$$P = \frac{L(M + W)}{N}$$



### Carousel Conveyor (Plan View) for Crescent Top Chains



$$P = \frac{TF(W + M) + (TMF)}{N}$$

Note: (TMF) is the length of stalled product.

## Roller Chain Formulas

### Horsepower

Horsepower equals 33,000 foot-pounds per minute, or 550 foot-pounds per second. In terms of chain working load or pull (P) and speed:

$$HP = \frac{P \times S}{33,000}$$

$$HP = \frac{P \times \text{Number of Teeth} \times \text{Pitch} \times \text{RPM}}{396,000}$$

$$HP = \frac{\text{Torque (lb.-in.)} \times \text{RPM}}{63,025}$$

$$HP = \frac{\text{Torque (lb.-in.)} \times \text{RPM}}{5,252}$$

### Ratio

$$\text{Ratio} = \frac{\text{Teeth in Large Sprocket}}{\text{Teeth in Small Sprocket}} \quad \text{or} \quad \frac{\text{Fast RPM}}{\text{Slow RPM}}$$

### Chain Working Load

When horsepower input is known, calculate for chain working load or pull (P):

$$P = \frac{HP \times 33,000}{\text{FPM}}$$

$$P = \frac{HP \times 396,000}{\text{Number of Teeth} \times \text{Pitch} \times \text{RPM}}$$

$$P = \frac{\text{Torque}}{\text{Sprocket Pitch Radius}}$$

### Chain Speed

$$\text{Speed (FPM)} = \frac{\text{Pitch} \times \text{Number of Teeth} \times \text{RPM}}{12}$$

### Sprocket Speed

$$\text{RPM} = \frac{12 \times \text{RPM}}{\text{Number of Teeth} \times \text{Pitch}}$$

$$\text{RPM of Driven Sprocket} = \frac{\text{Driver Teeth} \times \text{Driver RPM}}{\text{Driven Teeth}}$$

$$\text{RPM of Driver Sprocket} = \frac{\text{Driven Teeth} \times \text{Driven RPM}}{\text{Driver Teeth}}$$

### Centrifugal Pull or Tension

Pull or tension caused by chain weight and velocity:

$$\text{Centrifugal Pull} = \frac{\text{Chain Weight per Foot} \times (\text{FPM})^2}{115,900}$$

### Total Chain Tension

Total Chain Tension = Working Load + Centrifugal Pull

### Chain Bearing Pressure

$$\text{Bearing Pressure (pounds per square inch)} = \frac{\text{Working Load}}{\text{Bushing Length} \times \text{Pin Dia.}}$$

### Torque

Torque = Sprocket Pitch Radius x Working Load

$$\text{Torque (lb.-in.)} = \frac{HP \times 63,025}{\text{RPM}}$$

$$\text{Torque (lb.-ft.)} = \frac{HP \times 5,252}{\text{RPM}}$$

### Factor of Safety

$$FS = \frac{\text{Chain Ultimate Strength}}{\text{Chain Working Load}}$$

## Notes

**G**

## Ordering Procedure

Attachments may be ordered as separate links or assembled in chains.

**WHEN ORDERING SEPARATE ATTACHMENT LINKS, THE FOLLOWING DATA MUST BE GIVEN:**

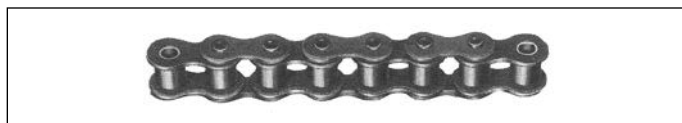
1. Chain Number and Attachment Number.
2. Connecting Link or Roller Link.

**WHEN ORDER ATTACHMENTS ASSEMBLED\* IN CHAIN, THE FOLLOWING INFORMATION MUST BE SUPPLIED:**

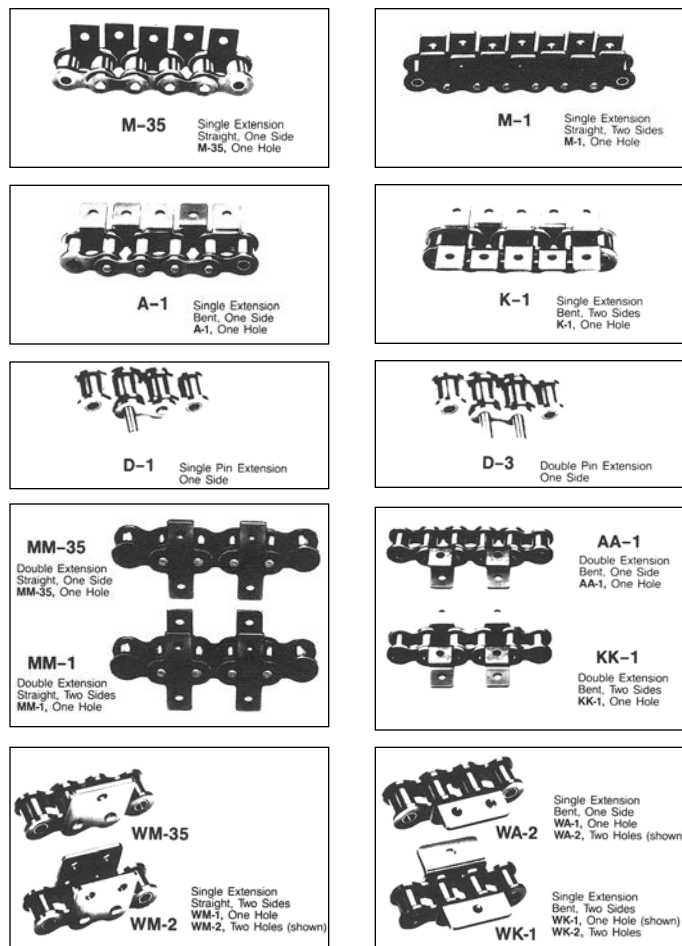
1. Chain Number and Attachment Number.
2. Spacing between Attachment Centers (Pitches or Inches). This must be a multiple of the chain pitch.
3. If spacing is an even number of pitches, attachments will be assembled as pin links unless roller link style is specified.
4. If spacing is an odd number of pitches, assembly will normally be supplied with alternate pin and roller link attachments. For attachments to be on pin (or roller) links only, an offset link must be assembled in each interval.

\*Riveted assembly will be supplied unless detachable links are specified.

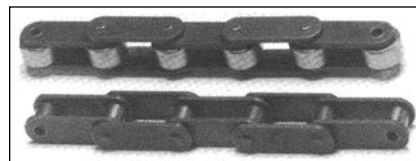
## ANSI Standard Roller Chains



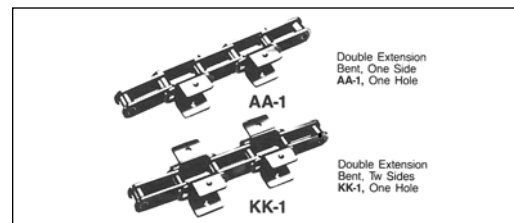
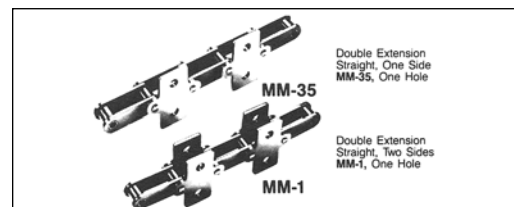
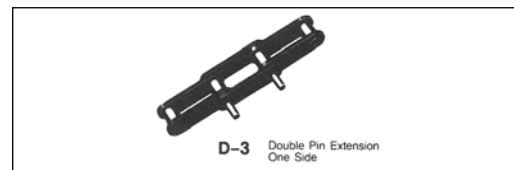
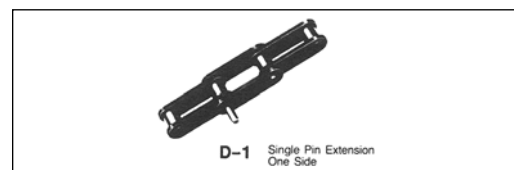
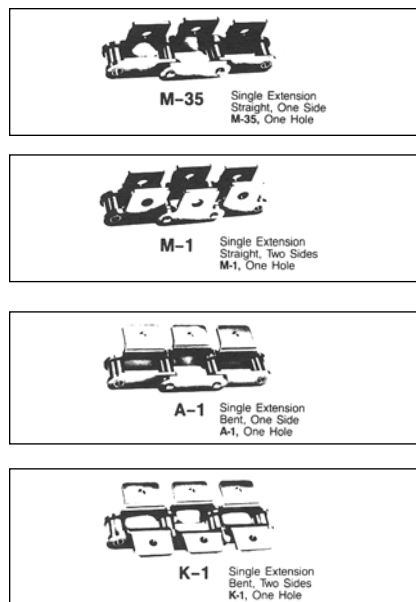
## Standard Roller Chain Attachments



## Double Pitch Roller Chains



## Double Pitch Chain Attachments



# Roller Chains

## Hollow Pin

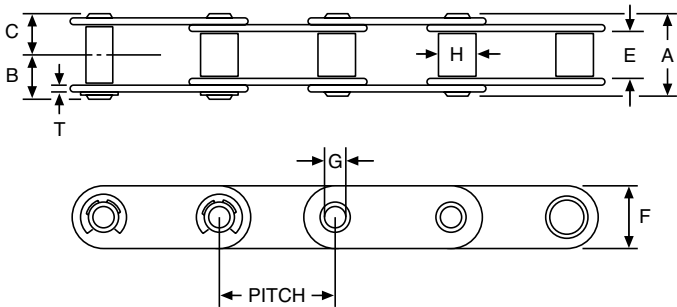
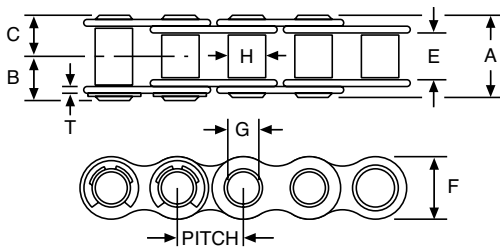
### Single and Double Pitch



Boston Gear Hollow Pin Chain is identical to ANSI Roller Chain in pitch, roller width and roller diameter. It is quality designed for long wear life in conveyor applications. The “hollow pin” feature provides unlimited conveyor design versatility. Stud, bushed design. Bushing diameter is same as comparable roller chain.

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| Chain Pitch<br>and<br>Number    | Standard<br>Package<br>Quantities | Catalog<br>Number | Item<br>Code |
|---------------------------------|-----------------------------------|-------------------|--------------|
| SINGLE PITCH                    |                                   |                   |              |
| 1/2" – 40HP                     | 20' Pkg.                          | 40HP – 20'        | 31088        |
| 5/8" – 50HP                     |                                   | 50 HP – 20'       | 31092        |
| 3/4" – 60 HP                    |                                   | 60 HP – 20"       | 31096        |
| 1" – 80 HP                      |                                   | 80 HP – 20'       | 31100        |
| DOUBLE PITCH – STANDARD ROLLERS |                                   |                   |              |
| 1" – C2040HP                    | 20' Pkg.                          | C2040HP – 20'     | 31104        |
| 1-1/4" – C2050HP                |                                   | C2050 HP – 20'    | 31108        |
| 1-1/2" – C2060 HP               |                                   | C2060 HP – 20"    | 31112        |
| 2" – C2080 HP                   |                                   | C2080 HP – 20'    | 31116        |
| DOUBLE PITCH – OVERSIZE ROLLERS |                                   |                   |              |
| 1" – C2042HP                    | 20' Pkg.                          | C2042HP – 20'     | 50223        |
| 1-1/4" – C2052HP                |                                   | C2052 HP – 20'    | 50224        |
| 1-1/2" – C2062 HP               |                                   | C2062 HP – 20"    | 50225        |
| 2" – C2082 HP                   |                                   | C2082 HP – 20'    | 50226        |



#### DIMENSIONS IN INCHES

| Chain Pitch |        | E    | H    | A    | B   | C   | T    | F   | G    | Average Ultimate Strength (Lbs.) | Average Weight Per Foot (Lbs.) |        |
|-------------|--------|------|------|------|-----|-----|------|-----|------|----------------------------------|--------------------------------|--------|
| Single      | Double |      |      |      |     |     |      |     |      |                                  | Single                         | Double |
| 1/2         | 1      | .312 | .312 | .65  | .37 | .32 | .060 | .46 | .158 | 2500                             | .38                            | .31    |
| 5/8         | 1-1/4  | .375 | .400 | .79  | .46 | .40 | .080 | .59 | .203 | 3700                             | .63                            | .51    |
| 3/4         | 1-1/2  | .500 | .469 | .97  | .57 | .49 | .094 | .69 | .237 | 6100                             | .88                            | .75    |
| 1           | 2      | .625 | .625 | 1.22 | .70 | .61 | .125 | .88 | .318 | 8500                             | 1.56                           | 1.33   |

### ORDER BY CATALOG NUMBER OR ITEM CODE

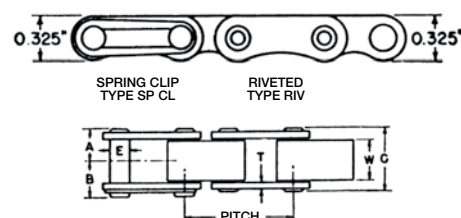
| Chain Number | Standard Package Quantities | Catalog Number | Item Code |
|--------------|-----------------------------|----------------|-----------|
| B503         | 25' Pkg.                    | B503-25'       | 30602     |
| B504         |                             | B504-25'       | 30608     |
| B505         |                             | B505-25'       | 30614     |
| B506         |                             | B506-25'       | 30620     |

STAINLESS STEEL Block Chain available on Special Order. Contact Factory.



### ALL DIMENSIONS IN INCHES

| Chain No. | Pitch | W    | From Pin Head to C/L | From Pin Head to C/L | Over-All Width |       | Link Plate Thickness | Pin Dia. E | Average Weight Per Foot, (Lbs.) |
|-----------|-------|------|----------------------|----------------------|----------------|-------|----------------------|------------|---------------------------------|
|           |       |      | A                    | B                    | Riv.           | Sp Cl |                      |            |                                 |
| B503      | 1     | 1/4  | 7/32                 | 17/64                | 7/16           | 31/64 | 0.060                | 0.170      | 0.3                             |
| B504      | 1     | 5/16 | 9/32                 | 5/16                 | 9/16           | 19/32 | 0.080                | 0.187      | 0.4                             |
| B505      | 1     | 3/8  | 5/16                 | 11/32                | 5/8            | 21/32 | 0.080                | 0.187      | 0.4                             |
| B506      | 1     | 1/2  | 3/8                  | 13/32                | 3/4            | 25/32 | 0.080                | 0.187      | 0.5                             |



\*Refer to Page 298 for Block Chain Sprockets

## Leaf (Cable) Chain

Boston Leaf Chains are designed for tension linkage applications such as counterweight chains for machine tools, elevator and oven doors, fork lift truck masts, spinning frames, i.e. applications to lift or pull where it is not necessary to engage a sprocket.

Leaf chains normally run over sheaves and are attached to clevises at each end. Because of the wide variation in clevis designs, leaf chains are furnished less the end pins.

Not recommended for new applications.



### ORDER BY CHAIN NUMBER AND LENGTH IN FEET

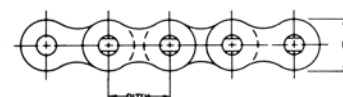
| Chain Pitch | Lacing | A    | G    | H    | T    | Average Ultimate Strength (Lbs.) | Weight Per Foot (Lbs.) | Chain Number |
|-------------|--------|------|------|------|------|----------------------------------|------------------------|--------------|
| 1/2         | 2 x 3  | .50  | .200 | .455 | .080 | 6,000                            | .48                    | BL-423       |
| 1/2         | 3 x 4  | .67  | .200 | .455 | .080 | 9,000                            | .64                    | BL-434       |
| 1/2         | 4 x 6  | .92  | .200 | .455 | .080 | 12,000                           | .93                    | BL-446       |
| 5/8         | 2 x 3  | .58  | .234 | .585 | .094 | 9,000                            | .74                    | BL-523       |
| 5/8         | 3 x 4  | .78  | .234 | .585 | .094 | 13,200                           | 1.03                   | BL-534       |
| 5/8         | 3 x 4  | 1.07 | .234 | .585 | .094 | 18,000                           | 1.46                   | BL-546       |
| 3/4         | 2 x 3  | .76  | .312 | .708 | .125 | 13,200                           | 1.15                   | BL-623       |
| 3/4         | 3 x 4  | 1.02 | .312 | .708 | .125 | 20,400                           | 1.60                   | BL-634       |
| 3/4         | 4 x 6  | 1.41 | .312 | .708 | .125 | 26,400                           | 2.30                   | BL-646       |
| 1           | 2 x 3  | .94  | .375 | .950 | .156 | 22,800                           | 1.91                   | BL-823       |
| 1           | 3 x 4  | 1.26 | .375 | .950 | .156 | 34,800                           | 2.66                   | BL-834       |
| 1           | 4 x 6  | 1.41 | .375 | .950 | .156 | 45,600                           | 3.78                   | BL-846       |

### STANDARD LACING TABLE

2 x 3

3 x 4

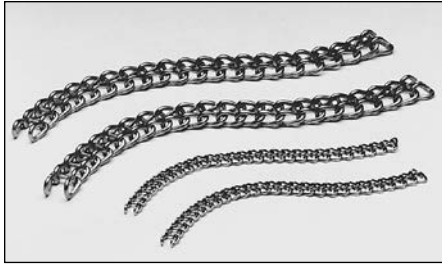
4 x 6



When ordering chain with odd number of pitches specify whether male or female end link required.

# Ladder Chain

## Steel–Stainless Steel–Brass



An effective, low-cost means of transmitting motion where load (torque) is not a critical factor.

In addition to stock-listed sizes and materials, ladder chain can be furnished pre-assembled into endless lengths to customer specifications or pre-cut to desired lengths.

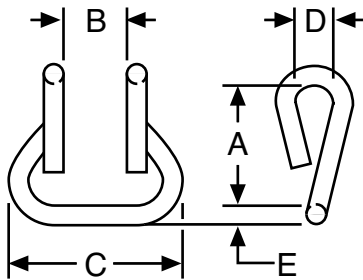
Ladder chain may be made into endless loops by opening the two eyes of one end link with needle-nosed pliers to permit entry of the other end link and then closing the open eyes.

Ladder chain can be furnished on a made-to-order basis made endless, with special plating. Consult the factory for prices.

### ORDER BY CATALOG NUMBER OR ITEM CODE\*

| Chain Number  | Standard package Quantities | Catalog Number                                            | Item Code                        |
|---------------|-----------------------------|-----------------------------------------------------------|----------------------------------|
| 1AA Miniature | *                           | 1AA Stainless Steel                                       | 54941                            |
| 1             | 50' Pkg.                    | 1 BRASS—50'<br>1 HITEN—50'<br>1 STEEL—50'<br>1 SS—50'     | 31200<br>31208<br>31216<br>46847 |
| 1A            | 50' Pkg.                    | 1A BRASS—50'<br>1A HITEN—50'<br>1A STEEL—50'<br>1A SS—50' | 31202<br>31210<br>31218<br>46848 |
| 2             | 50' Pkg.                    | 2 BRASS—50'<br>2 HITEN—50'<br>2 STEEL—50'<br>2 SS—50'     | 31204<br>31212<br>31220<br>46849 |
| 2-1/2         | 50' Pkg.                    | 2A BRASS—50'<br>2A HITEN—50'<br>2A STEEL—50'<br>2A SS—50' | 31206<br>31214<br>31222<br>46850 |

\*To order Miniature Ladder Chain, specify Item Code and Number of Feet required. For Sprockets to run with this Chain, see Miniature Roller Chain Sprockets, Page 274.



### ALL DIMENSIONS IN INCHES

| Chain Number | Links per Foot (Approx.) | A     |       | B    | C    | D    | E      | Weight Per 100 Ft. (Lbs.) |       |
|--------------|--------------------------|-------|-------|------|------|------|--------|---------------------------|-------|
|              |                          | Min.  | Max.  | Min. | Max. | Max. | ±.0005 | Steel                     | Brass |
| 1AA          | 82                       | .1465 | .1485 | .079 | .229 | —    | .031   | —                         | —     |
| 1A           | 65                       | .1840 | .1852 | .115 | .315 | .072 | .041   | 2.85                      | 3.06  |
| 1            | 42                       | .2846 | .2869 | .125 | .350 | .091 | .047   | 3.38                      | 3.04  |
| 2            | 34                       | .3514 | .3546 | .180 | .480 | .115 | .054   | 4.20                      | 4.50  |
| 2-1/2        | 34                       | .3507 | .3553 | .195 | .565 | .155 | .080   | 10.30                     | 11.10 |

### Load Data

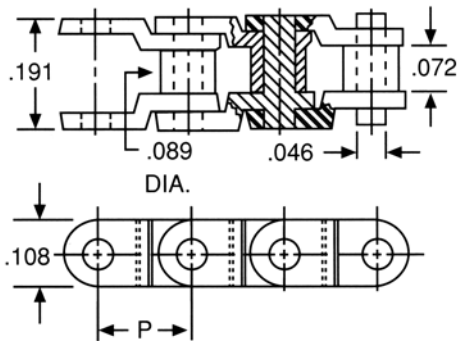
| Chain Number | Approx. Yield Point (In Pounds) |              |           |       | Approx. HP at 500 RPM |              |           |       |
|--------------|---------------------------------|--------------|-----------|-------|-----------------------|--------------|-----------|-------|
|              | Steel                           |              |           | Brass | Steel                 |              |           | Brass |
|              | Untreated                       | High Tensile | Stainless |       | Untreated             | High Tensile | Stainless |       |
| 1A           | 20                              | 40           | 20        | 15    | 1/6                   | 1/3          | 1/6       | 1/8   |
| 1            | 40                              | 70           | 25        | 25    | 1/4                   | 1/2          | 3/16      | 1/6   |
| 2            | 50                              | 90           | 35        | 30    | 1/3                   | 3/4          | 1/4       | 1/4   |
| 2-1/2        | 75                              | 140          | 65        | 45    | 1/2                   | 1            | 7/16      | 1/3   |

Ratings for 1AA Chain will be furnished on request.

# Miniature Roller Chains

## Stainless Steel – Single Strand Riveted

**MATERIAL:** Stainless Steel Type 18-8  
**FINISH:** Clear Passivated  
**AVERAGE TENSILE LOAD:** 180 lbs.  
**WEIGHT:** .035 lbs. per foot



### ORDER BY CATALOG NUMBER OR ITEM CODE

| Item Number | Catalog Number | No. of Links | Length |
|-------------|----------------|--------------|--------|
| 54919       | 15SS50         | 50           | 7.375  |
| 54920       | 15SS60         | 60           | 8.850  |
| 54921       | 15SS70         | 70           | 10.325 |
| 54922       | 15SS80         | 80           | 11.800 |
| 54923       | 15SS90         | 90           | 13.275 |
| 54924       | 15SS100        | 100          | 14.750 |
| 54925       | 15SS110        | 110          | 16.225 |
| 54926       | 15SS120        | 120          | 17.700 |
| 54927       | 15SS130        | 130          | 19.175 |
| 54928       | 15SS140        | 140          | 20.650 |
| 54929       | 15SS150        | 150          | 22.125 |
| 54930       | 15SS160        | 160          | 23.600 |
| 54931       | 15SS170        | 170          | 25.075 |
| 54932       | 15SS180        | 180          | 26.550 |
| 54933       | 15SS190        | 190          | 28.035 |
| 54934       | 15SS200        | 200          | 29.500 |
| 54935       | 15SS210        | 210          | 30.975 |
| 54936       | 15SS220        | 220          | 32.450 |
| 54937       | 15SS230        | 230          | 33.925 |
| 54938       | 15SS240        | 240          | 35.400 |

NOTE: Sizes not listed are available on request.  
 All lengths include and are supplied with connecting link  
 15SS C/L

### PRICED PER FOOT

| Item Number | Catalog Number | Material    | P Pitch | Links per Foot | Weight per Foot |
|-------------|----------------|-------------|---------|----------------|-----------------|
| 54939       | 6M-7-MS        | Nylatron GS | .1475   | 81.3           | .093 oz.        |

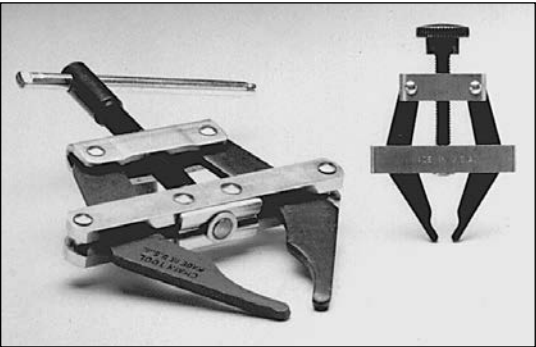
### CONNECTING LINK

| Catalog Number | Item Code |
|----------------|-----------|
| 54942          | 15SS C/L  |

### BUSHING LINK

| Catalog Number | Item Code |
|----------------|-----------|
| 54943          | 15SS B/L  |

# Chain Pullers



The Boston Chain Puller was designed to make roller chain installation quick and easy.

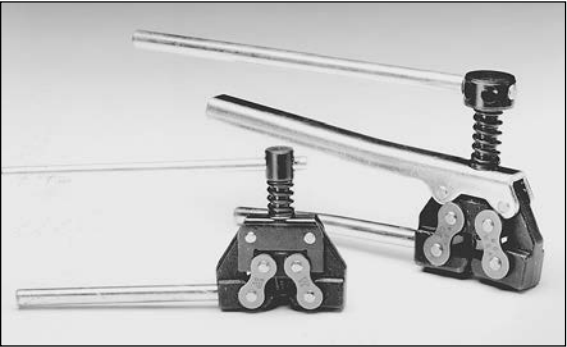
To use: (1) hook the two jaws into each end of the chain; (2) turn the screw until the two ends almost meet; (3) insert the connecting link and fasten.

**ORDER BY CATALOG NUMBER OR ITEM CODE**

| Chain Sizes | Jaw Spread | Catalog Number | Item Code |
|-------------|------------|----------------|-----------|
| Nos. 35-60  | 2"         | TH35-60        | 10784     |
| 80-240      | 5"         | TH80-240       | 10788     |

G

# Chain Breaking Tools



These Boston Chain Breaking Tools will disconnect any riveted roller chain manufactured to ANSI specifications, up to and including No. 100 (1-1/4" pitch).

Tool steel replaceable punch point, tempered for long life.

**ORDER BY CATALOG NUMBER OR ITEM CODE**

| Chain Sizes | Catalog Number | Item Code | Replaceable Points |           |
|-------------|----------------|-----------|--------------------|-----------|
|             |                |           | Catalog Number     | Item Code |
| Nos. 25-60  | CBT-60         | 06800     | XCBT 60-5          | 06808     |
| 60-100      | CBT-100        | 63526     | XCBT 100-5         | 63587     |



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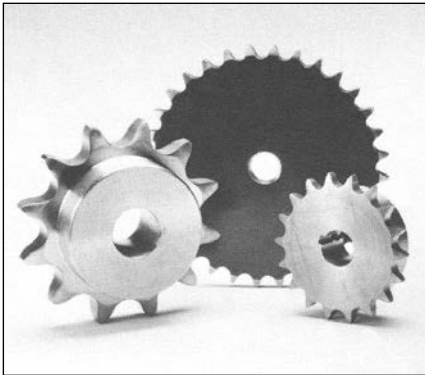
|                                            |         |
|--------------------------------------------|---------|
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# Chain Drives

## Roller Chain Sprockets



**Boston roller chain sprockets** are quality designed and built to ANSI specifications for superior fatigue resistance and long operational life in a host of industrial and process applications. Sprockets are available in a wide range of materials and pitches, with or without hubs.

### Types and Styles

#### Type A – No Hub

Boston standard Type A sprockets are stocked for all single strand Roller Chains up to 1" Pitch (#80 Chain).

#### Type B – Single Hub

Boston Steel—Type B Stock Bore sprockets are stocked for all single strand Roller Chains up to 1" Pitch (#80 Chain) and for double strand Roller Chains in 3/8, 1/2, 5/8 and 3/4" Pitches.

Boston Stainless Steel—Type B Stock Bore sprockets are stocked for single strand Roller Chain in 1/4, 3/8, and 1/2" pitches.

Boston Steel—Type B Bored-to-Size sprockets are stocked for single strand Roller Chain in 1/4, 3/8, 1/2, 5/8, 3/4, and 1" pitches.

Boston Type B sprockets are solid (one piece) construction in small sizes, and two-piece design in larger numbers of teeth, see Chart.

| Pitch Size | Solid up to | Two-Piece starting at |
|------------|-------------|-----------------------|
| 25         | 25B30       | 25B32                 |
| 35         | 35B25       | 35B26                 |
| 41         | 41B20       | 41B21                 |
| 40         | 40B20       | 40B21                 |
| 50         | 50B16       | 50B17                 |
| 60         | 60B16       | 60B17                 |
| 80         | 80B14       | 80B15                 |

### Roller Chain Drive Selection

The following considerations are very important in the selection and application of roller chain drives:

**HORSEPOWER RATINGS**—This catalog lists Horsepower Ratings for ANSI Series, single pitch, single strand chains No. 25 through No.160 (and lightweight machinery series No. 41).

Ratings are listed for various numbers of teeth and speeds of smaller sprocket. Ratings for intermediate numbers of teeth or RPM may be determined by interpolation. The ratings reflect a service factor of 1, a chain length of approximately 100 pitches, the use of recommended lubrication methods and a drive arrangement where two aligned sprockets are mounted on parallel horizontal shafts. For maximum service life, sprockets with small numbers of teeth, operating at moderate to high speeds or near the rated horsepower should have hardened teeth. Approximately 15,000 hours of service life at full load operation may be expected under these conditions.

**NO. OF TEETH**—It is good practice to select a pinion sprocket with no less than 17 Teeth, to assure 120° of chain wrap and minimize overhung load. However, certain conditions, i.e., space limitations, light loads, intermittent duty, etc. will permit the use of smaller pinions.

**RATIO**—Sprocket ratios should not exceed about 6 to 1 for normal chain life.

**HARDENED TEETH**—Boston Gear steel sprockets can be hardened. Consult the factory for recommended procedure.

**CENTER DISTANCE**—The correct center distance is very important. In designing chain drives, it is important that the Center Distance should be long enough to provide at least 120° of chain wrap on the smaller sprocket.

**RELATIVE SHAFT LOCATIONS**—It is desirable that the line between the two shaft centers be as nearly horizontal as possible. If this line is more than 60° from the horizontal, special precautions should be taken.

## Roller Chain Drive Selection (Continued)

A roller chain consists essentially of numerous small bearings operating under high pressures and requires adequate lubrication. There are four basic types of lubrication suggested for chain drives, depending upon the chain speed and the power transmitted. The Horsepower Rating Tables indicate the type of lubrication recommended.

### Type I—Manual Lubrication

Manual lubrication is accomplished by applying oil with a brush or spout can to the inside of the chain at the edges of the side plates. Volume and frequency should be determined by periodic inspection.

### TYPE II—Drip Lubrication

Oil is directed between link plate edges to a drip lubricator. Only enough oil to keep the chain moist is necessary and a light metal splash guard will keep the floor and surroundings clean.

### TYPE III—Bath or Disc Lubrication

With bath lubrication, the lower strand of the chain runs through a sump of oil. The oil level should reach the pitch line of the chain at its lowest point while operating. With disc lubrication, the chain operates above the oil level. The disc picks up oil from the sump and deposits it on the chain, usually by means of a trough. The disc diameter should be such as to produce rim speeds from 600 minimum to 8000 maximum FPM. This type of lubrication requires that the drive be enclosed in an oil tight chain case.

### TYPE IV—Oil Stream Lubrication

The lubricant is usually supplied by a circulating pump capable of supplying the chain drive with a continuous stream of oil. The oil should be applied inside the chain loop evenly across the chain width, and directed at the lower strand. This type of lubrication requires that the drive be enclosed in an oil tight chain case.

Recommended lubricant viscosities for various ambient temperatures are listed in the following table:

| Temp.<br>Degrees F. | Lubricant | Temp.<br>Degrees F. | Lubricant |
|---------------------|-----------|---------------------|-----------|
| 20-40               | SAE20     | 100-120             | SAE-40    |
| 40-100              | SAE30     | 120-140             | SAE50     |

**SURROUNDING CONDITIONS**—Abrasive, corrosive, or high temperature conditions can shorten chain life. If adverse conditions exist, special precautions should be taken. It may be advisable to use a drive with higher capacity than normal, stainless steel chain, etc.

Roller chain drives may be selected with the following procedure:

- From Table #1 of the Application Classification Chart on Pages 331-332 determine the Service Factor.
- Multiply the Application HP by the Service Factor to obtain a Design HP.\*
- The Selection Table below may be used to select an appropriate chain size using a sprocket of 17 teeth or larger.
- From the appropriate horsepower rating table (pages 268-270) determine the minimum size sprocket needed to provide, at the required speed, a rating equal to (or greater than) the Design horsepower.
- The Tables on pages 271-273 may then be used to select number of sprocket teeth, shaft center distance and chain length of a drive suitable for the application.

\*For Stainless Steel Chains, operating under wet or dry conditions, the Design Horsepower must be multiplied by a Factor (see Table below) for selection purposes.

NOTE: Standard Steel Chains are not recommended for wet or dry applications.

| Application Conditions | Factor |
|------------------------|--------|
| Wet (Moisture)         | 2.0    |
| Dry (Unlubricated)     | 5.0    |

Horsepower ratings of Multiple Strand chain may be obtained by multiplying the Single Strand rating by the proper Factor from the following table:

### MULTIPLE STRAND RATING FACTORS

| Number of Strands | Double | Triple | Quadruple |
|-------------------|--------|--------|-----------|
| Rating Factor     | 1.7    | 2.5    | 3.3       |

\*These Horsepower Ratings are based on certain operating conditions, see Page 268.

## SELECTION TABLE

| RPM<br>Smaller<br>Sprocket | DESIGN HORSEPOWER |     |       |     |     |     |     |       |     |     |      |      |      |
|----------------------------|-------------------|-----|-------|-----|-----|-----|-----|-------|-----|-----|------|------|------|
|                            | 1/2               | 1   | 1-1/2 | 2   | 3   | 4   | 5   | 7-1/2 | 10  | 15  | 20   | 25   | 30   |
|                            | CHAIN NUMBER      |     |       |     |     |     |     |       |     |     |      |      |      |
| 1800                       | 25                | 25  | 35    | 35  | 35  | 40  | 40  | 40    | 50  | 80  | 60-2 | 80-2 | —    |
| 1500                       | 25                | 25  | 35    | 35  | 35  | 40  | 40  | 40    | 60  | 60  | 80   | 60-2 | 80-2 |
| 1200                       | 25                | 35  | 35    | 35  | 40  | 40  | 40  | 50    | 60  | 60  | 80   | 80   | 100  |
| 1000                       | 25                | 35  | 35    | 35  | 40  | 40  | 40  | 50    | 60  | 60  | 80   | 80   | 80   |
| 800                        | 25                | 35  | 35    | 40  | 40  | 40  | 50  | 50    | 60  | 60  | 80   | 80   | 80   |
| 700                        | 25                | 35  | 35    | 40  | 40  | 50  | 50  | 50    | 60  | 80  | 80   | 80   | 80   |
| 600                        | 35                | 35  | 35    | 40  | 40  | 50  | 50  | 60    | 60  | 80  | 80   | 80   | 100  |
| 500                        | 35                | 35  | 40    | 40  | 50  | 50  | 50  | 60    | 80  | 80  | 80   | 100  | 100  |
| 400                        | 35                | 35  | 40    | 40  | 50  | 50  | 60  | 60    | 80  | 80  | 100  | 100  | 100  |
| 350                        | 35                | 40  | 40    | 40  | 50  | 50  | 60  | 80    | 80  | 80  | 100  | 100  | 100  |
| 300                        | 35                | 40  | 40    | 50  | 50  | 60  | 60  | 80    | 80  | 100 | 100  | 100  | 120  |
| 250                        | 35                | 40  | 40    | 50  | 50  | 60  | 60  | 80    | 80  | 100 | 100  | 120  | 120  |
| 200                        | 35                | 40  | 50    | 50  | 60  | 60  | 80  | 80    | 80  | 100 | 120  | 120  | 120  |
| 175                        | 40                | 40  | 50    | 50  | 60  | 60  | 80  | 80    | 100 | 100 | 120  | 120  | 140  |
| 150                        | 40                | 50  | 50    | 60  | 60  | 80  | 80  | 80    | 100 | 120 | 120  | 120  | 140  |
| 125                        | 40                | 50  | 50    | 60  | 80  | 80  | 80  | 100   | 100 | 120 | 120  | 140  | 140  |
| 100                        | 40                | 50  | 60    | 60  | 80  | 80  | 80  | 100   | 100 | 120 | 140  | 140  | 160  |
| 80                         | 40                | 50  | 60    | 80  | 80  | 80  | 100 | 100   | 120 | 140 | 140  | 160  | 160  |
| 70                         | 50                | 60  | 60    | 80  | 80  | 80  | 100 | 120   | 120 | 140 | 160  | 160  |      |
| 60                         | 50                | 60  | 80    | 80  | 80  | 100 | 100 | 120   | 120 | 140 | 160  |      |      |
| 50                         | 50                | 60  | 80    | 80  | 80  | 100 | 100 | 120   | 140 | 160 | 160  |      |      |
| 40                         | 50                | 60  | 80    | 80  | 100 | 100 | 120 | 120   | 140 | 160 |      |      |      |
| 30                         | 60                | 80  | 80    | 100 | 100 | 120 | 120 | 140   | 160 |     |      |      |      |
| 25                         | 60                | 80  | 80    | 100 | 120 | 120 | 140 | 140   | 160 |     |      |      |      |
| 20                         | 60                | 80  | 100   | 100 | 120 | 120 | 140 | 160   |     |     |      |      |      |
| 15                         | 80                | 100 | 100   | 120 | 120 | 140 | 160 |       |     |     |      |      |      |
| 10                         | 80                | 100 | 120   | 120 | 140 | 140 |     |       |     |     |      |      |      |

# Roller Chain Drives

## Horsepower Ratings for ANSI Roller Chains

See Horsepower Ratings, page 267

| Small Sprocket | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 25-1/4" PITCH |      |      |      |      |      |      |      |      |     |     |     |     |     |      |        |      |      |      |      |      |         |  |  |  |  |
|----------------|--------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|------|--------|------|------|------|------|------|---------|--|--|--|--|
| RPM →          | 10                                                                 | 20   | 30   | 50   | 75   | 100  | 125  | 150  | 200  | 250 | 300 | 400 | 600 | 900 | 1200 | 1800   | 2500 | 3000 | 3500 | 4000 |      |         |  |  |  |  |
| Teeth P.D.     |                                                                    |      |      |      |      |      |      |      |      |     |     |     |     |     |      |        |      |      |      |      |      |         |  |  |  |  |
| 12             | .97"                                                               | .007 | .014 | .020 | .032 | .046 | .059 | .072 | .085 | .11 | .24 | .16 | .21 | .29 | 0.43 | 0.55   | 0.80 | 1.07 | 1.26 | 1.45 | 1.62 |         |  |  |  |  |
| 15             | 1.20                                                               | .009 | .018 | .025 | .040 | .058 | .075 | .092 | .108 | .14 | .17 | .20 | .26 | .38 | 0.54 | 0.70   | 1.01 | 1.36 | 1.61 | 1.85 | 2.08 |         |  |  |  |  |
| 17             | 1.36                                                               | .011 | .020 | .029 | .046 | .066 | .086 | .105 | .124 | .16 | .20 | .23 | .30 | .43 | 0.62 | 0.81   | 1.16 | 1.56 | 1.84 | 2.11 | 2.38 |         |  |  |  |  |
| 19             | 1.52                                                               | .012 | .023 | .033 | .052 | .075 | .097 | .119 | .140 | .18 | .22 | .26 | .34 | .49 | 0.70 | 0.91   | 1.31 | 1.76 | 2.07 | 2.38 | 2.69 |         |  |  |  |  |
| 20             | 1.60                                                               | .013 | .024 | .035 | .055 | .079 | .103 | .125 | .148 | .19 | .23 | .28 | .36 | .52 | 0.74 | 0.96   | 1.38 | 1.86 | 2.19 | 2.52 | 2.84 |         |  |  |  |  |
| Lubrication #  |                                                                    |      |      |      |      |      |      |      |      |     |     |     |     |     |      | Type I |      |      |      |      |      | Type II |  |  |  |  |

| Small Sprocket | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 35-3/8" PITCH |      |      |      |     |     |     |     |     |        |      |      |      |      |         |      |      |      |      |          |  |  |  |  |
|----------------|--------------------------------------------------------------------|------|------|------|-----|-----|-----|-----|-----|--------|------|------|------|------|---------|------|------|------|------|----------|--|--|--|--|
| RPM →          | 10                                                                 | 20   | 30   | 50   | 75  | 100 | 125 | 150 | 200 | 250    | 300  | 400  | 600  | 900  | 1200    | 1500 | 1800 | 2500 | 3000 |          |  |  |  |  |
| Teeth P.D.     |                                                                    |      |      |      |     |     |     |     |     |        |      |      |      |      |         |      |      |      |      |          |  |  |  |  |
| 11 1.33"       | .023                                                               | .043 | .062 | .098 | .14 | .18 | .22 | .26 | .34 | .42    | .49  | .63  | .91  | 1.32 | 1.72    | 2.08 | 2.47 | 3.32 | 2.93 |          |  |  |  |  |
| 13 1.57        | .027                                                               | .051 | .074 | .117 | .17 | .22 | .27 | .31 | .41 | .50    | .59  | .76  | 1.09 | 1.59 | 2.05    | 2.49 | 2.96 | 3.98 | 3.76 |          |  |  |  |  |
| 15 1.80        | .032                                                               | .060 | .086 | .136 | .20 | .26 | .31 | .37 | .47 | .58    | .68  | .89  | 1.28 | 1.85 | 2.40    | 2.91 | 3.45 | 4.64 | 4.66 |          |  |  |  |  |
| 17 2.04        | .037                                                               | .068 | .099 | .156 | .22 | .29 | .36 | .42 | .54 | .66    | .78  | 1.02 | 1.46 | 2.12 | 2.75    | 3.33 | 3.95 | 5.31 | 5.63 |          |  |  |  |  |
| 19 2.28        | .042                                                               | .077 | .111 | .176 | .25 | .33 | .40 | .47 | .61 | .75    | .88  | 1.15 | 1.65 | 2.39 | 3.10    | 3.76 | 4.46 | 5.99 | 6.65 |          |  |  |  |  |
| 21 2.52        | .046                                                               | .086 | .124 | .196 | .28 | .37 | .45 | .53 | .68 | .83    | .98  | 1.27 | 1.84 | 2.66 | 3.45    | 4.19 | 4.97 | 6.68 | 7.73 |          |  |  |  |  |
| 23 2.75        | .051                                                               | .095 | .137 | .217 | .31 | .41 | .49 | .58 | .75 | .92    | 1.09 | 1.41 | 2.03 | 2.94 | 3.81    | 4.62 | 5.48 | 7.37 | 8.68 |          |  |  |  |  |
| 25 2.99        | .055                                                               | .104 | .150 | .237 | .34 | .44 | .54 | .64 | .82 | 1.01   | 1.19 | 1.54 | 2.22 | 3.21 | 4.16    | 5.06 | 6.00 | 8.06 | 9.50 |          |  |  |  |  |
| Lubrication #  |                                                                    |      |      |      |     |     |     |     |     | Type I |      |      |      |      | Type II |      |      |      |      | Type III |  |  |  |  |

| Small Sprocket |       | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 41-1/2" PITCH |      |      |     |     |     |     |     |      |         |      |      |      |          |      |         |      |      |
|----------------|-------|--------------------------------------------------------------------|------|------|-----|-----|-----|-----|-----|------|---------|------|------|------|----------|------|---------|------|------|
| RPM →          |       | 10                                                                 | 20   | 30   | 50  | 75  | 100 | 125 | 150 | 200  | 250     | 300  | 400  | 600  | 900      | 1200 | 1800    | 2400 | 3000 |
| Teeth          | P.D.  |                                                                    |      |      |     |     |     |     |     |      |         |      |      |      |          |      |         |      |      |
| 11             | 1.77" | .030                                                               | .056 | .080 | .13 | .18 | .24 | .29 | .34 | .44  | .54     | .64  | .82  | 1.19 | 1.71     | 1.71 | .093    | .060 | .043 |
| 13             | 2.09  | .036                                                               | .067 | .096 | .15 | .22 | .28 | .35 | .41 | .53  | .65     | .76  | .99  | 1.42 | 2.05     | 2.20 | 1.20    | 0.78 | 0.56 |
| 15             | 2.40  | .042                                                               | .078 | .112 | .18 | .26 | .33 | .40 | .48 | .62  | .75     | .89  | 1.15 | 1.66 | 2.39     | 2.73 | 1.49    | 0.96 | 0.69 |
| 17             | 2.72  | .048                                                               | .089 | .128 | .20 | .29 | .38 | .46 | .55 | .71  | .86     | 1.02 | 1.32 | 1.90 | 2.74     | 3.29 | 1.79    | 1.16 | 0.83 |
| 19             | 3.04  | .054                                                               | .100 | .145 | .23 | .33 | .43 | .52 | .62 | .80  | .97     | 1.15 | 1.49 | 2.14 | 3.09     | 3.89 | 2.12    | 1.38 | 0.98 |
| 21             | 3.35  | .060                                                               | .112 | .161 | .26 | .37 | .48 | .58 | .69 | .89  | 1.09    | 1.28 | 1.66 | 2.39 | 3.44     | 4.46 | 2.46    | 1.60 | 1.14 |
| 23             | 3.67  | .066                                                               | .124 | .178 | .28 | .41 | .53 | .64 | .76 | .98  | 1.20    | 1.41 | 1.83 | 2.64 | 3.79     | 4.92 | 2.82    | 1.83 | 1.31 |
| 25             | 3.99  | .072                                                               | .135 | .195 | .31 | .44 | .58 | .70 | .83 | 1.07 | 1.31    | 1.55 | 2.00 | 2.88 | 4.15     | 5.38 | 3.20    | 2.08 | 1.49 |
| Lubrication #  |       | Type I                                                             |      |      |     |     |     |     |     |      | Type II |      |      |      | Type III |      | Type IV |      |      |

| Small Sprocket |       | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 43-1/2" PITCH |      |      |     |     |     |     |     |     |     |      |      |         |      |      |      |      |          |
|----------------|-------|--------------------------------------------------------------------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|---------|------|------|------|------|----------|
| RPM →          |       | 10                                                                 | 20   | 30   | 40  | 50  | 75  | 100 | 125 | 150 | 175 | 200  | 250  | 300     | 350  | 400  | 500  | 600  | 900      |
| Teeth          | P.D.  |                                                                    |      |      |     |     |     |     |     |     |     |      |      |         |      |      |      |      |          |
| 11             | 1.77" | .030                                                               | .056 | .080 | .11 | .13 | .18 | .24 | .29 | .34 | .39 | .44  | .54  | .64     | .73  | .82  | 1.01 | 1.19 | 1.40     |
| 13             | 2.09  | .036                                                               | .067 | .096 | .13 | .15 | .22 | .28 | .35 | .41 | .47 | .53  | .65  | .76     | .87  | .99  | 1.21 | 1.42 | 1.70     |
| 15             | 2.41  | .042                                                               | .078 | .112 | .15 | .18 | .26 | .33 | .40 | .48 | .55 | .62  | .75  | .89     | 1.02 | 1.15 | 1.41 | 1.66 | 2.00     |
| 16             | 2.56  | .045                                                               | .084 | .120 | .16 | .19 | .28 | .36 | .43 | .52 | .59 | .67  | .81  | .96     | 1.10 | 1.23 | 1.51 | 1.78 | 2.28     |
| 18             | 2.88  | .051                                                               | .095 | .137 | .18 | .22 | .31 | .41 | .49 | .59 | .67 | .76  | .92  | 1.09    | 1.25 | 1.41 | 1.72 | 2.02 | 2.80     |
| 20             | 3.20  | .057                                                               | .106 | .153 | .20 | .25 | .35 | .46 | .55 | .66 | .75 | .85  | 1.03 | 1.22    | 1.40 | 1.58 | 1.93 | 2.27 | 3.25     |
| 22             | 3.51  | .063                                                               | .118 | .170 | .23 | .27 | .39 | .51 | .61 | .73 | .83 | .94  | 1.15 | 1.35    | 1.55 | 1.75 | 2.14 | 2.52 | 3.62     |
| 24             | 3.83  | .069                                                               | .130 | .187 | .25 | .30 | .43 | .56 | .67 | .80 | .91 | 1.03 | 1.26 | 1.48    | 1.70 | 1.92 | 2.35 | 2.76 | 3.97     |
| Lubrication #  |       | Type I                                                             |      |      |     |     |     |     |     |     |     |      |      | Type II |      |      |      |      | Type III |

\*See Page 267 for Multiple Strand Rating Factor.

#See Page 267 for Lubrication Details.

RATINGS FOR INTERMEDIATE NUMBERS OF TEETH OR RPM MAY BE OBTAINED BY INTERPOLATION.

# Roller Chain Drives

## Horsepower Ratings for ANSI Roller Chains

See Horsepower Ratings, page 267

| Small Sprocket |      | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 40-1/2" PITCH |     |     |     |     |      |      |      |         |      |      |      |      |      |          |      |      |         |      |      |  |
|----------------|------|--------------------------------------------------------------------|-----|-----|-----|-----|------|------|------|---------|------|------|------|------|------|----------|------|------|---------|------|------|--|
| RPM            | →    | 10                                                                 | 20  | 30  | 50  | 75  | 100  | 125  | 150  | 200     | 250  | 300  | 400  | 500  | 600  | 900      | 1200 | 1500 | 1800    | 2400 | 3000 |  |
| Teeth          | P.D. |                                                                    |     |     |     |     |      |      |      |         |      |      |      |      |      |          |      |      |         |      |      |  |
| 11             | 1.77 | .054                                                               | .10 | .15 | .23 | .33 | .43  | .53  | .62  | .80     | .98  | 1.16 | 1.50 | 1.84 | 2.16 | 3.11     | 4.03 | 4.93 | 4.66    | 3.03 | 2.17 |  |
| 13             | 2.09 | .065                                                               | .12 | .17 | .28 | .40 | .52  | .63  | .74  | .96     | 1.18 | 1.39 | 1.80 | 2.20 | 2.59 | 3.73     | 4.83 | 5.91 | 5.99    | 3.89 | 2.79 |  |
| 15             | 2.40 | .076                                                               | .14 | .20 | .32 | .46 | .60  | .74  | .87  | 1.12    | 1.37 | 1.62 | 2.10 | 2.56 | 3.02 | 4.35     | 5.64 | 6.89 | 7.43    | 4.82 | 3.45 |  |
| 17             | 2.72 | .087                                                               | .16 | .23 | .37 | .53 | .69  | .84  | .99  | 1.29    | 1.57 | 1.85 | 2.40 | 2.94 | 3.45 | 4.98     | 6.45 | 7.89 | 8.96    | 5.82 | 4.17 |  |
| 19             | 3.04 | .098                                                               | .18 | .26 | .42 | .60 | .78  | .95  | 1.12 | 1.45    | 1.77 | 2.09 | 2.71 | 3.31 | 3.90 | 5.62     | 7.27 | 8.89 | 10.5    | 6.88 | 4.92 |  |
| 21             | 3.35 | .109                                                               | .20 | .29 | .46 | .67 | .87  | 1.06 | 1.25 | 1.62    | 1.98 | 2.33 | 3.02 | 3.69 | 4.34 | 6.26     | 8.11 | 9.91 | 11.7    | 7.99 | 5.72 |  |
| 23             | 3.67 | .120                                                               | .22 | .32 | .51 | .74 | .96  | 1.17 | 1.38 | 1.78    | 2.18 | 2.57 | 3.33 | 4.07 | 4.79 | 6.90     | 8.94 | 10.9 | 12.9    | 9.16 | 6.55 |  |
| 25             | 3.99 | .132                                                               | .25 | .35 | .56 | .81 | 1.05 | 1.28 | 1.51 | 1.95    | 2.38 | 2.81 | 3.64 | 4.45 | 5.24 | 7.55     | 9.78 | 12.0 | 14.1    | 10.4 | 7.43 |  |
| Lubrication #  |      | Type I                                                             |     |     |     |     |      |      |      | Type II |      |      |      |      |      | Type III |      |      | Type IV |      |      |  |

| Small Sprocket |      | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 50-5/8" PITCH |     |     |      |      |      |         |      |      |      |      |      |          |      |      |         |      |      |      |      |
|----------------|------|--------------------------------------------------------------------|-----|-----|------|------|------|---------|------|------|------|------|------|----------|------|------|---------|------|------|------|------|
| RPM →          |      | 10                                                                 | 20  | 30  | 50   | 75   | 100  | 125     | 150  | 200  | 250  | 300  | 400  | 600      | 900  | 1200 | 1500    | 1800 | 2100 | 2400 | 2700 |
| Teeth          | P.D. |                                                                    |     |     |      |      |      |         |      |      |      |      |      |          |      |      |         |      |      |      |      |
| 11             | 2.22 | .11                                                                | .20 | .28 | .45  | .65  | .84  | 1.03    | 1.21 | 1.56 | 1.91 | 2.25 | 2.92 | 4.21     | 6.07 | 7.86 | 7.44    | 5.58 | 4.42 | 3.62 | 3.04 |
| 13             | 2.61 | .13                                                                | .24 | .34 | .54  | .78  | 1.01 | 1.23    | 1.45 | 1.87 | 2.29 | 2.70 | 3.50 | 5.04     | 7.26 | 9.42 | 9.56    | 7.17 | 5.67 | 4.65 | 3.90 |
| 15             | 3.01 | .15                                                                | .28 | .40 | .63  | .90  | 1.17 | 1.43    | 1.69 | 2.19 | 2.67 | 3.15 | 4.08 | 5.88     | 8.48 | 11.0 | 11.9    | 8.89 | 7.03 | 5.76 | 4.83 |
| 17             | 3.40 | .17                                                                | .32 | .45 | .72  | 1.04 | 1.34 | 1.64    | 1.93 | 2.50 | 3.06 | 3.60 | 4.67 | 6.73     | 9.70 | 12.6 | 14.3    | 10.7 | 8.48 | 6.95 | 5.83 |
| 19             | 3.80 | .19                                                                | .36 | .51 | .81  | 1.17 | 1.51 | 1.85    | 2.18 | 2.82 | 3.45 | 4.06 | 5.27 | 7.59     | 10.9 | 14.2 | 16.9    | 12.7 | 10.0 | 8.22 | 6.89 |
| 21             | 4.19 | .21                                                                | .40 | .57 | .90  | 1.30 | 1.69 | 2.06    | 2.43 | 3.15 | 3.85 | 4.53 | 5.87 | 8.46     | 12.2 | 15.8 | 19.3    | 14.7 | 11.6 | 9.55 | 8.01 |
| 23             | 4.59 | .23                                                                | .44 | .63 | 1.00 | 1.44 | 1.86 | 2.27    | 2.68 | 3.47 | 4.24 | 5.00 | 6.48 | 9.33     | 13.4 | 17.4 | 21.3    | 16.9 | 13.3 | 10.9 | 9.18 |
| 25             | 4.99 | .26                                                                | .48 | .69 | 1.09 | 1.57 | 2.04 | 2.49    | 2.93 | 3.80 | 4.64 | 5.47 | 7.09 | 10.2     | 14.7 | 19.1 | 23.3    | 19.1 | 15.1 | 12.4 | 10.4 |
| Lubrication #  |      | Type I                                                             |     |     |      |      |      | Type II |      |      |      |      |      | Type III |      |      | Type IV |      |      |      |      |

| Small Sprocket |      | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 60-3/4" PITCH |     |      |      |      |         |      |      |      |      |          |      |      |      |         |      |      |      |      |      |      |
|----------------|------|--------------------------------------------------------------------|-----|------|------|------|---------|------|------|------|------|----------|------|------|------|---------|------|------|------|------|------|------|
| RPM →          |      | 10                                                                 | 20  | 30   | 50   | 75   | 100     | 125  | 150  | 200  | 250  | 300      | 400  | 600  | 900  | 1200    | 1400 | 1600 | 1800 | 2000 | 2200 | 2400 |
| Teeth          | P.D. |                                                                    |     |      |      |      |         |      |      |      |      |          |      |      |      |         |      |      |      |      |      |      |
| 11             | 2.66 | .18                                                                | .34 | .49  | .78  | 1.11 | 1.44    | 1.76 | 2.07 | 2.69 | 3.29 | 3.87     | 5.02 | 7.23 | 10.5 | 11.9    | 9.45 | 7.70 | 6.49 | 5.51 | 4.78 | 4.20 |
| 13             | 3.13 | .22                                                                | .41 | .58  | .93  | 1.33 | 1.72    | 2.11 | 2.48 | 3.22 | 3.94 | 4.64     | 6.01 | 8.65 | 12.5 | 15.3    | 12.1 | 9.89 | 8.34 | 7.08 | 6.14 | 5.39 |
| 15             | 3.61 | .25                                                                | .47 | .68  | 1.08 | 1.55 | 2.01    | 2.46 | 2.90 | 3.76 | 4.59 | 5.41     | 7.01 | 10.1 | 14.6 | 18.9    | 15.0 | 12.3 | 10.3 | 8.77 | 7.61 | 6.68 |
| 17             | 4.08 | .29                                                                | .54 | .78  | 1.24 | 1.78 | 2.30    | 2.82 | 3.32 | 4.31 | 5.26 | 6.20     | 8.03 | 11.6 | 16.7 | 21.7    | 18.2 | 14.8 | 12.5 | 10.6 | 9.18 | 8.06 |
| 19             | 4.56 | .33                                                                | .61 | .88  | 1.40 | 2.01 | 2.60    | 3.18 | 3.74 | 4.86 | 5.93 | 6.99     | 9.05 | 13.0 | 18.8 | 24.4    | 21.5 | 17.5 | 14.7 | 12.5 | 10.9 | 9.52 |
| 21             | 5.03 | .37                                                                | .68 | .98  | 1.56 | 2.24 | 2.89    | 3.54 | 4.17 | 5.41 | 6.61 | 7.78     | 10.1 | 14.5 | 21.0 | 27.2    | 24.9 | 20.3 | 17.1 | 14.5 | 12.6 | 11.1 |
| 23             | 5.51 | .40                                                                | .75 | 1.08 | 1.72 | 2.47 | 3.19    | 3.91 | 4.60 | 5.97 | 7.29 | 8.59     | 11.1 | 16.0 | 23.2 | 30.2    | 28.6 | 23.3 | 19.6 | 16.7 | 14.4 | 12.7 |
| 25             | 5.98 | .44                                                                | .82 | 1.18 | 1.88 | 2.70 | 3.49    | 4.28 | 5.04 | 6.53 | 7.98 | 9.40     | 12.2 | 17.5 | 25.4 | 32.9    | 32.4 | 26.4 | 22.3 | 18.9 | 16.4 | 14.4 |
| Lubrication #  |      | Type I                                                             |     |      |      |      | Type II |      |      |      |      | Type III |      |      |      | Type IV |      |      |      |      |      |      |

| Small Sprocket | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 80-1" PITCH |      |      |         |      |      |      |      |      |          |      |      |      |         |      |      |      |      |      |      |      |      |
|----------------|------------------------------------------------------------------|------|------|---------|------|------|------|------|------|----------|------|------|------|---------|------|------|------|------|------|------|------|------|
| RPM →          | 10                                                               | 20   | 30   | 50      | 75   | 100  | 125  | 150  | 200  | 250      | 300  | 400  | 600  | 900     | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 | 2200 |      |
| Teeth P.D.     |                                                                  |      |      |         |      |      |      |      |      |          |      |      |      |         |      |      |      |      |      |      |      |      |
| 11             | 3.55                                                             | .42  | .79  | 1.14    | 1.80 | 2.60 | 3.36 | 4.11 | 4.84 | 6.28     | 7.67 | 9.04 | 11.7 | 16.9    | 23.0 | 19.6 | 14.9 | 11.8 | 9.69 | 8.12 | 6.94 | 6.01 |
| 13             | 4.18                                                             | .51  | .95  | 1.36    | 2.16 | 3.11 | 4.03 | 4.92 | 5.80 | 7.51     | 9.19 | 10.8 | 14.0 | 20.2    | 29.1 | 25.2 | 19.2 | 15.2 | 12.5 | 10.4 | 8.91 | 7.72 |
| 15             | 4.81                                                             | .59  | 1.10 | 1.59    | 2.52 | 3.63 | 4.70 | 5.75 | 6.77 | 8.77     | 10.7 | 12.6 | 16.4 | 23.6    | 34.0 | 31.2 | 23.8 | 18.9 | 15.4 | 12.9 | 11.0 | 9.57 |
| 17             | 5.44                                                             | .68  | 1.26 | 1.82    | 2.88 | 4.15 | 5.38 | 6.58 | 7.75 | 10.0     | 12.3 | 14.5 | 18.7 | 27.0    | 38.9 | 37.6 | 28.7 | 22.7 | 18.6 | 15.6 | 13.3 | 11.5 |
| 19             | 6.08                                                             | .76  | 1.43 | 2.05    | 3.25 | 4.68 | 6.07 | 7.42 | 8.74 | 11.3     | 13.8 | 16.3 | 21.1 | 30.4    | 43.8 | 44.5 | 33.9 | 26.9 | 22.0 | 18.4 | 15.7 | 13.6 |
| 21             | 6.71                                                             | .85  | 1.59 | 2.29    | 3.62 | 5.22 | 6.76 | 8.27 | 9.74 | 12.6     | 15.4 | 18.2 | 23.6 | 34.0    | 48.9 | 51.7 | 39.4 | 31.2 | 25.6 | 21.4 | 18.3 | 15.9 |
| 23             | 7.34                                                             | .94  | 1.75 | 2.52    | 4.00 | 5.76 | 7.46 | 9.12 | 10.7 | 13.9     | 17.0 | 20.0 | 26.0 | 37.4    | 53.9 | 59.2 | 45.1 | 35.8 | 29.3 | 24.6 | 21.0 | 18.2 |
| 25             | 7.98                                                             | 1.03 | 1.92 | 2.76    | 4.38 | 6.30 | 8.17 | 9.98 | 11.8 | 15.2     | 18.6 | 21.9 | 28.4 | 40.9    | 59.0 | 64.9 | 51.1 | 40.6 | 33.2 | 27.8 | 23.8 | 20.6 |
| Lubrication #  | Type I                                                           |      |      | Type II |      |      |      |      |      | Type III |      |      |      | Type IV |      |      |      |      |      |      |      |      |

\*See Page 267 for Multiple Strand Rating Factor.

#See Page 267 for Lubrication Details.

RATINGS FOR INTERMEDIATE NUMBERS OF TEETH OR RPM MAY BE OBTAINED BY INTERPOLATION.

# Roller Chain Drives

## Horsepower Ratings for ANSI Roller Chains

See Horsepower Ratings, page 267

| Small Sprocket |      | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 100-1-1/4" PITCH |      |      |         |      |          |      |      |      |      |      |         |      |      |      |      |      |      |
|----------------|------|-----------------------------------------------------------------------|------|------|---------|------|----------|------|------|------|------|------|---------|------|------|------|------|------|------|
| RPM →          |      | 10                                                                    | 20   | 30   | 50      | 75   | 100      | 125  | 150  | 200  | 250  | 300  | 400     | 500  | 600  | 900  | 1000 | 1200 | 1400 |
| Teeth          | P.D. |                                                                       |      |      |         |      |          |      |      |      |      |      |         |      |      |      |      |      |      |
| 11             | 4.44 | .81                                                                   | 1.51 | 2.18 | 3.45    | 4.97 | 6.44     | 7.88 | 9.28 | 12.0 | 14.7 | 17.3 | 22.4    | 27.4 | 32.3 | 27.5 | 23.4 | 17.8 | 14.2 |
| 13             | 5.22 | .97                                                                   | 1.81 | 2.61 | 4.13    | 5.96 | 7.72     | 9.43 | 11.1 | 14.4 | 17.6 | 20.7 | 26.9    | 32.8 | 38.7 | 35.3 | 30.1 | 22.9 | 18.2 |
| 15             | 6.01 | 1.13                                                                  | 2.12 | 3.05 | 4.82    | 6.95 | 9.00     | 11.0 | 13.0 | 16.8 | 20.6 | 24.2 | 31.4    | 38.3 | 45.2 | 43.7 | 37.3 | 28.4 | 22.5 |
| 17             | 6.80 | 1.30                                                                  | 2.42 | 3.49 | 5.52    | 7.96 | 10.3     | 12.6 | 14.9 | 19.2 | 23.5 | 27.7 | 35.9    | 43.9 | 51.7 | 52.7 | 45.0 | 34.3 | 27.2 |
| 19             | 7.59 | 1.46                                                                  | 2.73 | 3.93 | 6.23    | 8.98 | 11.6     | 14.2 | 16.8 | 21.7 | 26.5 | 31.2 | 40.5    | 49.5 | 58.3 | 62.3 | 53.2 | 40.5 | 32.1 |
| 21             | 8.39 | 1.63                                                                  | 3.04 | 4.38 | 6.94    | 10.0 | 12.9     | 15.8 | 18.7 | 24.2 | 29.6 | 34.8 | 45.1    | 55.1 | 64.9 | 72.4 | 61.8 | 47.0 | 37.3 |
| 23             | 9.18 | 1.80                                                                  | 3.36 | 4.84 | 7.65    | 11.0 | 14.3     | 17.5 | 20.6 | 26.6 | 32.6 | 38.4 | 49.7    | 60.8 | 71.7 | 83.0 | 70.9 | 53.9 | 42.8 |
| 25             | 9.97 | 1.97                                                                  | 3.67 | 5.29 | 8.37    | 12.1 | 15.6     | 19.1 | 22.5 | 29.2 | 35.7 | 42.0 | 54.4    | 66.5 | 78.4 | 94.1 | 80.3 | 61.1 | 48.5 |
| Lubrication #  |      | Type I                                                                |      |      | Type II |      | Type III |      |      |      |      |      | Type IV |      |      |      |      |      |      |

| Small Sprocket | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 120-1-1/2" PITCH |         |      |      |      |      |      |         |      |      |      |      |      |         |      |      |      |      |      |      |  |
|----------------|-----------------------------------------------------------------------|---------|------|------|------|------|------|---------|------|------|------|------|------|---------|------|------|------|------|------|------|--|
| RPM →          |                                                                       | 10      | 20   | 30   | 50   | 75   | 100  | 125     | 150  | 200  | 250  | 300  | 400  | 500     | 600  | 700  | 800  | 900  | 1000 | 1200 |  |
| Teeth          | P.D.                                                                  |         |      |      |      |      |      |         |      |      |      |      |      |         |      |      |      |      |      |      |  |
| 11             | 5.324                                                                 | 1.37    | 2.56 | 3.68 | 5.82 | 8.40 | 10.9 | 13.3    | 15.6 | 20.3 | 24.8 | 29.2 | 37.8 | 46.3    | 54.5 | 46.3 | 37.9 | 31.8 | 27.1 | 20.6 |  |
| 13             | 6.268                                                                 | 1.64    | 3.06 | 4.41 | 6.97 | 10.1 | 13.0 | 15.9    | 18.7 | 24.3 | 29.7 | 35.0 | 45.3 | 55.4    | 65.3 | 59.5 | 48.7 | 40.8 | 34.9 | 26.5 |  |
| 15             | 7.215                                                                 | 1.91    | 3.57 | 5.14 | 8.13 | 11.7 | 15.2 | 18.6    | 21.9 | 28.3 | 34.7 | 40.8 | 52.9 | 64.6    | 76.1 | 73.8 | 60.4 | 50.6 | 43.2 | 32.9 |  |
| 17             | 8.164                                                                 | 2.19    | 4.09 | 5.88 | 9.31 | 13.4 | 17.4 | 21.3    | 25.0 | 32.4 | 39.7 | 46.7 | 60.5 | 74.0    | 87.2 | 89.0 | 72.8 | 61.0 | 52.1 | 39.6 |  |
| 19             | 9.114                                                                 | 2.47    | 4.61 | 6.64 | 10.5 | 15.2 | 19.6 | 24.0    | 28.2 | 36.5 | 44.8 | 52.7 | 68.2 | 83.4    | 98.3 | 105  | 86.1 | 72.1 | 61.6 | 46.8 |  |
| 21             | 10.064                                                                | 2.75    | 5.13 | 7.39 | 11.7 | 16.9 | 21.8 | 26.7    | 31.4 | 40.7 | 49.8 | 58.7 | 76.0 | 93.0    | 110  | 122  | 100  | 83.8 | 71.6 | 54.4 |  |
| Lubrication    | #Type I                                                               | Type II |      |      |      |      |      | Type IV |      |      |      |      |      | Type IV |      |      |      |      |      |      |  |

| Small Sprocket |        | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 140-1-3/4" PITCH |      |      |         |      |      |          |      |      |      |      |      |         |      |      |      |      |  |
|----------------|--------|-----------------------------------------------------------------------|------|------|---------|------|------|----------|------|------|------|------|------|---------|------|------|------|------|--|
| RPM →          |        | 10                                                                    | 20   | 30   | 50      | 75   | 100  | 125      | 150  | 200  | 250  | 300  | 400  | 500     | 600  | 700  | 800  | 900  |  |
| Teeth          | P.D.   |                                                                       |      |      |         |      |      |          |      |      |      |      |      |         |      |      |      |      |  |
| 11             | 6.211  | 2.13                                                                  | 3.97 | 5.72 | 9.06    | 13.1 | 16.9 | 20.7     | 24.4 | 31.5 | 38.6 | 45.5 | 58.9 | 72.0    | 65.8 | 52.4 | 42.9 | 35.9 |  |
| 13             | 7.312  | 2.55                                                                  | 4.74 | 6.83 | 10.9    | 15.6 | 20.3 | 24.7     | 29.2 | 37.8 | 46.2 | 54.4 | 70.5 | 86.2    | 84.6 | 67.3 | 55.1 | 46.2 |  |
| 15             | 8.417  | 2.98                                                                  | 5.56 | 8.01 | 12.7    | 18.3 | 23.7 | 28.9     | 34.1 | 44.1 | 54.0 | 63.6 | 82.4 | 101     | 105  | 83.4 | 68.3 | 57.2 |  |
| 17             | 9.523  | 3.41                                                                  | 6.36 | 9.16 | 14.5    | 20.9 | 27.1 | 33.1     | 39.0 | 50.5 | 61.7 | 72.8 | 94.2 | 115     | 126  | 100  | 82.4 | 69.1 |  |
| 19             | 10.632 | 3.84                                                                  | 7.17 | 10.3 | 16.0    | 23.5 | 30.5 | 37.3     | 44.0 | 57.0 | 70.0 | 82.1 | 106  | 130     | 149  | 119  | 97.4 | 81.6 |  |
| 21             | 11.742 | 4.28                                                                  | 7.98 | 11.5 | 18.2    | 26.2 | 34.0 | 41.5     | 49.0 | 63.4 | 77.6 | 91.4 | 118  | 145     | 171  | 138  | 113  | 94.8 |  |
| Lubrication #  |        | Type I                                                                |      |      | Type II |      |      | Type III |      |      |      |      |      | Type IV |      |      |      |      |  |

| Small Sprocket      |        | HP RATINGS—STANDARD SINGLE * STRAND ROLLER CHAIN—NO. 160-2" PITCH |      |      |          |      |      |      |      |      |         |      |      |      |      |      |
|---------------------|--------|-------------------------------------------------------------------|------|------|----------|------|------|------|------|------|---------|------|------|------|------|------|
| RPM →               |        | 10                                                                | 20   | 30   | 50       | 75   | 100  | 125  | 150  | 200  | 250     | 300  | 400  | 500  | 550  | 600  |
| Teeth               | P.D.   |                                                                   |      |      |          |      |      |      |      |      |         |      |      |      |      |      |
| 11                  | 7.099  | 3.07                                                              | 5.74 | 8.26 | 13.1     | 18.8 | 24.4 | 29.8 | 35.1 | 45.5 | 55.6    | 65.5 | 84.9 | 96.7 | 83.9 | 73.5 |
| 13                  | 8.357  | 3.67                                                              | 6.85 | 9.86 | 15.7     | 22.5 | 29.2 | 35.6 | 42.0 | 54.4 | 66.6    | 78.4 | 102  | 124  | 108  | 94.4 |
| 15                  | 9.620  | 4.28                                                              | 8.00 | 11.5 | 18.3     | 26.3 | 34.1 | 41.7 | 49.0 | 63.5 | 77.7    | 91.5 | 119  | 145  | 134  | 117  |
| 17                  | 10.884 | 4.90                                                              | 9.16 | 13.2 | 20.9     | 30.1 | 39.0 | 47.7 | 56.1 | 72.7 | 88.9    | 105  | 136  | 166  | 161  | 141  |
| 19                  | 12.151 | 5.53                                                              | 10.3 | 14.9 | 23.6     | 33.9 | 44.0 | 53.8 | 63.2 | 82.0 | 100     | 118  | 153  | 188  | 190  | 166  |
| 21                  | 13.419 | 6.16                                                              | 11.5 | 16.6 | 26.3     | 37.8 | 49.0 | 59.9 | 70.5 | 91.4 | 112     | 132  | 171  | 209  | 220  | 194  |
| Lubrication #Type I |        | Type II                                                           |      |      | Type III |      |      |      |      |      | Type IV |      |      |      |      |      |

\*See Page 267 for Multiple Strand Rating Factor.

#See Page 267 for Lubrication Details.

RATINGS FOR INTERMEDIATE NUMBERS OF TEETH OR RPM MAY BE OBTAINED BY INTERPOLATION.

### SPEED RATIOS - CENTER DISTANCES - CHAIN LENGTHS

| Teeth<br>Driven<br>Sprocket | Teeth on Driver Sprocket |                      |                      |                      |                      |                      |                      |                      |                      |                                                                                                                                                                                     |                      |                      |                      |                      |                      |
|-----------------------------|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                             | 11                       | 12                   | 13                   | 14                   | 15                   | 16                   | 17                   | 18                   | 19                   | 20                                                                                                                                                                                  | 21                   | 22                   | 23                   | 24                   | 25                   |
| 15                          | 1.36<br>6.469<br>26      | 1.25<br>7.235<br>28  | 1.15<br>6.993<br>28  | 1.07<br>7.748<br>20  | 1.00<br>7.500<br>30  |                      |                      |                      |                      | <b>RATIO</b><br><b>CENTER DISTANCE - IN PITCHES</b><br><b>CHAIN LENGTH - IN PITCHES</b><br>To obtain corresponding values in<br>INCHES, multiply by the appropriate<br>Chain Pitch. |                      |                      |                      |                      |                      |
| 16                          | 1.45<br>7.207<br>28      | 1.33<br>6.971<br>28  | 1.23<br>7.736<br>30  | 1.14<br>7.494<br>30  | 1.07<br>8.249<br>32  | 1.00<br>8.000<br>32  |                      |                      |                      |                                                                                                                                                                                     |                      |                      |                      |                      |                      |
| 17                          | 1.55<br>7.943<br>30      | 1.42<br>7.710<br>30  | 1.31<br>7.473<br>30  | 1.21<br>8.237<br>32  | 1.13<br>7.994<br>32  | 1.06<br>8.749<br>34  | 1.00<br>8.500<br>34  |                      |                      |                                                                                                                                                                                     |                      |                      |                      |                      |                      |
| 18                          | 1.64<br>7.669<br>30      | 1.50<br>8.446<br>32  | 1.38<br>8.212<br>32  | 1.29<br>7.975<br>32  | 1.20<br>8.737<br>34  | 1.13<br>8.495<br>34  | 1.06<br>9.249<br>36  | 1.00<br>9.000<br>36  |                      |                                                                                                                                                                                     |                      |                      |                      |                      |                      |
| 19                          | 1.73<br>8.404<br>32      | 1.58<br>8.174<br>32  | 1.46<br>8.949<br>34  | 1.36<br>8.714<br>34  | 1.27<br>8.477<br>34  | 1.19<br>9.238<br>36  | 1.12<br>8.995<br>36  | 1.06<br>9.749<br>38  | 1.00<br>9.500<br>38  |                                                                                                                                                                                     |                      |                      |                      |                      |                      |
| 20                          | 1.82<br>8.124<br>32      | 1.67<br>8.909<br>34  | 1.54<br>8.679<br>34  | 1.43<br>9.452<br>36  | 1.33<br>9.216<br>36  | 1.25<br>8.978<br>36  | 1.18<br>9.739<br>38  | 1.11<br>9.495<br>38  | 1.05<br>10.249<br>40 | 1.00<br>10.000<br>40                                                                                                                                                                |                      |                      |                      |                      |                      |
| 21                          | 1.91<br>8.857<br>34      | 1.75<br>8.632<br>34  | 1.61<br>9.414<br>36  | 1.50<br>9.183<br>36  | 1.40<br>9.955<br>38  | 1.31<br>9.718<br>38  | 1.24<br>9.479<br>38  | 1.17<br>10.239<br>40 | 1.11<br>9.995<br>40  | 1.05<br>10.749<br>42                                                                                                                                                                | 1.00<br>10.500<br>42 |                      |                      |                      |                      |
| 22                          | 2.00<br>9.590<br>36      | 1.83<br>9.365<br>36  | 1.69<br>9.139<br>36  | 1.57<br>9.918<br>38  | 1.47<br>9.686<br>38  | 1.37<br>10.457<br>40 | 1.29<br>10.220<br>40 | 1.22<br>9.980<br>40  | 1.16<br>10.740<br>42 | 1.10<br>10.496<br>42                                                                                                                                                                | 1.05<br>11.249<br>44 | 1.00<br>11.000<br>44 |                      |                      |                      |
| 23                          | 2.09<br>9.304<br>36      | 1.92<br>10.098<br>38 | 1.77<br>9.872<br>38  | 1.64<br>9.645<br>38  | 1.53<br>10.422<br>40 | 1.44<br>10.189<br>40 | 1.35<br>10.959<br>42 | 1.28<br>10.721<br>42 | 1.21<br>10.481<br>42 | 1.15<br>11.240<br>44                                                                                                                                                                | 1.10<br>10.996<br>44 | 1.05<br>11.749<br>46 | 1.00<br>11.500<br>46 |                      |                      |
| 24                          | 2.18<br>10.037<br>38     | 2.00<br>9.815<br>38  | 1.85<br>10.605<br>40 | 1.72<br>10.378<br>40 | 1.69<br>10.150<br>40 | 1.50<br>10.926<br>42 | 1.41<br>10.692<br>42 | 1.33<br>11.461<br>44 | 1.26<br>11.222<br>44 | 1.20<br>10.982<br>44                                                                                                                                                                | 1.14<br>11.741<br>46 | 1.09<br>11.496<br>46 | 1.04<br>12.249<br>48 | 1.00<br>12.000<br>48 |                      |
| 25                          | 2.27<br>9.744<br>38      | 2.08<br>10.547<br>40 | 1.92<br>10.324<br>40 | 1.79<br>11.112<br>42 | 1.67<br>10.884<br>42 | 1.56<br>10.654<br>42 | 1.47<br>11.429<br>44 | 1.39<br>11.195<br>44 | 1.31<br>11.963<br>46 | 1.25<br>11.723<br>46                                                                                                                                                                | 1.19<br>11.483<br>46 | 1.14<br>12.241<br>48 | 1.09<br>11.996<br>48 | 1.04<br>12.750<br>50 | 1.00<br>12.500<br>50 |
| 30                          | 2.72<br>11.345<br>44     | 2.50<br>12.161<br>46 | 2.31<br>11.943<br>46 | 2.14<br>12.746<br>48 | 2.00<br>12.522<br>48 | 1.88<br>12.299<br>48 | 1.76<br>13.087<br>50 | 1.67<br>12.858<br>50 | 1.58<br>13.638<br>52 | 1.50<br>13.406<br>52                                                                                                                                                                | 1.43<br>13.172<br>52 | 1.36<br>13.942<br>54 | 1.30<br>13.705<br>54 | 1.25<br>14.469<br>56 | 1.20<br>14.228<br>56 |
| 32                          | 2.91<br>12.812<br>48     | 2.66<br>12.597<br>48 | 2.46<br>12.379<br>48 | 2.28<br>13.188<br>50 | 2.14<br>12.967<br>50 | 2.00<br>13.765<br>52 | 1.88<br>13.539<br>52 | 1.78<br>13.314<br>52 | 1.68<br>14.099<br>54 | 1.60<br>13.869<br>54                                                                                                                                                                | 1.52<br>14.646<br>56 | 1.45<br>14.413<br>56 | 1.39<br>14.178<br>56 | 1.33<br>14.946<br>58 | 1.28<br>14.708<br>58 |
| 35                          | 3.18<br>13.976<br>52     | 2.92<br>13.761<br>52 | 2.69<br>13.546<br>52 | 2.50<br>14.361<br>54 | 2.33<br>14.141<br>54 | 2.19<br>13.921<br>54 | 2.06<br>14.721<br>56 | 1.94<br>14.497<br>56 | 1.84<br>15.288<br>58 | 1.75<br>15.061<br>58                                                                                                                                                                | 1.67<br>14.833<br>58 | 1.59<br>15.613<br>60 | 1.52<br>15.382<br>60 | 1.46<br>16.155<br>62 | 1.40<br>15.921<br>62 |
| 36                          | 3.27<br>13.668<br>52     | 3.00<br>14.495<br>54 | 2.77<br>14.279<br>54 | 2.57<br>14.063<br>54 | 2.40<br>14.874<br>56 | 2.25<br>14.653<br>56 | 2.12<br>14.433<br>56 | 2.00<br>15.230<br>58 | 1.89<br>15.006<br>58 | 1.80<br>15.795<br>60                                                                                                                                                                | 1.71<br>15.567<br>60 | 1.64<br>15.338<br>60 | 1.56<br>16.117<br>62 | 1.50<br>15.886<br>62 | 1.44<br>16.658<br>64 |
| 40                          | 3.64<br>15.561<br>58     | 3.34<br>15.349<br>58 | 3.08<br>15.136<br>58 | 2.86<br>15.961<br>60 | 2.67<br>15.746<br>60 | 2.50<br>15.528<br>60 | 2.35<br>16.339<br>62 | 2.22<br>16.119<br>62 | 2.10<br>16.920<br>64 | 2.00<br>16.697<br>64                                                                                                                                                                | 1.90<br>16.473<br>64 | 1.82<br>17.262<br>66 | 1.74<br>17.035<br>66 | 1.67<br>17.818<br>68 | 1.60<br>17.588<br>68 |
| 42                          | 3.82<br>15.983<br>60     | 3.50<br>15.773<br>60 | 3.23<br>16.605<br>62 | 3.00<br>16.391<br>62 | 2.80<br>16.177<br>62 | 2.62<br>16.994<br>64 | 2.47<br>16.777<br>64 | 2.34<br>16.557<br>64 | 2.21<br>17.364<br>66 | 2.10<br>17.142<br>66                                                                                                                                                                | 2.00<br>17.939<br>68 | 1.91<br>17.714<br>68 | 1.83<br>17.489<br>68 | 1.75<br>18.275<br>70 | 1.68<br>18.047<br>70 |
| 45                          | 4.09<br>17.139<br>64     | 3.75<br>16.930<br>64 | 3.46<br>16.719<br>64 | 3.22<br>17.553<br>66 | 3.00<br>17.340<br>66 | 2.81<br>18.161<br>68 | 2.65<br>17.945<br>68 | 2.50<br>17.728<br>68 | 2.37<br>18.536<br>70 | 2.25<br>18.317<br>70                                                                                                                                                                | 2.14<br>18.096<br>70 | 2.04<br>18.895<br>72 | 1.96<br>18.671<br>72 | 1.88<br>19.463<br>74 | 1.80<br>19.237<br>74 |

For Center Distances other than listed in this Table, the Chain Length must be calculated, see Page 273.

# Roller Chain Drives

## Selection

### SPEED RATIOS - CENTER DISTANCES - CHAIN LENGTHS

| Teeth<br>Driven<br>Sprocket | Teeth on Driver Sprocket |                      |                      |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
|-----------------------------|--------------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                             | 11                       | 12                   | 13                   | 14                    | 15                    | 16                    | 17                    | 18                    | 19                    | 20                    | 21                    | 22                    | 23                    | 24                    | 25                    |
| 48                          | 4.36<br>18.294<br>68     | 4.00<br>18.085<br>68 | 3.69<br>18.925<br>70 | 3.43<br>18.713<br>70  | 3.20<br>18.500<br>70  | 3.00<br>18.287<br>70  | 2.92<br>19.110<br>72  | 2.67<br>18.894<br>72  | 2.52<br>18.677<br>72  | 2.40<br>19.489<br>74  | 2.28<br>19.270<br>74  | 2.18<br>20.073<br>76  | 2.08<br>18.829<br>74  | 2.00<br>19.628<br>76  | 1.92<br>20.422<br>78  |
| 54                          | 4.91<br>19.539<br>74     | 4.50<br>20.396<br>76 | 4.15<br>20.186<br>76 | 3.86<br>19.977<br>76  | 3.60<br>20.819<br>78  | 3.38<br>20.607<br>78  | 3.18<br>20.395<br>78  | 3.00<br>21.223<br>80  | 2.84<br>21.008<br>80  | 2.70<br>21.827<br>82  | 2.57<br>21.609<br>82  | 2.46<br>21.392<br>82  | 2.34<br>22.200<br>84  | 2.25<br>21.980<br>84  | 2.16<br>21.760<br>84  |
| 60                          | 5.45<br>21.843<br>82     | 5.00<br>21.637<br>82 | 4.61<br>22.496<br>84 | 4.29<br>22.287<br>84  | 4.00<br>22.079<br>84  | 3.75<br>22.923<br>86  | 3.53<br>22.712<br>86  | 3.33<br>22.501<br>86  | 3.16<br>23.332<br>88  | 3.00<br>23.119<br>88  | 2.86<br>23.492<br>90  | 2.73<br>23.726<br>90  | 2.61<br>23.510<br>90  | 2.50<br>24.323<br>92  | 2.40<br>24.104<br>92  |
| 70                          |                          | 5.83<br>25.834<br>96 | 5.39<br>25.628<br>96 | 5.00<br>25.422<br>96  | 4.67<br>26.279<br>98  | 4.37<br>26.071<br>98  | 4.12<br>25.863<br>98  | 3.89<br>26.708<br>100 | 3.68<br>26.498<br>100 | 3.50<br>26.287<br>100 | 3.33<br>27.121<br>102 | 3.18<br>26.910<br>102 | 3.04<br>26.695<br>102 | 2.92<br>27.522<br>104 | 2.80<br>27.306<br>104 |
| 72                          |                          | 6.00<br>26.244<br>98 | 5.54<br>26.038<br>98 | 5.14<br>25.834<br>98  | 4.80<br>26.694<br>100 | 4.50<br>26.487<br>100 | 4.24<br>27.337<br>102 | 4.00<br>27.128<br>102 | 3.79<br>27.918<br>102 | 3.60<br>27.758<br>104 | 3.43<br>27.547<br>104 | 3.27<br>27.334<br>104 | 3.13<br>28.164<br>106 | 3.00<br>27.951<br>106 | 2.88<br>27.736<br>106 |
| 80                          |                          |                      |                      | 5.71<br>28.545<br>108 | 5.33<br>29.413<br>110 | 5.00<br>29.206<br>110 | 4.70<br>29.000<br>110 | 4.44<br>29.855<br>112 | 4.21<br>29.647<br>112 | 4.00<br>31.330<br>118 | 3.81<br>30.283<br>114 | 3.64<br>30.073<br>114 | 3.48<br>30.910<br>116 | 3.33<br>30.699<br>118 | 3.20<br>30.486<br>116 |
| 84                          |                          |                      |                      | 6.00<br>30.439<br>114 | 5.60<br>30.234<br>114 | 5.25<br>31.098<br>116 | 4.94<br>30.891<br>116 | 4.66<br>30.685<br>116 | 4.41<br>31.539<br>118 | 4.20<br>31.330<br>118 | 4.00<br>31.122<br>118 | 3.82<br>31.965<br>120 | 3.65<br>31.755<br>120 | 3.50<br>31.544<br>120 | 3.36<br>32.380<br>122 |
| 96                          |                          |                      |                      |                       |                       | 6.00<br>34.633<br>130 | 5.64<br>34.429<br>130 | 5.33<br>35.295<br>132 | 5.05<br>35.088<br>132 | 4.80<br>34.882<br>132 | 4.57<br>35.738<br>134 | 4.36<br>35.531<br>134 | 4.17<br>35.322<br>134 | 4.00<br>36.170<br>136 | 3.84<br>35.960<br>136 |
| 112                         |                          |                      |                      |                       |                       |                       |                       |                       | 5.90<br>40.516<br>152 | 5.60<br>40.312<br>152 | 5.33<br>41.177<br>154 | 5.03<br>40.971<br>154 | 4.87<br>40.765<br>154 | 4.67<br>41.622<br>156 | 4.48<br>41.414<br>156 |

TO DETERMINE CHAIN LENGTH IN PITCHES  
(Approximately):

$$L = 2C + \left( \frac{N + n}{2} \right) + \text{Constant}$$

Legend:

L = Chain length in pitches  
C = Center distance in pitches  
N = Number of teeth, driven  
n = Number of teeth, driver

Constant:

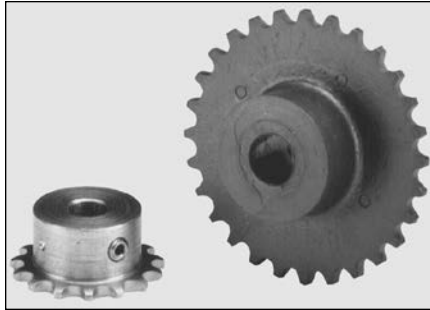
If ratio is  $\left\{ \begin{array}{l} \text{Up to 4:1} = 2 \\ \text{4 to 6:1} = 4 \\ \text{6 to 8:1} = 8 \end{array} \right.$

| No.<br>of<br>Pitches | Chain Pitch — Inches |      |      |      |      |      |       |       |       |       |       |       |
|----------------------|----------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                      | 1/4                  | 3/8  | 1/2  | 5/8  | 3/4  | 1    | 1-1/4 | 1-1/2 | 1-3/4 | 2     | 2-1/4 | 2-1/2 |
| 1                    | 0.02                 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.10  | 0.12  | 0.14  | 0.16  | 0.18  | 0.20  |
| 2                    | 0.04                 | 0.06 | 0.08 | 0.10 | 0.12 | 0.16 | 0.20  | 0.25  | 0.29  | 0.33  | 0.37  | 0.41  |
| 3                    | 0.06                 | 0.09 | 0.12 | 0.15 | 0.18 | 0.25 | 0.31  | 0.37  | 0.43  | 0.50  | 0.56  | 0.62  |
| 4                    | 0.08                 | 0.12 | 0.16 | 0.20 | 0.25 | 0.33 | 0.41  | 0.50  | 0.58  | 0.66  | 0.75  | 0.83  |
| 5                    | 0.10                 | 0.15 | 0.20 | 0.26 | 0.31 | 0.41 | 0.52  | 0.62  | 0.72  | 0.83  | 0.93  | 1.04  |
| 6                    | 0.12                 | 0.18 | 0.25 | 0.31 | 0.37 | 0.50 | 0.62  | 0.75  | 0.87  | 1.00  | 1.12  | 1.25  |
| 7                    | 0.14                 | 0.21 | 0.29 | 0.36 | 0.43 | 0.58 | 0.72  | 0.87  | 1.02  | 1.16  | 1.31  | 1.45  |
| 8                    | 0.16                 | 0.25 | 0.33 | 0.41 | 0.50 | 0.66 | 0.83  | 1.00  | 1.16  | 1.33  | 1.50  | 1.66  |
| 9                    | 0.18                 | 0.28 | 0.37 | 0.46 | 0.56 | 0.75 | 0.93  | 1.12  | 1.31  | 1.50  | 1.68  | 1.87  |
| 10                   | 0.20                 | 0.31 | 0.41 | 0.52 | 0.62 | 0.83 | 1.04  | 1.25  | 1.45  | 1.66  | 1.87  | 2.08  |
| 11                   | 0.22                 | 0.34 | 0.45 | 0.57 | 0.68 | 0.91 | 1.14  | 1.37  | 1.60  | 1.83  | 2.06  | 2.29  |
| 12                   | 0.25                 | 0.37 | 0.50 | 0.62 | 0.75 | 1.00 | 1.25  | 1.50  | 1.75  | 2.00  | 2.25  | 2.50  |
| 13                   | 0.27                 | 0.40 | 0.54 | 0.67 | 0.81 | 1.08 | 1.35  | 1.62  | 1.89  | 2.16  | 2.43  | 2.70  |
| 14                   | 0.29                 | 0.43 | 0.58 | 0.72 | 0.87 | 1.16 | 1.45  | 1.75  | 2.04  | 2.33  | 2.62  | 2.91  |
| 15                   | 0.31                 | 0.46 | 0.62 | 0.78 | 0.93 | 1.25 | 1.56  | 1.87  | 2.18  | 2.50  | 2.81  | 3.12  |
| 16                   | 0.33                 | 0.50 | 0.66 | 0.83 | 1.00 | 1.33 | 1.66  | 2.00  | 2.33  | 2.66  | 3.00  | 3.33  |
| 17                   | 0.35                 | 0.53 | 0.70 | 0.88 | 1.06 | 1.41 | 1.77  | 2.12  | 2.47  | 2.83  | 3.18  | 3.54  |
| 18                   | 0.37                 | 0.56 | 0.75 | 0.93 | 1.12 | 1.50 | 1.87  | 2.25  | 2.62  | 3.00  | 3.37  | 3.75  |
| 19                   | 0.39                 | 0.59 | 0.79 | 0.98 | 1.18 | 1.58 | 1.97  | 2.37  | 2.77  | 3.16  | 3.56  | 3.95  |
| 20                   | 0.41                 | 0.62 | 0.83 | 1.04 | 1.25 | 1.66 | 2.08  | 2.50  | 2.91  | 3.33  | 3.75  | 4.16  |
| 22                   | 0.45                 | 0.68 | 0.91 | 1.14 | 1.37 | 1.83 | 2.29  | 2.75  | 3.20  | 3.66  | 4.12  | 4.58  |
| 24                   | 0.50                 | 0.75 | 1.00 | 1.25 | 1.50 | 2.00 | 2.50  | 3.00  | 3.50  | 4.00  | 4.50  | 5.00  |
| 28                   | 0.58                 | 0.87 | 1.16 | 1.45 | 1.75 | 2.33 | 2.91  | 3.50  | 4.08  | 4.56  | 5.25  | 5.83  |
| 30                   | 0.62                 | 0.93 | 1.25 | 1.56 | 1.87 | 2.50 | 3.12  | 3.75  | 4.37  | 5.00  | 5.62  | 6.25  |
| 34                   | 0.70                 | 1.06 | 1.41 | 1.77 | 2.12 | 2.83 | 3.54  | 4.25  | 4.95  | 5.66  | 6.37  | 7.08  |
| 38                   | 0.79                 | 1.18 | 1.58 | 1.97 | 2.37 | 3.16 | 3.95  | 4.75  | 5.54  | 6.33  | 7.12  | 7.91  |
| 40                   | 0.83                 | 1.25 | 1.66 | 2.08 | 2.50 | 3.33 | 4.16  | 5.00  | 5.83  | 6.66  | 7.50  | 8.33  |
| 44                   | 0.91                 | 1.37 | 1.83 | 2.29 | 2.75 | 3.66 | 4.58  | 5.50  | 6.41  | 7.33  | 8.25  | 9.16  |
| 48                   | 1.00                 | 1.50 | 2.00 | 2.50 | 3.00 | 4.00 | 5.00  | 6.00  | 7.00  | 8.00  | 9.00  | 10.00 |
| 50                   | 1.04                 | 1.56 | 2.08 | 2.60 | 3.12 | 4.16 | 5.20  | 6.25  | 7.29  | 8.33  | 9.37  | 10.41 |
| 54                   | 1.12                 | 1.68 | 2.25 | 2.81 | 3.37 | 4.50 | 5.62  | 6.75  | 7.87  | 9.00  | 10.12 | 11.25 |
| 58                   | 1.20                 | 1.81 | 2.41 | 3.02 | 3.62 | 4.83 | 6.04  | 7.25  | 8.45  | 9.66  | 10.87 | 12.08 |
| 60                   | 1.25                 | 1.87 | 2.50 | 3.12 | 3.75 | 5.00 | 6.25  | 7.50  | 8.75  | 10.00 | 11.25 | 12.50 |
| 65                   | 1.35                 | 2.03 | 2.70 | 3.38 | 4.06 | 5.41 | 6.77  | 8.12  | 9.47  | 10.83 | 12.18 | 13.54 |
| 70                   | 1.45                 | 2.18 | 2.91 | 3.64 | 4.37 | 5.83 | 7.29  | 8.75  | 10.20 | 11.66 | 13.12 | 14.58 |
| 75                   | 1.56                 | 2.34 | 3.12 | 3.90 | 4.68 | 6.25 | 7.81  | 9.37  | 10.93 | 12.50 | 14.06 | 15.62 |
| 80                   | 1.66                 | 2.50 | 3.33 | 4.16 | 5.00 | 6.66 | 8.33  | 10.00 | 11.66 | 13.33 | 15.00 | 16.66 |
| 85                   | 1.77                 | 2.65 | 3.54 | 4.42 | 5.31 | 7.08 | 8.85  | 10.62 | 12.39 | 14.16 | 15.93 | 17.70 |
| 90                   | 1.87                 | 2.81 | 3.75 | 4.68 | 5.62 | 7.50 | 9.37  | 11.25 | 13.12 | 15.00 | 16.87 | 18.75 |
| 95                   | 1.97                 | 2.96 | 3.95 | 4.94 | 5.93 | 7.91 | 9.89  | 11.87 | 13.85 | 15.83 | 17.81 | 19.79 |
| 100                  | 2.08                 | 3.12 | 4.16 | 5.20 | 6.25 | 8.33 | 10.41 | 12.50 | 14.58 | 16.66 | 18.75 | 20.83 |

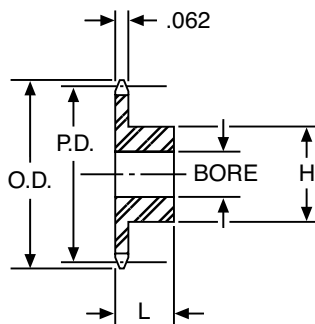
# Miniature Chain Sprockets

## Single Strand

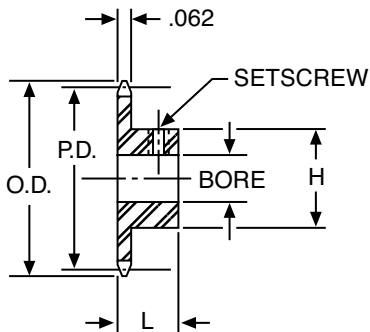
.1475 Pitch; Plastic and Stainless Steel



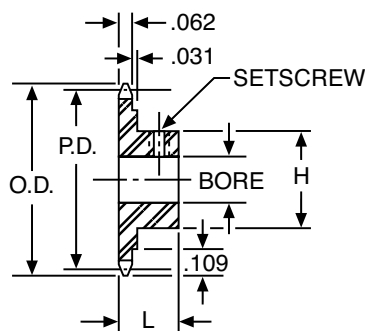
PLASTIC



STAINLESS STEEL  
7-28 TEETH



30-48 TEETH



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth                                              | Pitch<br>Dia. | Bore  | Hub<br>Dia. | O.D.    | Length<br>thru<br>Bore | Catalog<br>Number | Item<br>Code |
|-----------------------------------------------------------------|---------------|-------|-------------|---------|------------------------|-------------------|--------------|
| TYPE B SINGLE HUB PLASTIC (NYLATRON GS)                         |               |       |             |         |                        |                   |              |
| 7                                                               | .340          | .093  | 3/16        | .392    | 3/8                    | 15BP7             | 54144        |
| 8                                                               | .385          | .1250 | 7/32        | .437    |                        | 15BP8             | 54145        |
| 9                                                               | .431          |       | 1/4         | .483    |                        | 15BP9             | 54146        |
| 10                                                              | .477          |       |             | .529    |                        | 15BP10            | 54147        |
| 12                                                              | .570          |       |             | .622    |                        | 15BP12            | 54148        |
| 13                                                              | .616          | .1875 | 3/8         | .668    |                        | 15BP13            | 54149        |
| 14                                                              | .663          |       | 1/2         | .715    |                        | 15BP14            | 54150        |
| 15                                                              | .709          |       |             | .761    |                        | 15BP15            | 54151        |
| 16                                                              | .756          |       |             | .808    |                        | 15BP16            | 54152        |
| 17                                                              | .803          |       |             | .855    |                        | 15BP17            | 54153        |
| 18                                                              | .849          |       |             | .901    |                        | 15BP18            | 54154        |
| 19                                                              | .890          |       |             | .948    |                        | 15BP19            | 54155        |
| 20                                                              | .943          |       |             | .995    |                        | 15BP20            | 54156        |
| 21                                                              | .990          | .250  | 5/8         | 1.042   |                        | 15BP21            | 54157        |
| 22                                                              | 1.036         |       |             | 1.088   |                        | 15BP22            | 54158        |
| 23                                                              | 1.083         |       |             | 1.135   |                        | 15BP23            | 54159        |
| 24                                                              | 1.130         |       |             | 1.182   |                        | 15BP24            | 54160        |
| 25                                                              | 1.177         |       |             | 1.228   |                        | 15BP25            | 54161        |
| 26                                                              | 1.224         |       |             | 1.276   |                        | 15BP26            | 54162        |
| 27                                                              | 1.270         |       |             | 1.322   |                        | 15BP27            | 54163        |
| 28                                                              | 1.317         |       |             | 1.369   |                        | 15BP28            | 54164        |
| 29                                                              | 1.364         |       |             | 1.416   |                        | 15BP29            | 54165        |
| 30                                                              | 1.411         |       |             | 1.463   |                        | 15BP30            | 54166        |
| 31                                                              | 1.458         |       |             | 1.510   |                        | 15BP31            | 54167        |
| 32                                                              | 1.505         |       |             | 1.557   |                        | 15BP32            | 54168        |
| 33                                                              | 1.552         | 1.604 | 15BP33      | 54169   |                        |                   |              |
| 34                                                              | 1.598         | 1.650 | 15BP34      | 54170   |                        |                   |              |
| 35                                                              | 1.645         | 1.697 | 15BP35      | 54171   |                        |                   |              |
| 36                                                              | 1.692         | 1.744 | 15BP36      | 54172   |                        |                   |              |
| 38                                                              | 1.786         | 1.838 | 15BP38      | 54173   |                        |                   |              |
| 40                                                              | 1.880         | 1.922 | 15BP40      | 54174   |                        |                   |              |
| 42                                                              | 1.974         | 2.026 | 15BP42      | 54175   |                        |                   |              |
| 44                                                              | 2.068         | 2.120 | 15BP44      | 54176   |                        |                   |              |
| 52                                                              | 2.443         | 2.495 | 15BP52      | 54177   |                        |                   |              |
| TYPE B SINGLE HUB STAINLESS STEEL (TYPE 303 – CLEAR PASSIVATED) |               |       |             |         |                        |                   |              |
| 7                                                               | .340          | .0937 | 15/64*      | .392    | 11/32                  | 15BSS7            | 54178        |
| 8                                                               | .385          | .1250 | 9/32*       | .437    |                        | 15BSS8            | 54179        |
| 9                                                               | .431          |       | 21/64*      | .483    |                        | 15BSS9            | 54180        |
| 10                                                              | .477          |       | 3/8*        | .529    |                        | 15BSS10           | 54181        |
| 12                                                              | .570          |       | 25/64       | .622    |                        | 15BSS12           | 54182        |
| 15                                                              | .709          | .1875 | 17/32       | .761    |                        | 15BSS15           | 54183        |
| 16                                                              | .756          |       | 9/16        | .808    |                        | 15BSS16           | 54184        |
| 18                                                              | .849          |       | 21/32       | .901    |                        | 15BSS18           | 54185        |
| 20                                                              | .943          |       | .995        | 15BSS20 | 54186                  |                   |              |
| 24                                                              | 1.130         | .2500 | 3/4         | 1.182   | 15BSS24                | 54187             |              |
| 28                                                              | 1.317         |       |             | 1.369   | 15BSS28                | 54188             |              |
| 30                                                              | 1.411         |       |             | 1.463   | 15BSS30                | 54189             |              |
| 34                                                              | 1.598         |       |             | 1.650   | 15BSS34                | 54190             |              |
| 36                                                              | 1.692         |       |             | 1.744   | 15BSS36                | 54191             |              |
| 40                                                              | 1.880         |       |             | 1.932   | 15BSS40                | 54192             |              |
| 48                                                              | 2.255         |       |             | 2.307   | 15BSS48                | 54193             |              |

### STANDARD TOLERANCES\*

| DIMENSIONS |     | TOLERANCE      |
|------------|-----|----------------|
| Bore       | All | ±.001 to -.000 |

\*Stainless Steel Only.

# Roller Chain Sprockets

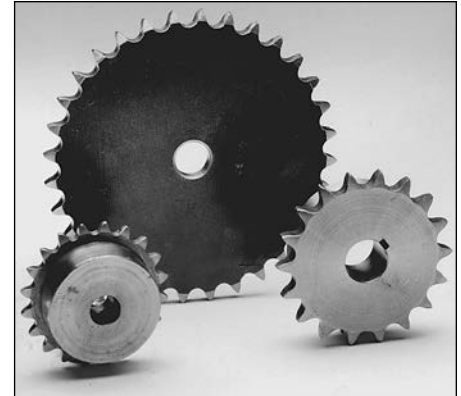
## Single Strand No. 25 1/4" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth               | Pitch Dia. | Bore | Catalog Number | Item Code |
|----------------------------|------------|------|----------------|-----------|
| <b>TYPE A NO HUB STEEL</b> |            |      |                |           |
| 32                         | 2.551      | 3/8  | 25A32          | 68195     |
| 36                         | 2.868      |      | 25A36          | 46224     |
| 40                         | 3.186      | 1/2  | 25A40          | 46225     |
| 45                         | 3.584      |      | 25A45          | 68198     |
| 48                         | 3.822      |      | 25A48          | 46226     |
| 54                         | 4.300      |      | 25A54          | 46227     |
| 60                         | 4.777      |      | 25A60          | 46228     |
| 72                         | 5.731      |      | 25A72          | 46229     |

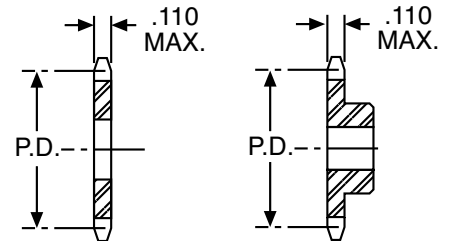
### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore | Hub<br>Dia. | Length<br>thru<br>Bore | With Setscrew*    |              | Without Setscrew  |              |
|-------------------------|---------------|------|-------------|------------------------|-------------------|--------------|-------------------|--------------|
|                         |               |      |             |                        | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |      |             |                        |                   |              |                   |              |
| 9                       | .731          | 1/4  | 29/64       | 1/2                    | 25B9 – 1/4        | 68466        | 25B9              | 68465        |
| 10                      | .809          | 1/4  | 17/32       | 1/2                    | 25B10 – 1/4       | 58230        | 25B10             | 15600        |
| 11                      | .887          | 1/4  | 9/16        | 1/2                    | 25B11 – 1/4       | 68468        | 25B11             | 68467        |
| 12                      | .966          | 1/4  | 11/16       | 1/2                    | 25B12 – 1/4       | 19200        | 25B12A            | 19199        |
|                         |               | 5/16 |             |                        | 25B12 – 5/16      | 58231        | 25B12             | 15602        |
|                         |               | 3/8  |             |                        | 25B12 – 3/8       | 58232        | —                 | —            |
| 13                      | 1.045         | 1/4  | 11/16       | 1/2                    | 25B13 – 1/4       | 19202        | 25B13A            | 19201        |
|                         |               | 5/16 |             |                        | 25B13 – 5/16      | 68470        | 25B13             | 15603        |
|                         |               | 3/8  |             |                        | 25B13 – 3/8       | 68471        | —                 | —            |
| 14                      | 1.123         | 1/4  | 3/4         | 1/2                    | 25B14 – 1/4       | 19204        | 25B14A            | 19203        |
|                         |               | 5/16 |             |                        | 25B14 – 5/16      | 68473        | 25B14             | 68472        |
|                         |               | 3/8  |             |                        | 25B14 – 3/8       | 68474        | —                 | —            |
| 15                      | 1.202         | 1/4  | 3/4         | 1/2                    | 25B15 – 1/4       | 19206        | 25B15A            | 19205        |
|                         |               | 5/16 |             |                        | 25B15 – 5/16      | 58233        | 25B15             | 15604        |
|                         |               | 3/8  |             |                        | 25B15 – 3/8       | 58234        | —                 | —            |
| 16                      | 1.281         | 1/4  | 13/16       | 1/2                    | 25B16 – 1/4       | 19208        | 25B16A            | 19207        |
|                         |               | 5/16 |             |                        | 25B16 – 5/16      | 58235        | 25B16             | 15606        |
|                         |               | 3/8  |             |                        | 25B16 – 3/8       | 58236        | —                 | —            |
| 17                      | 1.361         | 1/4  | 29/32       | 1/2                    | 25B17 – 1/4       | 19210        | 25B17A            | 19209        |
|                         |               | 5/16 |             |                        | 25B17 – 5/16      | 58237        | 25B17             | 15608        |
|                         |               | 3/8  |             |                        | 25B17 – 3/8       | 58238        | —                 | —            |
|                         |               | 1/2  |             |                        | 25B17 – 1/2       | 58239        | —                 | —            |
| 18                      | 1.440         | 1/4  | 1           | 1/2                    | 25B18 – 1/4       | 19212        | 25B18A            | 19211        |
|                         |               | 3/8  |             |                        | 25B18 – 3/8       | 58240        | 25B18             | 15610        |
|                         |               | 1/2  |             |                        | 25B18 – 1/2       | 58241        | —                 | —            |
| 19                      | 1.519         | 1/4  | 1-1/16      | 1/2                    | 25B19 – 1/4       | 19214        | 25B19A            | 19213        |
|                         |               | 3/8  |             |                        | 25B19 – 3/8       | 58242        | 25B19             | 15612        |
|                         |               | 1/2  |             |                        | 25B19 – 1/2       | 58243        | —                 | —            |
|                         |               | 5/8  |             |                        | 25B19 – 5/8       | 58244        | —                 | —            |
| 20                      | 1.598         | 1/4  | 1-5/32      | 5/8                    | 25B20 – 1/4       | 19216        | 25B20A            | 19215        |
|                         |               | 3/8  |             |                        | 25B20 – 3/8       | 58245        | 25B20             | 15614        |
|                         |               | 1/2  |             |                        | 25B20 – 1/2       | 58246        | —                 | —            |
|                         |               | 5/8  |             |                        | 25B20 – 5/8       | 58247        | —                 | —            |
| 21                      | 1.677         | 3/8  | 1-3/8       | 5/8                    | 25B21 – 3/8       | 45670        | 25B21             | 68187        |
|                         |               | 1/2  |             |                        | 25B21 – 1/2       | 45671        | —                 | —            |
|                         |               | 5/8  |             |                        | 25B21 – 5/8       | 45672        | —                 | —            |
| 22                      | 1.757         | 3/8  | 1-7/16      | 5/8                    | 25B22 – 3/8       | 45673        | 25B22             | 68188        |
|                         |               | 1/2  |             |                        | 25B22 – 1/2       | 45674        | —                 | —            |
|                         |               | 5/8  |             |                        | 25B22 – 5/8       | 45675        | —                 | —            |
| 23                      | 1.836         | 3/8  | 1-1/2       | 5/8                    | 25B23 – 3/8       | 45676        | 25B23             | 68189        |
|                         |               | 1/2  |             |                        | 25B23 – 1/2       | 45677        | —                 | —            |
|                         |               | 5/8  |             |                        | 25B23 – 5/8       | 45678        | —                 | —            |
| 24                      | 1.915         | 3/8  | 1-1/2       | 5/8                    | 25B24 – 3/8       | 45679        | 25B24             | 68190        |
|                         |               | 1/2  |             |                        | 25B24 – 1/2       | 45680        | —                 | —            |
|                         |               | 5/8  |             |                        | 25B24 – 5/8       | 45681        | —                 | —            |



TYPE A

TYPE B



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.234"**

### STANDARD TOLERANCES

| DIMENSION |      | TOLERANCE |              |
|-----------|------|-----------|--------------|
| Type A    | Bore | All       | +.002 - .001 |
| Type B    | Bore | All       | ±.001        |

### Reference Pages

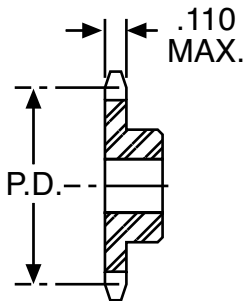
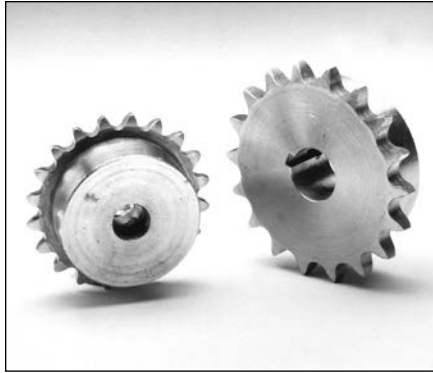
Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have 10-32 setscrews.

# Roller Chain Sprockets

## Single Strand

### No. 25 1/4" Pitch; Steel and Stainless Steel



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.234"**

#### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE |
|------------|-----|-----------|
| Bore       | All | ±.001     |

#### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*Sprockets 28 and 30 teeth have 10-32 set-screws. 32-72 teeth 1/4-20 setscrews.

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth                | Pitch<br>Dia. | Bore | Hub<br>Dia. | Length<br>thru<br>Bore | With Setscrew*    |              | Without Setscrew  |              |       |
|-----------------------------------|---------------|------|-------------|------------------------|-------------------|--------------|-------------------|--------------|-------|
|                                   |               |      |             |                        | Catalog<br>Number | Item<br>Code | Catalog<br>Number | Item<br>Code |       |
| TYPE B SINGLE HUB STEEL           |               |      |             |                        |                   |              |                   |              |       |
| 25                                | 1.995         | 3/8  | 1-1/2       | 5/8                    | 25B25 – 3/8       | 45682        | 25B25             | 68191        |       |
|                                   |               | 1/2  |             |                        | 25B25 – 1/2       | 45683        |                   |              |       |
|                                   |               | 5/8  |             |                        | 25B25 – 5/8       | 45684        |                   |              |       |
| 26                                | 2.074         | 3/8  | 1-1/2       | 5/8                    | 25B26 – 3/8       | 45685        | 25B26             | 68192        |       |
|                                   |               | 1/2  |             |                        | 25B26 – 1/2       | 45686        |                   |              |       |
|                                   |               | 5/8  |             |                        | 25B26 – 5/8       | 45687        |                   |              |       |
| 28                                | 2.233         | 3/8  | 1-1/2       | 5/8                    | 25B28 – 3/8       | 45692        | 25B28             | 68193        |       |
|                                   |               | 1/2  |             |                        | 25B28 – 1/2       | 45693        |                   |              |       |
|                                   |               | 5/8  |             |                        | 25B28 – 5/8       | 45694        |                   |              |       |
| 30                                | 2.392         | 3/8  | 1-9/32      | 1/2                    | 25B30 – 3/8       | 58248        | 25B30             | 15616        |       |
|                                   |               | 1/2  |             |                        | 25B30 – 1/2       | 58249        |                   |              |       |
|                                   |               | 5/8  |             |                        | 25B30 – 5/8       | 58250        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B30 – 3/4       | 58251        |                   |              |       |
| 32                                | 2.551         | 1/2  | 1-1/2       | 5/8                    | 25B32 – 1/2       | 67922        | 25B32             | 68204        |       |
|                                   |               | 5/8  |             |                        | 25B32 – 5/8       | 45695        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B32 – 3/4       | 45696        |                   |              |       |
| 36                                | 2.868         | 1/2  | 1-1/2       | 3/4                    | 25B36 – 1/2       | 58252        | 25B36             | 15618        |       |
|                                   |               | 5/8  |             |                        | 25B36 – 5/8       | 45709        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B36 – 3/4       | 45710        |                   |              |       |
| 40                                | 3.186         | 1/2  | 2           | 3/4                    | 25B40 – 1/2       | 58253        | 25B40             | 15620        |       |
|                                   |               | 5/8  |             |                        | 25B40 – 5/8       | 45723        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B40 – 3/4       | 45724        |                   |              |       |
|                                   |               | 1/2  |             |                        | 25B45 – 1/2       | 67925        | 25B45             | 68207        |       |
| 45                                | 3.584         | 5/8  | 2           | 3/4                    | 25B45 – 5/8       | 45725        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B45 – 3/4       | 45726        |                   |              |       |
|                                   |               | 1/2  |             |                        | 25B48 – 1/2       | 58254        | 25B48             | 15622        |       |
| 48                                | 3.822         | 5/8  | 2           | 3/4                    | 25B48 – 5/8       | 45727        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B48 – 3/4       | 45728        |                   |              |       |
|                                   |               | 1/2  |             |                        | 25B54 – 1/2       | 58255        | 25B54             | 15624        |       |
| 54                                | 4.300         | 5/8  | 2           | 3/4                    | 25B54 – 5/8       | 45729        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B54 – 3/4       | 45730        |                   |              |       |
|                                   |               | 1/2  |             |                        | 25B60 – 1/2       | 58256        | 25B60             | 15626        |       |
| 60                                | 4.777         | 5/8  | 2           | 3/4                    | 25B60 – 5/8       | 45731        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B60 – 3/4       | 45732        |                   |              |       |
|                                   |               | 1/2  |             |                        | 25B72 – 3/4       | 58257        | 25B72             | 15628        |       |
| 72                                | 5.731         | 5/8  | 2           | 3/4                    | 25B72 – 5/8       | 45739        |                   |              |       |
|                                   |               | 3/4  |             |                        | 25B72 – 3/4       | 45740        |                   |              |       |
|                                   |               |      |             |                        |                   |              |                   |              |       |
| TYPE B SINGLE HUB STAINLESS STEEL |               |      |             |                        |                   |              |                   |              |       |
| 9                                 | .731          | 1/4  | 7/16        | 1/2                    |                   |              | 25B9SS            | 69448        |       |
| 10                                | .809          | 1/4  | 1/2         |                        |                   |              | 25B10SS           | 69449        |       |
| 11                                | .887          | 1/4  | 9/16        |                        |                   |              | 25B11SS           | 69450        |       |
| 12                                | .966          | 1/4  | 5/8         |                        |                   |              | 25B12SS           | 69451        |       |
| 13                                | 1.045         | 1/4  | 23/32       |                        |                   |              | 25B13SS           | 69452        |       |
| 14                                | 1.123         | 1/4  | 13/16       |                        |                   |              | 25B14SS           | 69453        |       |
| 15                                | 1.202         | 1/4  | 57/64       |                        |                   |              | 25B15SS           | 69456        |       |
| 16                                | 1.281         | 1/4  | 31/32       |                        |                   |              | 25B16SS           | 69467        |       |
| 17                                | 1.361         | 1/4  | 1-1/32      |                        |                   |              | 25B17SS           | 69468        |       |
| 18                                | 1.440         | 1/4  | 1-1/8       |                        |                   |              | 25B18SS           | 69469        |       |
| 19                                | 1.519         | 1/4  | 1-7/32      | 5/8                    |                   |              | 25B19SS           | 69470        |       |
| 20                                | 1.598         | 1/4  | 1-9/32      |                        |                   |              | 25B20SS           | 69471        |       |
| 25                                | 1.995         | 3/8  | 1-1/2       |                        |                   |              | 25B25SS           | 69472        |       |
| 30                                | 2.392         | 3/8  | 1-1/2       |                        |                   |              | 25B30SS           | 69473        |       |
| 36                                | 2.868         | 3/8  | 1-1/2       |                        | 3/4               |              |                   | 25B36SS      | 69474 |
| 40                                | 3.186         | 1/2  | 2           |                        |                   |              |                   | 25B40SS      | 69475 |
| 45                                | 3.584         | 1/2  | 2           |                        |                   |              | 25B45SS           | 69476        |       |
| 60                                | 4.777         | 1/2  | 2           |                        |                   |              | 25B60SS           | 69477        |       |

# Roller Chain Sprockets

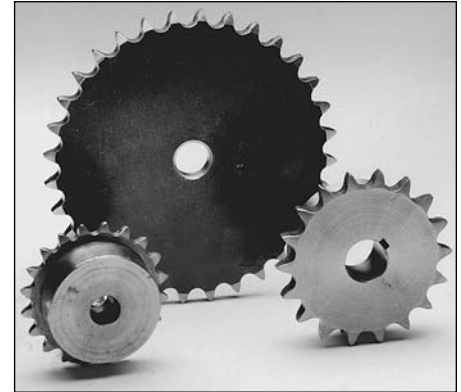
## Single Strand No. 35 3/8" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth               | Pitch Dia. | Bore  | Catalog Number | Item Code |
|----------------------------|------------|-------|----------------|-----------|
| <b>TYPE A NO HUB STEEL</b> |            |       |                |           |
| 26                         | 3.111      | 1/2   | 35A26          | 67761     |
| 28                         | 3.349      |       | 35A28          | 67763     |
| 30                         | 3.588      |       | 35A30          | 67764     |
| 32                         | 3.826      | 5/8   | 35A32          | 46230     |
| 36                         | 4.303      |       | 35A36          | 46232     |
| 40                         | 4.780      | 19/32 | 35A40          | 46233     |
| 45                         | 5.376      |       | 35A45          | 46235     |
| 48                         | 5.734      |       | 35A48          | 46236     |
| 72                         | 8.597      | 23/32 | 35A72          | 67775     |

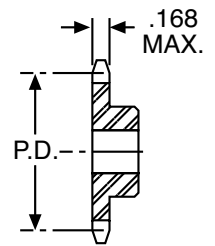
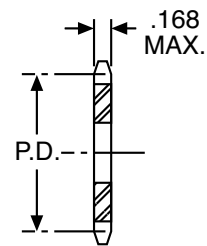
### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth            | Pitch Dia. | Bore | Hub Dia. | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |
|-------------------------|------------|------|----------|------------------|---------------------------|-----------|-----------------------------|-----------|
|                         |            |      |          |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |
| TYPE B SINGLE HUB STEEL |            |      |          |                  |                           |           |                             |           |
| 8                       | .980       | 3/8  | 3/4†     | 3/4              | 35B8 – 3/8*               | 49474     | 35B8                        | 15630†    |
| 9                       | 1.096      | 3/8  | 27/32†   | 3/4              | 35B9 – 3/8                | 45750     | 35B9                        | 14882     |
| 10                      | 1.214      | 3/8  | 31/32†   | 3/4              | 35B10 – 3/8               | 45751     | 35B10                       | 14884     |
|                         |            | 1/2  |          |                  | 35B10 – 1/2*              | 14886     |                             |           |
|                         |            | 5/8  |          |                  | 35B10 – 5/8*              | 45752     |                             |           |
| 11                      | 1.331      | 3/8  | 1-1/6†   | 3/4              | 35B11 – 3/8               | 45753     | 35B11                       | 14888     |
|                         |            | 1/2  |          |                  | 35B11 – 1/2               | 14890     |                             |           |
|                         |            | 5/8  |          |                  | 35B11 – 5/8*              | 45754     |                             |           |
|                         |            | 3/4  |          |                  | 35B11 – 3/4*              | 45755     |                             |           |
| 12                      | 1.449      | 1/2  | 1-7/32†  | 3/4              | 35B12 – 1/2               | 14892     | 35B12                       | 15632     |
|                         |            | 5/8  |          |                  | 35B12 – 5/8*              | 14894     |                             |           |
|                         |            | 3/4  |          |                  | 35B12 – 3/4*              | 14896     |                             |           |
| 13                      | 1.567      | 1/2  | 1-1/4†   | 3/4              | 35B13 – 1/2               | 14898     | 35B13                       | 15634     |
|                         |            | 5/8  |          |                  | 35B13 – 5/8*              | 14900     |                             |           |
|                         |            | 3/4  |          |                  | 35B13 – 3/4*              | 14902     |                             |           |
| 14                      | 1.685      | 1/2  | 1-1/4    | 3/4              | 35B14 – 1/2               | 14904     | 35B14                       | 15636     |
|                         |            | 5/8  |          |                  | 35B14 – 5/8*              | 14906     |                             |           |
|                         |            | 3/4  |          |                  | 35B14 – 3/4*              | 14908     |                             |           |
| 15                      | 1.804      | 1/2  | 1-11/32  | 3/4              | 35B15 – 1/2               | 14910     | 35B15                       | 15638     |
|                         |            | 5/8  |          |                  | 35B15 – 5/8               | 14912     |                             |           |
|                         |            | 3/4  |          |                  | 35B15 – 3/4*              | 14914     |                             |           |
| 16                      | 1.922      | 1/2  | 1-15/32  | 3/4              | 35B16 – 1/2               | 14916     | 35B16                       | 15640     |
|                         |            | 5/8  |          |                  | 35B16 – 5/8               | 14918     |                             |           |
|                         |            | 3/4  |          |                  | 35B16 – 3/4               | 14920     |                             |           |
| 17                      | 2.041      | 1/2  | 1-19/32  | 3/4              | 35B17 – 1/2               | 14922     | 35B17                       | 15642     |
|                         |            | 5/8  |          |                  | 35B17 – 5/8               | 14924     |                             |           |
|                         |            | 3/4  |          |                  | 35B17 – 3/4               | 14926     |                             |           |
|                         |            | 7/8  |          |                  | 35B17 – 7/8               | 45756     |                             |           |
|                         |            | 1    |          |                  | 35B17 – 1*                | 14928     |                             |           |
| 18                      | 2.160      | 1/2  | 1-23/32  | 3/4              | 35B18 – 1/2               | 14930     | 35B18                       | 15644     |
|                         |            | 5/8  |          |                  | 35B18 – 5/8               | 14932     |                             |           |
|                         |            | 3/4  |          |                  | 35B18 – 3/4               | 14934     |                             |           |
|                         |            | 7/8  |          |                  | 35B18 – 7/8               | 46674     |                             |           |
|                         |            | 1    |          |                  | 35B18 – 1                 | 14936     |                             |           |
| 19                      | 2.278      | 1/2  | 1-27/32  | 3/4              | 35B19 – 1/2               | 45757     | 35B19                       | 15646     |
|                         |            | 5/8  |          |                  | 35B19 – 5/8               | 14938     |                             |           |
|                         |            | 3/4  |          |                  | 35B19 – 3/4               | 14940     |                             |           |
|                         |            | 1    |          |                  | 35B19 – 1                 | 14942     |                             |           |
| 20                      | 2.397      | 1/2  | 1-15/16  | 3/4              | 35B20 – 1/2               | 45758     | 35B20                       | 15648     |
|                         |            | 5/8  |          |                  | 35B20 – 5/8               | 14944     |                             |           |
|                         |            | 3/4  |          |                  | 35B20 – 3/4               | 14946     |                             |           |
|                         |            | 1    |          |                  | 35B20 – 1                 | 14948     |                             |           |
| 21                      | 2.516      | 1/2  | 2        | 7/8              | 35B21 – 1/2               | 45759     | 35B21                       | 15650     |
|                         |            | 5/8  |          |                  | 35B21 – 5/8               | 14950     |                             |           |
|                         |            | 3/4  |          |                  | 35B21 – 3/4               | 14952     |                             |           |
|                         |            | 1    |          |                  | 35B21 – 1                 | 14954     |                             |           |



TYPE A

TYPE B



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.359"**

### STANDARD TOLERANCES

| DIMENSION |      | TOLERANCE |              |
|-----------|------|-----------|--------------|
| Type A    | Bore | All       | +.002 - .001 |
| Type B    | Bore | All       | ±.001        |

### Reference Pages

Alterations - 324  
Horsepower Ratings - 268-270  
Lubrication - 267  
Materials - 324  
Selection Procedure - 266  
ANSI Diameters - 325

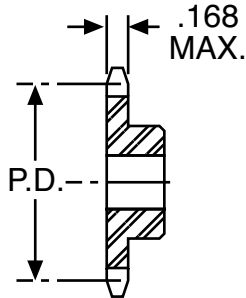
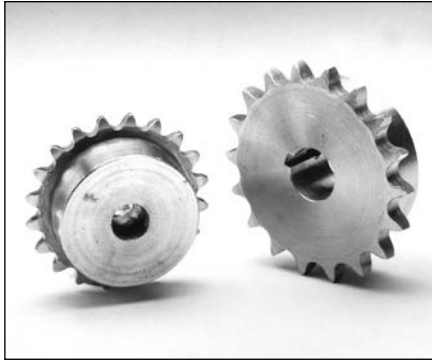
\*All sprockets have standard keyway. All sprockets have 1/4-20 setscrews located over keyway, except at 90° where marked.

†Has recessed groove in hub for chain clearance.

# Roller Chain Sprockets

## Single Strand

No. 35 3/8" Pitch; Steel



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .359"**

### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE |
|------------|-----|-----------|
| Bore       | All | ±.001     |

### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway. All sprockets have 1/4-20 setscrew located over keyway, except at 90° where marked.

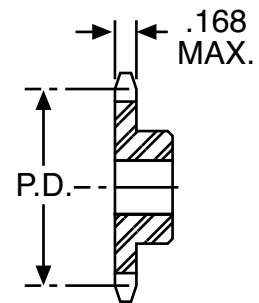
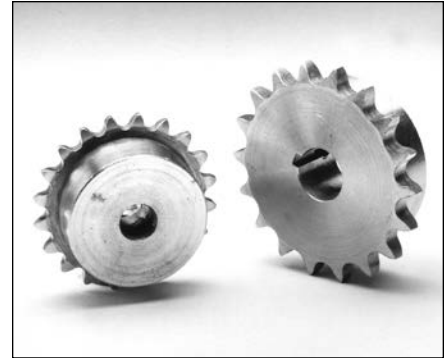
### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth            | Pitch Dia. | Bore | Hub Dia. | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |
|-------------------------|------------|------|----------|------------------|---------------------------|-----------|-----------------------------|-----------|
|                         |            |      |          |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |
| TYPE B SINGLE HUB STEEL |            |      |          |                  |                           |           |                             |           |
| 22                      | 2.635      | 1/2  | 2        | 7/8              | 35B22 – 1/2               | 45760     | 35B22                       | 15652     |
|                         |            | 5/8  |          |                  | 35B22 – 5/8               | 14956     |                             |           |
|                         |            | 3/4  |          |                  | 35B22 – 3/4               | 14958     |                             |           |
|                         |            | 1    |          |                  | 35B22 – 1                 | 14960     |                             |           |
| 23                      | 2.754      | 1/2  | 2        | 7/8              | 35B23 – 1/2               | 45761     | 35B23                       | 15654     |
|                         |            | 5/8  |          |                  | 35B23 – 5/8               | 14962     |                             |           |
|                         |            | 3/4  |          |                  | 35B23 – 3/4               | 14964     |                             |           |
|                         |            | 1    |          |                  | 35B23 – 1                 | 14966     |                             |           |
| 24                      | 2.873      | 1/2  | 2        | 7/8              | 35B24 – 1/2               | 45762     | 35B24                       | 15656     |
|                         |            | 5/8  |          |                  | 35B24 – 5/8               | 14968     |                             |           |
|                         |            | 3/4  |          |                  | 35B24 – 3/4               | 14970     |                             |           |
|                         |            | 1    |          |                  | 35B24 – 1                 | 14972     |                             |           |
| 25                      | 2.992      | 1/2  | 2        | 7/8              | 35B25 – 1/2               | 45763     | 35B25                       | 15658     |
|                         |            | 5/8  |          |                  | 35B25 – 5/8               | 14974     |                             |           |
|                         |            | 3/4  |          |                  | 35B25 – 3/4               | 14976     |                             |           |
|                         |            | 1    |          |                  | 35B25 – 1                 | 14978     |                             |           |
| 26                      | 3.111      | 1/2  | 2        | 7/8              | 35B26 – 1/2               | 45764     | 35B26                       | 67808     |
|                         |            | 5/8  |          |                  | 35B26 – 5/8               | 68257     |                             |           |
|                         |            | 3/4  |          |                  | 35B26 – 3/4               | 68258     |                             |           |
|                         |            | 1    |          |                  | 35B26 – 1                 | 68259     |                             |           |
| 28                      | 3.349      | 1/2  | 2        | 7/8              | 35B28 – 1/2               | 45766     | 35B28                       | 67810     |
|                         |            | 5/8  |          |                  | 35B28 – 5/8               | 68263     |                             |           |
|                         |            | 3/4  |          |                  | 35B28 – 3/4               | 68264     |                             |           |
|                         |            | 1    |          |                  | 35B28 – 1*                | 68265     |                             |           |
| 30                      | 3.588      | 1/2  | 2        | 7/8              | 35B30 – 1/2               | 45767     | 35B30                       | 15660     |
|                         |            | 5/8  |          |                  | 35B30 – 5/8               | 68266     |                             |           |
|                         |            | 3/4  |          |                  | 35B30 – 3/4               | 68267     |                             |           |
|                         |            | 1    |          |                  | 35B30 – 1*                | 68268     |                             |           |
| 32                      | 3.826      | 1/2  | 2        | 7/8              | 35B32 – 1/2               | 45768     | 35B32                       | 15662     |
|                         |            | 5/8  |          |                  | 35B32 – 5/8               | 68269     |                             |           |
|                         |            | 3/4  |          |                  | 35B32 – 3/4               | 68270     |                             |           |
|                         |            | 1    |          |                  | 35B32 – 1*                | 68271     |                             |           |
| 36                      | 4.303      | 5/8  | 2-1/4    | 7/8              | 35B36 – 5/8               | 68275     | 35B36                       | 15664     |
|                         |            | 3/4  |          |                  | 35B36 – 3/4               | 68276     |                             |           |
|                         |            | 1    |          |                  | 35B36 – 1*                | 68277     |                             |           |
| 40                      | 4.780      | 5/8  | 2-1/4    | 1                | 35B40 – 5/8               | 68278     | 35B40                       | 15666     |
|                         |            | 3/4  |          |                  | 35B40 – 3/4               | 68279     |                             |           |
|                         |            | 1    |          |                  | 35B40 – 1                 | 68280     |                             |           |
| 45                      | 5.376      | 5/8  | 2-1/4    | 1                | 35B45 – 5/8               | 45772     | 35B45A                      | 46241     |
|                         |            | 3/4  |          |                  | 35B45 – 3/4               | 45773     |                             |           |
|                         |            | 1    |          |                  | 35B45 – 1                 | 45774     |                             |           |
| 48                      | 5.734      | 5/8  | 2-1/4    | 1                | –                         | –         | 35B48                       | 15668     |
| 54                      | 6.449      | 5/8  | 2-1/4    | 1                | –                         | –         | 35B54                       | 15670     |
| 60                      | 7.165      | 3/4  | 2-1/4    | 1                | 35B60 – 3/4               | 45782     | 35B60                       | 15672     |
|                         |            | 1    |          |                  | 35B60 – 1                 | 45783     |                             |           |
| 72                      | 8.597      | 3/4  | 2-1/4    | 1                | –                         | –         | 35B72                       | 15674     |
| 84                      | 10.029     | 3/4  | 2-1/4    | 1                | –                         | –         | 35B84                       | 15676     |
| 96                      | 11.461     | 3/4  | 2-1/4    | 1                | –                         | –         | 35B96                       | 15678     |
| 112                     | 13.371     | 3/4  | 2-1/4    | 1                | –                         | –         | 35B112                      | 15680     |

# Roller Chain Sprockets

## Single Strand

### No. 35 3/8" Pitch; Stainless Steel



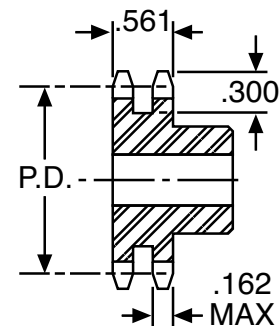
#### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth  | Pitch<br>Dia. | Bore | Hub<br>Dia. | Length<br>thru<br>Bore | Without Keyway<br>or Setscrew |              |
|---------------------|---------------|------|-------------|------------------------|-------------------------------|--------------|
|                     |               |      |             |                        | Catalog<br>Number             | Item<br>Code |
| TYPE A NO HUB STEEL |               |      |             |                        |                               |              |
| 9                   | 1.096         | 3/8  | 27/32†      | 3/4                    | 35B9SS                        | 69478        |
| 10                  | 1.214         |      | 31/32†      |                        | 35B10SS                       | 69479        |
| 11                  | 1.331         |      | 1-1/16†     |                        | 35B11SS                       | 69480        |
| 12                  | 1.449         | 1/2  | 1-7/32†     | 3/4                    | 35B12SS                       | 69481        |
| 13                  | 1.567         |      | 1-1/4†      |                        | 35B13SS                       | 69482        |
| 14                  | 1.685         |      | 1-1/4       |                        | 35B14SS                       | 69483        |
| 15                  | 1.804         |      | 1-11/32     |                        | 35B15SS                       | 69484        |
| 16                  | 1.922         |      | 1-15//32    |                        | 35B16SS                       | 69485        |
| 17                  | 2.041         |      | 1-19/32     |                        | 35B17SS                       | 69486        |
| 18                  | 2.160         |      | 1-23/32     |                        | 35B18SS                       | 69487        |
| 19                  | 2.278         |      | 1-27/32     |                        | 35B19SS                       | 69488        |
| 20                  | 2.397         |      | 1-15/16     |                        | 35B20SS                       | 69489        |
| 25                  | 2.992         | 1/2  | 2           | 7/8                    | 35B25SS                       | 69490        |
| 30                  | 3.588         |      |             |                        | 35B30SS                       | 69511        |
| 35                  | 4.183         | 5/8  | 2-1/4       | 1                      | 35B35SS                       | 69512        |
| 40                  | 4.780         |      |             |                        | 35B40SS                       | 69513        |
| 45                  | 5.376         |      |             |                        | 35B45SS                       | 69624        |
| 60                  | 7.165         | 3/4  | 2-1/4       | 1                      | 35B60SS                       | 69682        |

†Has recessed groove in hub for chain reference.

## Double Strand

### No. 35 3/8" Pitch; Stainless Steel



#### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of<br>Teeth         | Pitch<br>Dia. | Bore | Hub<br>Dia. | Length<br>thru<br>Bore | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|------|-------------|------------------------|-------------------------------|--------------|
|                         |               |      |             |                        | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |      |             |                        |                               |              |
| 16                      | 1.922         | 1/2  | 1-15/32     | 1-1/4                  | D35B16                        | 15930        |
| 17                      | 2.041         |      | 1-19/32     |                        | D35B17                        | 15932        |
| 18                      | 2.160         |      | 1-23/32     |                        | D35B18                        | 15934        |
| 19                      | 2.278         |      | 1-7/8       |                        | D35B19                        | 15936        |
| 20                      | 2.397         | 3/4  | 1-15/16     | 1-3/8                  | D35B20                        | 15938        |
| 21                      | 2.516         |      | 2-1/16      |                        | D35B21                        | 15940        |
| 22                      | 2.635         |      | 2-3/16      |                        | D35B22                        | 15942        |
| 23                      | 2.754         |      | 2-1/4       |                        | D35B23                        | 15944        |
| 24                      | 2.873         |      | 2-1/4       |                        | D35B24                        | 15946        |
| 25                      | 2.992         |      | 2-1/4       |                        | D35B25                        | 15948        |
| 30                      | 3.588         | 3/4  | 2-1/2       | 1-3/8                  | D35B30                        | 69995        |

**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.359"**

#### STANDARD TOLERANCES

| Stainless Steel |     |              |
|-----------------|-----|--------------|
| Bore            | All | +.002 — .000 |
| Double Strand   |     |              |
| Bore            | All | ±.001        |

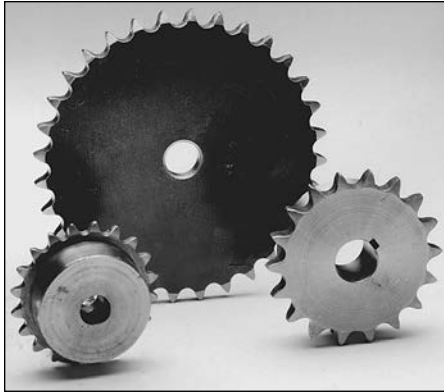
#### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

# Roller Chain Sprockets

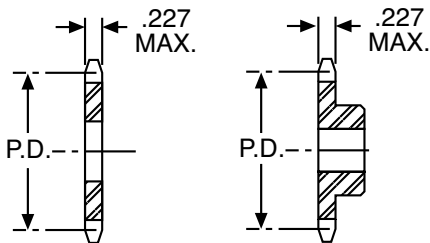
## Single Strand

### No. 41 1/2" Pitch; Steel



TYPE A

TYPE B



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.391"**

#### STANDARD TOLERANCES

| DIMENSIONS |      | TOLERANCE |               |
|------------|------|-----------|---------------|
| Type A     | Bore | All       | + .002 - .001 |
| Type B     | Bore | All       | ±.001         |

#### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway. All sprockets have 1/4-20 setscrews located over keyway except at 90° where marked.

†Has recessed groove in hub for chain clearance.

#### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth                 | Pitch Dia. | Bore  | Catalog Number | Item Code |
|------------------------------|------------|-------|----------------|-----------|
| <b>TYPE A – NO HUB STEEL</b> |            |       |                |           |
| 21                           | 3.355      | 5/8   | 41A21          | 56742     |
| 22                           | 3.513      |       | 41A22          | 56743     |
| 23                           | 3.672      |       | 41A23          | 56744     |
| 24                           | 3.831      |       | 41A24          | 56745     |
| 25                           | 3.989      |       | 41A25          | 56746     |
| 26                           | 4.148      |       | 41A26          | 67876     |
| 27                           | 4.307      |       | 41A27          | 67877     |
| 28                           | 4.466      |       | 41A28          | 67878     |
| 30                           | 4.783      |       | 41A30          | 16094     |
| 32                           | 5.101      | 19/32 | 41A32          | 16096     |
| 36                           | 5.737      |       | 41A36          | 16098     |
| 40                           | 6.373      | 23/32 | 41A40          | 16100     |
| 45                           | 7.168      |       | 41A45          | 16102     |
| 48                           | 7.645      |       | 41A48          | 16104     |
| 54                           | 8.599      |       | 41A54          | 16106     |
| 60                           | 9.554      |       | 41A60          | 16108     |
| 72                           | 11.463     |       | 41A72          | 16112     |
| 96                           | 15.282     | 15/16 | 41A96          | 16116     |

#### ORDER BY CATALOG NUMBER OR ITEM CODE

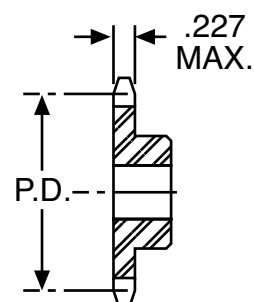
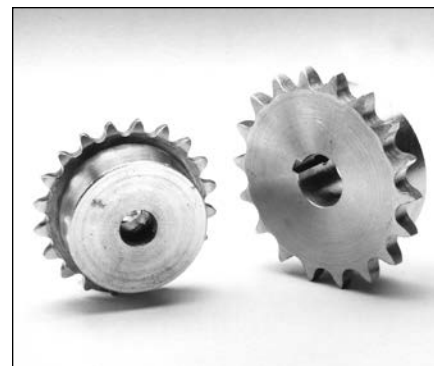
| No. of Teeth            | Pitch Dia. | Bore | Hub Dia. | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |
|-------------------------|------------|------|----------|------------------|---------------------------|-----------|-----------------------------|-----------|
|                         |            |      |          |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |
| TYPE B SINGLE HUB STEEL |            |      |          |                  |                           |           |                             |           |
| 6                       | 1.000      | 3/8  | 21/32†   | 7/8              | —                         | —         | 41B6                        | 15758     |
| 7                       | 1.15       | 3/8  | 3/4†     | 7/8              | —                         | —         | 41B7                        | 15760     |
| 8                       | 1.307      | 1/2  | 63/64†   | 7/8              | —                         | —         | 41B8                        | 15762     |
| 9                       | 1.462      | 1/2  | 1-1/8†   | 7/8              | 41B9-1/2                  | 15506     | 41B9                        | 15764     |
|                         |            | 5/8  |          |                  | 41B9-5/8*                 | 15508     |                             |           |
| 10                      | 1.618      | 1/2  | 1-1/4†   | 7/8              | 41B10-1/2                 | 15510     | 41B10                       | 15766     |
|                         |            | 5/8  |          |                  | 41B10-5/8*                | 15512     |                             |           |
|                         |            | 3/4  |          |                  | 41B10-3/4*                | 15514     |                             |           |
|                         |            | 1/2  |          |                  | 41B11-1/2                 | 15516     | 41B11                       | 15768     |
| 11                      | 1.775      | 5/8  | 1-7/16†  | 7/8              | 41B11-5/8                 | 15518     |                             |           |
|                         |            | 3/4  |          |                  | 41B11-3/4*                | 15520     |                             |           |
|                         |            | 1/2  |          |                  | 41B12-1/2                 | 15522     | 41B12                       | 15770     |
| 12                      | 1.932      | 5/8  | 1-9/16†  | 7/8              | 41B12-5/8                 | 15524     |                             |           |
|                         |            | 3/4  |          |                  | 41B12-3/4                 | 15526     |                             |           |
|                         |            | 7/8  |          |                  | 41B12-7/8                 | 35950     |                             |           |
|                         |            | 1/2  |          |                  | 41B13-1/2                 | 15528     | 41B13                       | 15772     |
| 13                      | 2.089      | 5/8  | 1-9/16†  | 7/8              | 41B13-5/8                 | 15530     |                             |           |
|                         |            | 3/4  |          |                  | 41B13-3/4                 | 15532     |                             |           |
|                         |            | 7/8  |          |                  | 41B13-7/8                 | 35952     |                             |           |
|                         |            | 1    |          |                  | 41B13-1*                  | 15534     |                             |           |
|                         |            | 1/2  |          |                  | 41B14-1/2                 | 15536     | 41B14                       | 15774     |
| 14                      | 2.247      | 5/8  | 1-3/4    | 7/8              | 41B14-5/8                 | 15538     |                             |           |
|                         |            | 3/4  |          |                  | 41B14-3/4                 | 15540     |                             |           |
|                         |            | 7/8  |          |                  | 41B14-7/8                 | 35954     |                             |           |
|                         |            | 1    |          |                  | 41B14-1*                  | 15542     |                             |           |
|                         |            | 1/2  |          |                  | 41B15-1/2                 | 15544     | 41B15                       | 15776     |
| 15                      | 2.405      | 5/8  | 1-29/32  | 7/8              | 41B15-5/8                 | 15546     |                             |           |
|                         |            | 3/4  |          |                  | 41B15-3/4                 | 15548     |                             |           |
|                         |            | 1    |          |                  | 41B15-1                   | 15550     |                             |           |
|                         |            |      |          |                  |                           |           |                             |           |

# Roller Chain Sprockets

## Single Strand No. 41 1/2" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth            | Pitch Dia. | Bore | Hub Dia. | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |
|-------------------------|------------|------|----------|------------------|---------------------------|-----------|-----------------------------|-----------|
|                         |            |      |          |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |
| TYPE B SINGLE HUB STEEL |            |      |          |                  |                           |           |                             |           |
| 16                      | 2.563      | 5/8  | 2-1/16   | 7/8              | 41B16-5/8                 | 15552     | 41B16                       | 15778     |
|                         |            | 3/4  |          |                  | 41B16-3/4                 | 15554     |                             |           |
|                         |            | 1    |          |                  | 41B16-1                   | 15556     |                             |           |
| 17                      | 2.721      | 5/8  | 2-15/64  | 1                | 41B17-5/8                 | 15558     | 41B17                       | 15780     |
|                         |            | 3/4  |          |                  | 41B17-3/4                 | 15560     |                             |           |
|                         |            | 1    |          |                  | 41B17-1                   | 15562     |                             |           |
| 18                      | 2.879      | 5/8  | 2-3/8    | 1                | 41B18-5/8                 | 15564     | 41B18                       | 15782     |
|                         |            | 3/4  |          |                  | 41B18-3/4                 | 15566     |                             |           |
|                         |            | 1    |          |                  | 41B18-1                   | 15568     |                             |           |
| 19                      | 3.038      | 5/8  | 2-15/32  | 1                | 41B19-5/8                 | 35956     | 41B19                       | 15784     |
|                         |            | 3/4  |          |                  | 41B19-3/4                 | 15570     |                             |           |
|                         |            | 1    |          |                  | 41B19-1                   | 15572     |                             |           |
| 20                      | 3.196      | 5/8  | 2-3/4    | 1                | 41B20-5/8                 | 35958     | 41B20                       | 15786     |
|                         |            | 3/4  |          |                  | 41B20-3/4                 | 15574     |                             |           |
|                         |            | 1    |          |                  | 41B20-1                   | 15576     |                             |           |
| 21                      | 3.355      | 5/8  | 2-7/8    | 1                | 41B21-5/8                 | 35960     | 41B21                       | 15788     |
|                         |            | 3/4  |          |                  | 41B21-3/4                 | 15578     |                             |           |
|                         |            | 1    |          |                  | 41B21-1                   | 15580     |                             |           |
| 22                      | 3.513      | 5/8  | 3        | 1                | 41B22-5/8                 | 35962     | 41B22                       | 15790     |
|                         |            | 3/4  |          |                  | 41B22-3/4                 | 15582     |                             |           |
|                         |            | 1    |          |                  | 41B22-1                   | 15584     |                             |           |
| 23                      | 3.672      | 5/8  | 3-3/16   | 1                | 41B23-5/8                 | 35964     | 41B23                       | 15792     |
|                         |            | 3/4  |          |                  | 41B23-3/4                 | 15586     |                             |           |
|                         |            | 1    |          |                  | 41B23-1                   | 15588     |                             |           |
| 24                      | 3.831      | 5/8  | 3-1/4    | 1                | 41B24-5/8                 | 35966     | 41B24                       | 15794     |
|                         |            | 3/4  |          |                  | 41B24-3/4                 | 15590     |                             |           |
|                         |            | 1    |          |                  | 41B24-1                   | 15592     |                             |           |
| 25                      | 3.989      | 5/8  | 3-1/4    | 1                | 41B25-5/8                 | 35968     | 41B25                       | 15796     |
|                         |            | 3/4  |          |                  | 41B25-3/4                 | 15594     |                             |           |
|                         |            | 1    |          |                  | 41B25-1                   | 15596     |                             |           |
| 26                      | 4.148      | 5/8  | 3-1/4    | 1                | 41B26-5/8                 | 68281     | 41B26                       | 67920     |
|                         |            | 3/4  |          |                  | 41B26-3/4                 | 68282     |                             |           |
|                         |            | 1    |          |                  | 41B26-1                   | 68283     |                             |           |
| 27                      | 4.307      | 5/8  | 3-1/4    | 1                | 41B27-5/8                 | 68284     | 41B27                       | 67930     |
|                         |            | 3/4  |          |                  | 41B27-3/4                 | 68285     |                             |           |
|                         |            | 1    |          |                  | 41B27-1                   | 68286     |                             |           |
| 28                      | 4.466      | 5/8  | 3-1/4    | 1                | 41B28-5/8                 | 68287     | 41B28                       | 67931     |
|                         |            | 3/4  |          |                  | 41B28-3/4                 | 68288     |                             |           |
|                         |            | 1    |          |                  | 41B28-1                   | 68289     |                             |           |
| 30                      | 4.783      | 5/8  | 3-1/4    | 1                | 41B30-5/8                 | 68290     | 41B30                       | 16464     |
|                         |            | 3/4  |          |                  | 41B30-3/4                 | 68291     |                             |           |
|                         |            | 1    |          |                  | 41B30-1                   | 68292     |                             |           |
| 32                      | 5.101      | 5/8  | 3-1/4    | 1                | —                         | —         | 41B32                       | 16466     |
| 36                      | 5.737      | 5/8  | 3-1/4    | 1                | —                         | —         | 41B36                       | 16468     |
| 40                      | 6.373      | 3/4  | 3-1/4    | 1-1/16           | —                         | —         | 41B40                       | 16470     |
| 45                      | 7.168      | 3/4  | 3-1/2    | 1-1/16           | —                         | —         | 41B45                       | 16472     |
| 48                      | 7.645      | 3/4  | 3-1/2    | 1-1/16           | —                         | —         | 41B48                       | 16474     |
| 54                      | 8.599      | 3/4  | 3-1/2    | 1-1/16           | —                         | —         | 41B54                       | 16476     |
| 60                      | 9.554      | 3/4  | 3-1/2    | 1-1/16           | —                         | —         | 41B60                       | 16478     |
| 72                      | 11.463     | 3/4  | 4        | 1-3/16           | —                         | —         | 41B72                       | 16482     |
| 96                      | 15.282     | 1    | 4        | 1-3/16           | —                         | —         | 41B96                       | 16486     |



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.391"**

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|-----------|
| Bore      | All ±.001 |

### Reference Pages

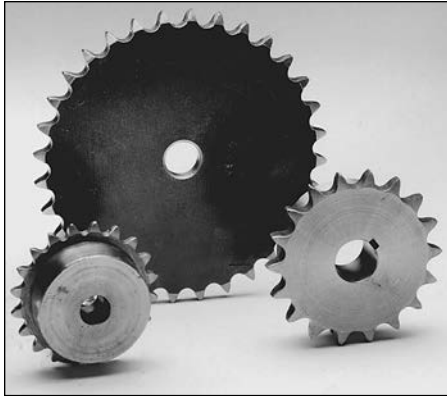
Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyways. All sprockets have 1/4-20 setscrews located over keyway.

# Roller Chain Sprockets

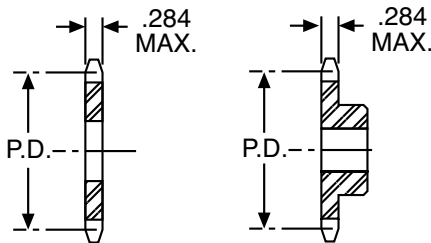
## Single Strand

No. 40 1/2" Pitch; Steel



TYPE A

TYPE B



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.469"**

### STANDARD TOLERANCES

| DIMENSIONS |      | TOLERANCE |              |
|------------|------|-----------|--------------|
| Type A     | Bore | All       | +.002 - .001 |
| Type B     | Bore | All       | ±.001        |

### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyways. All sprockets have 1/4-20 setscrews, located over keyway, except at 90° where marked.

†Has recessed groove in the hub for chain clearance.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth               | Pitch Dia. | Bore  | Catalog Number | Item Code |
|----------------------------|------------|-------|----------------|-----------|
| <b>TYPE A—NO HUB STEEL</b> |            |       |                |           |
| 19                         | 3.038      | 5/8   | 40A19          | 68007     |
| 20                         | 3.196      |       | 40A20          | 68008     |
| 21                         | 3.355      |       | 40A21          | 56747     |
| 22                         | 3.513      |       | 40A22          | 56748     |
| 23                         | 3.672      |       | 40A23          | 56749     |
| 24                         | 3.831      |       | 40A24          | 56750     |
| 25                         | 3.989      |       | 40A25          | 56751     |
| 26                         | 4.148      |       | 40A26          | 68014     |
| 27                         | 4.307      |       | 40A27          | 68015     |
| 28                         | 4.466      |       | 40A28          | 68016     |
| 30                         | 4.783      | 19/32 | 40A30          | 16258     |
| 32                         | 5.101      |       | 40A32          | 16260     |
| 35                         | 5.578      |       | 40A35          | 68023     |
| 36                         | 5.737      |       | 40A36          | 16262     |
| 38                         | 6.055      |       | 40A38          | 68026     |
| 40                         | 6.373      | 23/32 | 40A40          | 16264     |
| 42                         | 6.691      |       | 40A42          | 16266     |
| 45                         | 7.168      |       | 40A45          | 16268     |
| 48                         | 7.645      |       | 40A48          | 16270     |
| 54                         | 8.599      |       | 40A54          | 16272     |
| 60                         | 9.554      |       | 40A60          | 16274     |
| 72                         | 11.463     |       | 40A72          | 16278     |
| 84                         | 13.372     |       | 40A84          | 16282     |
| 96                         | 15.282     | 15/16 | 40A96          | 16284     |
| 112                        | 17.828     |       | 40A112         | 16286     |

### ORDER BY CATALOG NUMBER OR ITEM CODE

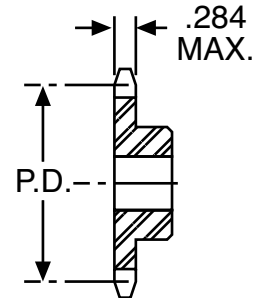
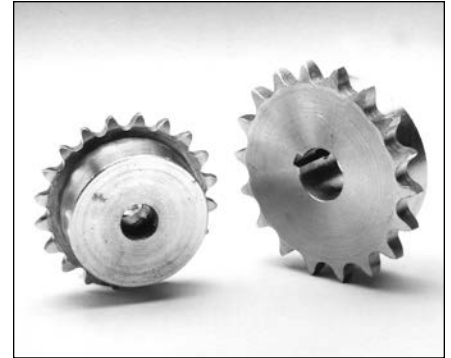
| No. of Teeth            | Pitch Dia. | Bore   | Hub Dia. | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |
|-------------------------|------------|--------|----------|------------------|---------------------------|-----------|-----------------------------|-----------|
|                         |            |        |          |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |
| TYPE B SINGLE HUB STEEL |            |        |          |                  |                           |           |                             |           |
| 8                       | 1.307      | 1/2    | 31/32†   | 7/8              | —                         | —         | 40B8                        | 15682     |
| 9                       | 1.462      | 1/2    | 1-1/16†  | 7/8              | 40B9-1/2*                 | 14980     | 40B9                        | 15684     |
|                         |            | 5/8    |          |                  | 40B9-5/8*                 | 14982     |                             |           |
| 10                      | 1.618      | 1/2    | 1-1/4†   | 7/8              | 40B10-1/2                 | 14984     | 40B10                       | 15686     |
|                         |            | 5/8    |          |                  | 40B10-5/8*                | 14986     |                             |           |
|                         |            | 3/4    |          |                  | 40B10-3/4*                | 14988     |                             |           |
|                         |            | 1/2    |          |                  | 40B11-1/2                 | 36054     | 40B11                       | 15688     |
| 11                      | 1.775      | 5/8    | 1-3/8†   | 7/8              | 40B11-5/8                 | 14990     |                             |           |
|                         |            | 3/4    |          |                  | 40B11-3/4                 | 14992     |                             |           |
|                         |            | 7/8    |          |                  | 40B11-7/8*                | 14994     |                             |           |
|                         |            | 1/2    |          |                  | 40B12-1/2                 | 36056     | 40B12                       | 15690     |
| 12                      | 1.932      | 5/8    | 1-9/16†  | 7/8              | 40B12-5/8                 | 14996     |                             |           |
|                         |            | 3/4    |          |                  | 40B12-3/4                 | 14998     |                             |           |
|                         |            | 7/8    |          |                  | 40B12-7/8                 | 15000     |                             |           |
|                         |            | 1      |          |                  | 40B12-1*                  | 15002     |                             |           |
|                         |            | 1/2    |          |                  | 40B13-1/2                 | 36058     | 40B13                       | 15692     |
| 13                      | 2.089      | 5/8    | 1-9/16   | 7/8              | 40B13-5/8                 | 15004     |                             |           |
|                         |            | 3/4    |          |                  | 40B13-3/4                 | 15006     |                             |           |
|                         |            | 7/8    |          |                  | 40B13-7/8                 | 15008     |                             |           |
|                         |            | 1      |          |                  | 40B13-1*                  | 15010     |                             |           |
|                         |            | 1/2    |          |                  | 40B14-1/2                 | 36060     | 40B14                       | 15694     |
| 14                      | 2.247      | 5/8    | 1-11/16  | 7/8              | 40B14-5/8                 | 15012     |                             |           |
|                         |            | 3/4    |          |                  | 40B14-3/4                 | 15014     |                             |           |
|                         |            | 7/8    |          |                  | 40B14-7/8                 | 15016     |                             |           |
|                         |            | 1      |          |                  | 40B14-1                   | 15018     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B14-1-1/8*              | 56732     |                             |           |
| 15                      | 2.405      | 1/2    | 1-13/16  | 7/8              | 40B15-1/2                 | 36062     | 40B15                       | 15696     |
|                         |            | 5/8    |          |                  | 40B15-5/8                 | 15020     |                             |           |
|                         |            | 3/4    |          |                  | 40B15-3/4                 | 15022     |                             |           |
|                         |            | 7/8    |          |                  | 40B15-7/8                 | 15024     |                             |           |
|                         |            | 1      |          |                  | 40B15-1                   | 15026     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B15-1-1/8               | 15028     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B15-1-3/16*             | 15030     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B15-1-1/4*              | 15032     |                             |           |

# Roller Chain Sprockets

## Single Strand No. 40 1/2" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth            | Pitch Dia. | Bore   | Hub Dia. | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |
|-------------------------|------------|--------|----------|------------------|---------------------------|-----------|-----------------------------|-----------|
|                         |            |        |          |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |
| TYPE B SINGLE HUB STEEL |            |        |          |                  |                           |           |                             |           |
| 16                      | 2.563      | 5/8    | 2        | 7/8              | 40B16-5/8                 | 15034     | 40B16                       | 15698     |
|                         |            | 3/4    |          |                  | 40B16-3/4                 | 15036     |                             |           |
|                         |            | 7/8    |          |                  | 40B16-7/8                 | 15038     |                             |           |
|                         |            | 1      |          |                  | 40B16-1                   | 15040     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B16-1-1/8               | 36064     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B16-1-3/16              | 15042     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B16-1-1/4               | 15044     |                             |           |
| 17                      | 2.721      | 5/8    | 2-1/8    | 1                | 40B17-5/8                 | 15046     | 40B17                       | 15700     |
|                         |            | 3/4    |          |                  | 40B17-3/4                 | 15048     |                             |           |
|                         |            | 7/8    |          |                  | 40B17-7/8                 | 36066     |                             |           |
|                         |            | 1      |          |                  | 40B17-1                   | 15050     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B17-1-1/8               | 15052     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B17-1-3/16              | 15054     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B17-1-1/4               | 56733     |                             |           |
| 18                      | 2.879      | 5/8    | 2-5/16   | 1                | 40B18-5/8                 | 36068     | 40B18                       | 15702     |
|                         |            | 3/4    |          |                  | 40B18-3/4                 | 15056     |                             |           |
|                         |            | 7/8    |          |                  | 40B18-7/8                 | 15058     |                             |           |
|                         |            | 1      |          |                  | 40B18-1                   | 15060     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B18-1-1/8               | 15062     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B18-1-3/16              | 15064     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B18-1-1/4               | 15066     |                             |           |
|                         |            | 1-3/8  |          |                  | 40B18-1-3/8               | 36070     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B18-1-7/16              | 15068     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B18-1-1/2               | 15070     |                             |           |
| 19                      | 3.038      | 5/8    | 2-1/2    | 1                | 40B19-5/8                 | 36072     | 40B19                       | 15704     |
|                         |            | 3/4    |          |                  | 40B19-3/4                 | 15072     |                             |           |
|                         |            | 7/8    |          |                  | 40B19-7/8                 | 36074     |                             |           |
|                         |            | 1      |          |                  | 40B19-1                   | 15074     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B19-1-1/8               | 36076     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B19-1-3/16              | 15076     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B19-1-1/4               | 36078     |                             |           |
|                         |            | 1-3/8  |          |                  | 40B19-1-3/8               | 36080     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B19-1-7/16†             |           | 15078                       |           |
|                         |            | 1-1/2  |          |                  | 40B19-1-1/2* 56734        |           |                             |           |
| 20                      | 3.196      | 5/8    | 2-5/8    | 1                | 40B20-5/8                 | 36082     | 40B20                       | 15706     |
|                         |            | 3/4    |          |                  | 40B20-3/4                 | 15080     |                             |           |
|                         |            | 7/8    |          |                  | 40B20-7/8                 | 15082     |                             |           |
|                         |            | 1      |          |                  | 40B20-1                   | 15084     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B20-1-1/8               | 15086     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B20-1-3/16              | 15088     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B20-1-1/4               | 15090     |                             |           |
|                         |            | 1-3/8  |          |                  | 40B20-1-3/8               | 36084     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B20-1-7/16              | 15092     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B20-1-1/2               | 15094     |                             |           |
| 21                      | 3.355      | 5/8    | 2-3/4    | 1                | 40B21-5/8                 | 36086     | 40B21                       | 15708     |
|                         |            | 3/4    |          |                  | 40B21-3/4                 | 17148     |                             |           |
|                         |            | 7/8    |          |                  | 40B21-7/8                 | 15096     |                             |           |
|                         |            | 1      |          |                  | 40B21-1                   | 15098     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B21-1-1/8               | 36088     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B21-1-3/16              | 15100     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B21-1-1/4               | 36090     |                             |           |
|                         |            | 1-3/8  |          |                  | 40B21-1-3/8               | 36092     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B21-1-7/16†             |           | 15102                       |           |
|                         |            | 1-1/2  |          |                  | 40B21-1-1/2* 15104        |           |                             |           |



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .469"**

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|-----------|
| Bore      | All ±.001 |

### Reference Pages

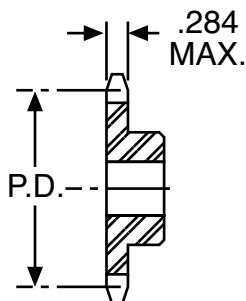
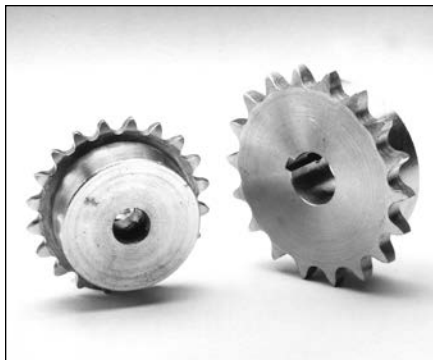
Alterations – 324  
 Horsepower Ratings – 268-270  
 Lubrication – 267  
 Materials – 324  
 Selection Procedure – 266  
 ANSI Diameters – 325

\*All sprockets have standard keyways.  
 Sprockets 16-17 teeth have 1/4-20 setscrews, 18-21 teeth 5/16-18 setscrews, located over keyway, except at 90° where marked.

# Roller Chain Sprockets

## Single Strand

No. 40 1/2" Pitch; Steel



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. +.469"**

### STANDARD TOLERANCES

| DIMENSIONS |     | TOLERANCE |
|------------|-----|-----------|
| Bore       | All | ±.001     |

### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyways. All sprockets have 5/16-18 setscrews located over keyway, except at 90° where marked.

### ORDER BY CATALOG NUMBER OR ITEM CODE

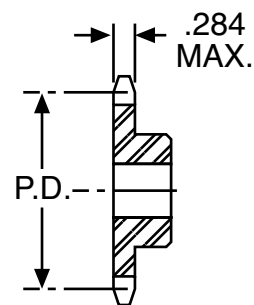
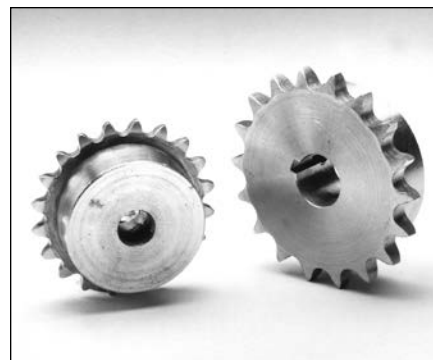
| No. of Teeth            | Pitch Dia.   | Bore   | Hub Dia.     | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |           |       |           |       |       |       |
|-------------------------|--------------|--------|--------------|------------------|---------------------------|-----------|-----------------------------|-----------|-----------|-------|-----------|-------|-------|-------|
|                         |              |        |              |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |           |       |           |       |       |       |
| TYPE B SINGLE HUB STEEL |              |        |              |                  |                           |           |                             |           |           |       |           |       |       |       |
| 22                      | 3.513        | 5/8    | 2-7/8        | 1                | 40B22-5/8                 | 36094     | 40B22                       | 15710     |           |       |           |       |       |       |
|                         |              | 3/4    |              |                  | 40B22-3/4                 | 15106     |                             |           |           |       |           |       |       |       |
|                         |              | 7/8    |              |                  | 40B22-7/8                 | 36096     |                             |           |           |       |           |       |       |       |
|                         |              | 1      |              |                  | 40B22-1                   | 15108     |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/8  |              |                  | 40B22-1-1/8               | 15110     |                             |           |           |       |           |       |       |       |
|                         |              | 1-3/16 |              |                  | 40B22-1-3/16              | 15112     |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/4  |              |                  | 40B22-1-1/4               | 15114     |                             |           |           |       |           |       |       |       |
|                         |              | 1-3/8  |              |                  | 40B22-1-3/8               | 36098     |                             |           |           |       |           |       |       |       |
|                         |              | 1-7/16 |              |                  | 40B22-1-7/16              | 15116     |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/2  |              |                  | 40B22-1-1/2               | 56735     |                             |           |           |       |           |       |       |       |
|                         |              | 23     |              |                  | 3.672                     | 5/8       |                             |           | 3         | 1     | 40B23-5/8 | 36102 | 40B23 | 15712 |
|                         |              |        |              |                  |                           | 3/4       |                             |           |           |       | 40B23-3/4 | 15118 |       |       |
| 7/8                     | 40B23-7/8    |        | 36104        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 1                       | 40B23-1      |        | 15120        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/8                   | 40B23-1-1/8  |        | 36106        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 1-3/16                  | 40B23-1-3/16 |        | 15122        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/4                   | 40B23-1-1/4  |        | 15124        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 1-3/8                   | 40B23-1-3/8  |        | 36108        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 1-7/16                  | 40B23-1-7/16 |        | 15126        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/2                   | 40B23-1-1/2  |        | 56736        |                  |                           |           |                             |           |           |       |           |       |       |       |
| 24                      | 3.831        |        | 5/8          | 3-1/4            |                           | 1         | 40B24-5/8                   | 36110     |           |       | 40B24     | 15714 |       |       |
|                         |              |        | 3/4          |                  |                           |           | 40B24-3/4                   | 15128     |           |       |           |       |       |       |
|                         |              | 7/8    | 40B24-7/8    |                  | 36112                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 1      | 40B24-1      |                  | 15130                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/8  | 40B24-1-1/8  |                  | 15132                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-3/16 | 40B24-1-3/16 |                  | 15134                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/4  | 40B24-1-1/4  |                  | 15136                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-3/8  | 40B24-1-3/8  |                  | 36114                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-7/16 | 40B24-1-7/16 |                  | 15138                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/2  | 40B24-1-1/2  |                  | 15140                     |           |                             |           |           |       |           |       |       |       |
|                         |              | 25     | 3.989        |                  | 5/8                       |           | 3-1/4                       | 1         | 40B25-5/8 | 36116 |           |       | 40B25 | 15716 |
|                         |              |        |              |                  | 3/4                       |           |                             |           | 40B25-3/4 | 15142 |           |       |       |       |
| 7/8                     | 40B25-7/8    |        |              | 36118            |                           |           |                             |           |           |       |           |       |       |       |
| 1                       | 40B25-1      |        |              | 15144            |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/8                   | 40B25-1-1/8  |        |              | 36120            |                           |           |                             |           |           |       |           |       |       |       |
| 1-3/16                  | 40B25-1-3/16 |        |              | 36122            |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/4                   | 40B25-1-1/4  |        |              | 15146            |                           |           |                             |           |           |       |           |       |       |       |
| 1-7/16                  | 40B25-1-7/16 |        |              | 36124            |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/2                   | 40B25-1-1/2  |        |              | 15148            |                           |           |                             |           |           |       |           |       |       |       |
| 26                      | 4.148        |        |              | 5/8              | 3-1/4                     | 1         |                             |           | 40B26-5/8 | 36126 | 40B26     | 68089 |       |       |
|                         |              |        |              | 3/4              |                           |           |                             |           | 40B26-3/4 | 68293 |           |       |       |       |
|                         |              |        |              | 7/8              |                           |           |                             |           | 40B26-7/8 | 68294 |           |       |       |       |
|                         |              | 1      | 40B26-1      | 68295            |                           |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/8  | 40B26-1-1/8  | 68296            |                           |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-3/16 | 40B26-1-3/16 | 68297            |                           |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/4  | 40B26-1-1/4  | 68298            |                           |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-7/16 | 40B26-1-7/16 | 68299            |                           |           |                             |           |           |       |           |       |       |       |
|                         |              | 1-1/2  | 40B26-1-1/2  | 68300            |                           |           |                             |           |           |       |           |       |       |       |
|                         |              | 27     | 4.307        | 5/8              |                           |           | 3-1/4                       | 1         | 40B27-5/8 | 36128 |           |       | 40B27 | 68090 |
|                         |              |        |              | 3/4              |                           |           |                             |           | 40B27-3/4 | 68301 |           |       |       |       |
|                         |              |        |              | 7/8              |                           |           |                             |           | 40B27-7/8 | 68302 |           |       |       |       |
| 1                       | 40B27-1      |        |              | 68303            |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/8                   | 40B27-1-1/8  |        |              | 68304            |                           |           |                             |           |           |       |           |       |       |       |
| 1-3/16                  | 40B27-1-3/16 |        |              | 68305            |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/4                   | 40B27-1-1/4  |        |              | 68306            |                           |           |                             |           |           |       |           |       |       |       |
| 1-7/16                  | 40B27-1-7/16 |        |              | 68307            |                           |           |                             |           |           |       |           |       |       |       |
| 1-1/2                   | 40B27-1-1/2  |        |              | 68308            |                           |           |                             |           |           |       |           |       |       |       |

# Roller Chain Sprockets

## Single Strand No. 40 1/2" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth            | Pitch Dia. | Bore   | Hub Dia. | Length thru Bore | With Keyway and Setscrew* |           | Without Keyway and Setscrew |           |
|-------------------------|------------|--------|----------|------------------|---------------------------|-----------|-----------------------------|-----------|
|                         |            |        |          |                  | Catalog Number            | Item Code | Catalog Number              | Item Code |
| TYPE B SINGLE HUB STEEL |            |        |          |                  |                           |           |                             |           |
| 28                      | 4.466      | 5/8    | 3-1/4    | 1                | 40B28-5/8                 | 36130     | 40B28                       | 68091     |
|                         |            | 3/4    |          |                  | 40B28-3/4                 | 68309     |                             |           |
|                         |            | 7/8    |          |                  | 40B28-7/8                 | 68310     |                             |           |
|                         |            | 1      |          |                  | 40B28-1                   | 68311     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B28-1-1/8               | 68312     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B28-1-3/16              | 68313     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B28-1-1/4               | 68314     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B28-1-7/16              | 68315     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B28-1-1/2               | 68316     |                             |           |
| 30                      | 4.783      | 5/8    | 3-1/4    | 1                | 40B30-5/8                 | 36134     | 40B30                       | 16434     |
|                         |            | 3/4    |          |                  | 40B30-3/4                 | 68325     |                             |           |
|                         |            | 7/8    |          |                  | 40B30-7/8                 | 68326     |                             |           |
|                         |            | 1      |          |                  | 40B30-1                   | 68327     |                             |           |
|                         |            | 1-1/8  |          |                  | 40B30-1-1/8               | 68328     |                             |           |
|                         |            | 1-3/16 |          |                  | 40B30-1-3/16              | 68329     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B30-1-1/4               | 68330     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B30-1-7/16              | 68331     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B30-1-1/2               | 68332     |                             |           |
| 32                      | 5.101      | 5/8    | 3-1/4    | 1                | —                         | —         | 40B32                       | 16436     |
| 35                      | 5.578      | 5/8    | 3-1/4    | 1                | 40B35-5/8                 | 36186     | 40B35                       | 68096     |
|                         |            | 3/4    |          |                  | 40B35-3/4                 | 36188     |                             |           |
|                         |            | 1      |          |                  | 40B35-1                   | 36190     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B35-1-1/4               | 36192     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B35-1-7/16              | 36194     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B35-1-1/2               | 36196     |                             |           |
| 36                      | 5.738      | 3/4    | 3-1/4    | 1                | 40B36-3/4                 | 49478     | 40B36                       | 16438     |
|                         |            | 1      |          |                  | 40B36-1                   | 36200     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B36-1-1/4               | 45979     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B36-1-7/16              | 45980     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B36-1-1/2               | 45981     |                             |           |
| 38                      | 6.055      | 5/8    | 3-1/4    | 1                | —                         | —         | 40B38                       | 68098     |
| 40                      | 6.373      | 3/4    | 3-1/2    | 1-1/8            | —                         | —         | 40B40                       | 16440     |
| 42                      | 6.691      | 3/4    | 3-1/2    | 1-1/8            | 40B42-3/4                 | 49479     | 40B42                       | 16442     |
|                         |            | 1      |          |                  | 40B42-1                   | 36264     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B42-1-1/4               | 36266     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B42-1-7/16              | 36268     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B42-1-1/2               | 36270     |                             |           |
| 45                      | 7.168      | 3/4    | 3-1/2    | 1-1/8            | 40B45-3/4                 | 49480     | 40B45                       | 16444     |
|                         |            | 1      |          |                  | 40B45-1                   | 36298     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B45-1-1/4               | 36300     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B45-1-7/16              | 36302     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B45-1-1/2               | 36304     |                             |           |
| 48                      | 7.645      | 3/4    | 3-1/2    | 1-1/8            | 40B48-3/4                 | 49481     | 40B48                       | 16446     |
|                         |            | 1      |          |                  | 40B48-1                   | 36330     |                             |           |
|                         |            | 1-1/4  |          |                  | 40B48-1-1/4               | 36332     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B48-1-7/16              | 36334     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B48-1-1/2               | 36336     |                             |           |
| 54                      | 8.599      | 3/4    | 3-1/2    | 1-1/8            | —                         | —         | 40B54                       | 16448     |
| 60                      | 9.554      | 1      | 3-1/2    | 1-1/8            | 40B60-1                   | 36470     | 40B60                       | 16450     |
|                         |            | 1-1/4  |          |                  | 40B60-1-1/4               | 36472     |                             |           |
|                         |            | 1-7/16 |          |                  | 40B60-1-7/16              | 36474     |                             |           |
|                         |            | 1-1/2  |          |                  | 40B60-1-1/2               | 36476     |                             |           |
| 72                      | 11.463     | 3/4    | 4        | 1-1/4            | —                         | —         | 40B72                       | 16454     |
| 84                      | 13.372     | 3/4    | 4        | 1-1/4            | —                         | —         | 40B84                       | 16458     |
| 96                      | 15.282     | 1      | 4        | 1-1/4            | —                         | —         | 40B96                       | 16460     |
| 112                     | 17.828     | 1      | 4        | 1-1/4            | —                         | —         | 40B112                      | 16462     |



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .469"**

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|-----------|
| Bore      | All ±.001 |

### Reference Pages

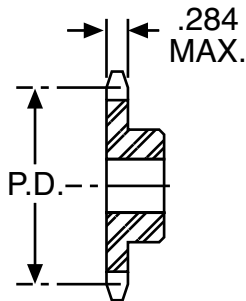
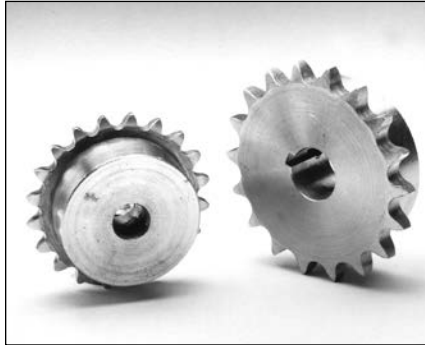
Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyways.  
All sprockets have 5/16-18 setscrews located over keyway.

# Roller Chain Sprockets

## Single Strand

No. 40 1/2" Pitch; Stainless Steel



### ORDER BY CATALOG NUMBER OR ITEM CODE

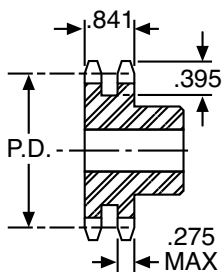
| No.<br>of<br>Teeth                | Pitch<br>Dia. | Bore | Hub<br>Dia. | Length<br>thru | Without Keyway<br>or Setscrew |              |
|-----------------------------------|---------------|------|-------------|----------------|-------------------------------|--------------|
|                                   |               |      |             |                | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STAINLESS STEEL |               |      |             |                |                               |              |
| 10                                | 1.618         | 1/2  | 1-1/4†      | 7/8            | 40B10SS                       | 69275        |
| 11                                | 1.775         |      | 1-3/8†      |                | 40B11SS                       | 69276        |
| 12                                | 1.932         |      | 1-9/16†     |                | 40B12SS                       | 69277        |
| 13                                | 2.089         |      | 1-9/16      |                | 40B13SS                       | 69278        |
| 14                                | 2.247         |      | 1-11/16     |                | 40B14SS                       | 69279        |
| 15                                | 2.405         | 5/8  | 1-13/16     | 7/8            | 40B15SS                       | 69280        |
| 16                                | 2.563         |      | 2           |                | 40B16SS                       | 69281        |
| 17                                | 2.721         | 5/8  | 2-1/8       | 1              | 40B17SS                       | 69282        |
| 18                                | 2.879         |      | 2-5/16      |                | 40B18SS                       | 69283        |
| 19                                | 3.038         |      | 2-1/2       |                | 40B19SS                       | 69294        |
| 20                                | 3.196         |      | 2-5/8       |                | 40B20SS                       | 69295        |
| 25                                | 3.989         |      | 3-1/4       |                | 40B25SS                       | 69296        |
| 30                                | 4.783         |      | 3-1/4       |                | 40B30SS                       | 69297        |
| 40                                | 6.373         | 3/4  | 3-1/2       | 1              | 40B40SS                       | 69300        |
| 45                                | 7.168         |      | 3-1/2       |                | 40B45SS                       | 69301        |
| 60                                | 9.554         |      | 3-1/2       |                | 40B60SS                       | 69302        |

†Has recessed groove in hub for chain reference.

## H

## Double Strand

No. 40 2-1/2" Pitch; Steel



### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore  | Hub<br>Dia. | Length<br>thru | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|-------|-------------|----------------|-------------------------------|--------------|
|                         |               |       |             |                | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |       |             |                |                               |              |
| 13                      | 2.089         | 1/2   | 1-1/2       | 1-1/2          | D40B13                        | 46563        |
| 14                      | 2.247         |       | 1-11/16     |                | D40B14                        | 46564        |
| 15                      | 2.405         |       | 1-13/16     |                | D40B15                        | 46565        |
| 16                      | 2.563         | 1/2   | 2           | 1-1/2          | D40B16                        | 15950        |
| 17                      | 2.721         |       | 2-1/8       |                | D40B17                        | 15952        |
| 18                      | 2.879         |       | 2-5/16      |                | D40B18                        | 15954        |
| 19                      | 3.038         |       | 2-1/2       |                | D40B19                        | 15956        |
| 20                      | 3.196         | 5/8   | 2-5/8       | 1-5/8          | D40B20                        | 15958        |
| 21                      | 3.355         |       | 2-3/4       |                | D40B21                        | 15960        |
| 22                      | 3.513         |       | 2-7/8       |                | D40B22                        | 15962        |
| 23                      | 3.672         |       | 3           |                | D40B23                        | 15964        |
| 24                      | 3.831         |       | 3-1/4       |                | D40B24                        | 15966        |
| 25                      | 4.989         |       | 3-1/4       |                | D40B25                        | 15968        |
| 26                      | 4.148         |       | 3-1/4       |                | D40B26                        | 68011        |
| 30                      | 4.783         | 7/8   | 2-1/2       | 1-5/8          | D40B30                        | 68012        |
| 35                      | 5.578         |       | 3-1/4       |                | D40B35                        | 68013        |
| 36                      | 5.737         | 15/16 | 3-3/4       | 1-5/8          | D40B36                        | 68018        |
| 40                      | 6.373         |       | 3-3/4       | 1-3/4          | D40B40                        | 68020        |

**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .469"**

### STANDARD TOLERANCES

| DIMENSIONS             |     | TOLERANCE    |
|------------------------|-----|--------------|
| <b>Stainless Steel</b> |     |              |
| Bore                   | All | +.002 — .000 |
| <b>Double Strand</b>   |     |              |
| Bore                   | All | ±.001        |

### Reference Pages

Alterations — 324  
Horsepower Ratings — 268-270  
Lubrication — 267  
Materials — 324  
Selection Procedure — 266  
ANSI Diameters — 325

# Roller Chain Sprockets

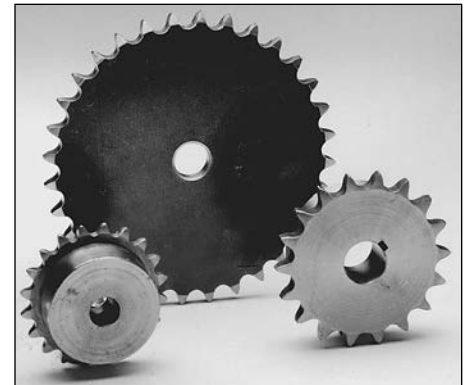
## Single Strand No. 50 5/8" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth               | Pitch Dia. | Bore  | Catalog Number | Item Code |
|----------------------------|------------|-------|----------------|-----------|
| <b>TYPE A NO HUB STEEL</b> |            |       |                |           |
| 17                         | 3.401      | 5/8   | 50A17          | 45865     |
| 18                         | 3.599      |       | 50A18          | 56752     |
| 19                         | 3.797      |       | 50A19          | 56753     |
| 20                         | 3.955      | 3/4   | 50A20          | 56754     |
| 21                         | 4.193      |       | 50A21          | 56755     |
| 22                         | 4.392      |       | 50A22          | 56756     |
| 23                         | 4.590      |       | 50A23          | 56757     |
| 24                         | 4.788      | 23/32 | 50A24          | 56758     |
| 25                         | 4.987      |       | 50A25          | 16288     |
| 26                         | 5.185      |       | 50A26          | 45866     |
| 28                         | 5.582      |       | 50A28          | 45867     |
| 30                         | 5.979      |       | 50A30          | 16290     |
| 32                         | 6.376      |       | 50A32          | 16292     |
| 35                         | 6.872      |       | 50A35          | 45872     |
| 36                         | 7.171      |       | 50A36          | 16294     |
| 40                         | 7.966      |       | 50A40          | 16296     |
| 42                         | 8.363      |       | 50A42          | 16298     |
| 45                         | 8.960      |       | 50A45          | 16300     |
| 48                         | 9.556      | 15/16 | 50A48          | 16302     |
| 54                         | 10.749     |       | 50A54          | 16304     |
| 60                         | 11.942     |       | 50A60          | 16306     |
| 72                         | 14.328     |       | 50A72          | 16310     |
| 84                         | 16.715     |       | 50A84          | 16314     |
| 96                         | 19.102     |       | 50A96          | 16316     |
| 112                        | 21.885     |       | 50A112         | 16318     |

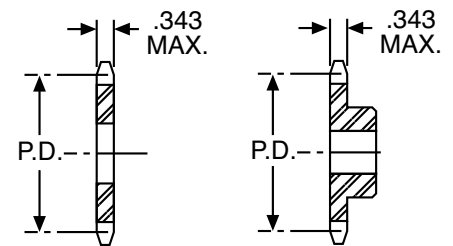
### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore   | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|--------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |        |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |        |             |                        |                            |              |                               |              |
| 8                       | 1.633         | 5/8    | 1-1/8†      | 1                      | 50B8-5/8*                  | 49482        | 50B8                          | 15798        |
| 9                       | 1.827         | 5/8    | 1-3/8†      | 1                      | 50B9-5/8                   | 15150        | 50B9                          | 15800        |
|                         |               | 3/4    |             |                        | 50B9-3/4*                  | 15152        |                               |              |
| 10                      | 2.023         | 5/8    | 1-9/16†     | 1                      | 50B10-5/8                  | 15154        | 50B10                         | 15802        |
|                         |               | 3/4    |             |                        | 50B10-3/4                  | 15156        |                               |              |
|                         |               | 7/8    |             |                        | 50B10-7/8                  | 36496        |                               |              |
|                         |               | 1      |             |                        | 50B10-1*                   | 36498        |                               |              |
| 11                      | 2.218         | 5/8    | 1-3/4†      | 1                      | 50B11-5/8                  | 15158        | 50B11                         | 15804        |
|                         |               | 3/4    |             |                        | 50B11-3/4                  | 15160        |                               |              |
|                         |               | 7/8    |             |                        | 50B11-7/8                  | 15162        |                               |              |
|                         |               | 1      |             |                        | 50B11-1*                   | 15164        |                               |              |
| 12                      | 2.415         | 5/8    | 1-63/64†    | 1                      | 50B12-5/8                  | 15166        | 50B12                         | 15806        |
|                         |               | 3/4    |             |                        | 50B12-3/4                  | 15168        |                               |              |
|                         |               | 7/8    |             |                        | 50B12-7/8                  | 15170        |                               |              |
|                         |               | 1      |             |                        | 50B12-1                    | 15172        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B12-1-1/8                | 15174        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B12-1-3/16               | 36500        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B12-1-1/4*               | 36502        |                               |              |
| 13                      | 2.612         | 5/8    | 1-7/8       | 1                      | 50B13-5/8                  | 36504        | 50B13                         | 15808        |
|                         |               | 3/4    |             |                        | 50B13-3/4                  | 15176        |                               |              |
|                         |               | 7/8    |             |                        | 50B13-7/8                  | 15178        |                               |              |
|                         |               | 1      |             |                        | 50B13-1                    | 15180        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B13-1-1/8*               | 15182        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B13-1-3/16               | 15184        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B13-1-1/4*               | 15186        |                               |              |
| 14                      | 2.809         | 5/8    | 2-1/8       | 1                      | 50B14-5/8                  | 36506        | 50B14                         | 15810        |
|                         |               | 3/4    |             |                        | 50B14-3/4                  | 15188        |                               |              |
|                         |               | 7/8    |             |                        | 50B14-7/8                  | 15190        |                               |              |
|                         |               | 1      |             |                        | 50B14-1                    | 15192        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B14-1-1/8                | 15194        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B14-1-3/16               | 15196        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B14-1-1/4*               | 15198        |                               |              |



TYPE A

TYPE B



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .594"**

### STANDARD TOLERANCES

| DIMENSION |      | TOLERANCE |               |
|-----------|------|-----------|---------------|
| Type A    | Bore | All       | +0.002 - .001 |
| Type B    | Bore | All       | ±.001         |

### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

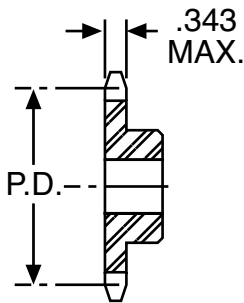
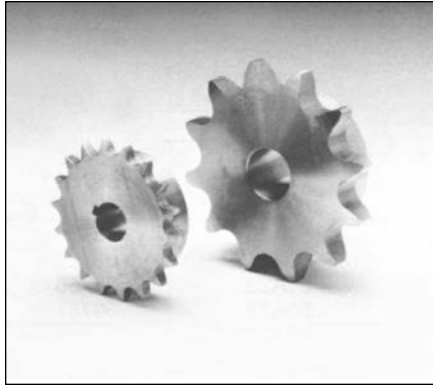
\*All sprockets have standard keyway. Sprockets 8-12 teeth have 1/4-20 setscrew, 13-14 teeth 5/16-18 setscrew located over keyway except at 90° where marked.

†Has recessed groove in hub for chain clearance.

# Roller Chain Sprockets

## Single Strand

No. 50 5/8" Pitch; Steel



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .594"**

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |       |
|------------|-----------|-------|
| Bore       | All       | ±.001 |

### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway. All sprockets have 5/16–18 setscrews located over keyway except at 90° where marked.

### ORDER BY CATALOG NUMBER OR ITEM CODE

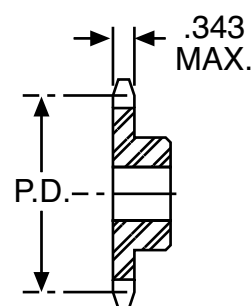
| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore   | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|--------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |        |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |        |             |                        |                            |              |                               |              |
| 15                      | 3.006         | 5/8    | 2-3/8       | 1                      | 50B15-5/8                  | 36508        | 50B15                         | 15812        |
|                         |               | 3/4    |             |                        | 50B15-3/4                  | 15200        |                               |              |
|                         |               | 7/8    |             |                        | 50B15-7/8                  | 15202        |                               |              |
|                         |               | 1      |             |                        | 50B15-1                    | 15204        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B15-1-1/8                | 36206        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B15-1-3/16               | 15208        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B15-1-1/4                | 15210        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B15-1-3/8                | 15212        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B15-1-7/16*              | 15214        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B15-1-1/2*               | 36510        |                               |              |
| 16                      | 3.204         | 5/8    | 2-1/2       | 1                      | 50B16-5/8                  | 36512        | 50B16                         | 15814        |
|                         |               | 3/4    |             |                        | 50B16-3/4                  | 15216        |                               |              |
|                         |               | 7/8    |             |                        | 50B16-7/8                  | 15218        |                               |              |
|                         |               | 1      |             |                        | 50B16-1                    | 15220        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B16-1-1/8                | 15222        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B16-1-3/16               | 15224        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B16-1-1/4                | 15226        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B16-1-3/8                | 15228        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B16-1-7/16               | 15230        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B16-1-1/2*               | 15232        |                               |              |
| 17                      | 3.401         | 5/8    | 2-11/16     | 1                      | 50B17-5/8                  | 36516        | 50B17                         | 15816        |
|                         |               | 3/4    |             |                        | 50B17-3/4                  | 15234        |                               |              |
|                         |               | 7/8    |             |                        | 50B17-7/8                  | 17150        |                               |              |
|                         |               | 1      |             |                        | 50B17-1                    | 15236        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B17-1-1/8                | 15238        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B17-1-3/16               | 15240        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B17-1-1/4                | 15242        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B17-1-3/8*               | 15244        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B17-1-7/16*              | 15246        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B17-1-1/2*               | 56737        |                               |              |
| 18                      | 3.599         | 5/8    | 2-7/8       | 1                      | 50B18-5/8                  | 36520        | 50B18                         | 15818        |
|                         |               | 3/4    |             |                        | 50B18-3/4                  | 15248        |                               |              |
|                         |               | 7/8    |             |                        | 50B18-7/8                  | 15250        |                               |              |
|                         |               | 1      |             |                        | 50B18-1                    | 15252        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B18-1-1/8                | 36522        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B18-1-3/16               | 15254        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B18-1-1/4                | 15256        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B18-1-1/4                | 15258        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B18-1-7/16               | 15260        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B18-1-1/2                | 15262        |                               |              |
| 19                      | 3.797         | 5/8    | 3           | 1                      | 50B19-5/8                  | 36524        | 50B19                         | 15820        |
|                         |               | 3/4    |             |                        | 50B19-3/4                  | 36526        |                               |              |
|                         |               | 7/8    |             |                        | 50B19-7/8                  | 36528        |                               |              |
|                         |               | 1      |             |                        | 50B19-1                    | 15264        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B19-1-1/8                | 15266        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B19-1-3/16               | 15268        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B19-1-1/4                | 15270        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B19-1-1/4                | 15272        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B19-1-7/16               | 15274        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B19-1-1/2                | 15276        |                               |              |
| 20                      | 3.995         | 3/4    | 3           | 1                      | 50B20-3/4                  | 36530        | 50B20                         | 15877        |
|                         |               | 7/8    |             |                        | 50B20-7/8                  | 15278        |                               |              |
|                         |               | 1      |             |                        | 50B20-1                    | 15280        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B20-1-1/8                | 56738        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B20-1-3/16               | 15282        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B20-1-1/4                | 15284        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B20-1-1/4                | 15286        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B20-1-7/16               | 15288        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B20-1-1/2                | 15290        |                               |              |
|                         |               | 1-5/8  |             |                        | 50B20-1-5/8                | 36532        |                               |              |

# Roller Chain Sprockets

## Single Strand No. 50 5/8" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore   | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|--------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |        |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |        |             |                        |                            |              |                               |              |
| 21                      | 4.193         | 3/4    | 3           | 1                      | 50B21-3/4                  | 36536        | 50B21                         | 15824        |
|                         |               | 1      |             |                        | 50B21-1                    | 15292        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B21-1-1/8                | 36540        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B21-1-3/16               | 36538        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B21-1-1/4                | 15294        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B21-1-3/8                | 36542        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B21-1-7/16               | 56739        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B21-1-1/2                | 15296        |                               |              |
| 22                      | 4.392         | 3/4    | 3           | 1                      | 50B22-3/4                  | 36546        | 50B22                         | 15826        |
|                         |               | 1      |             |                        | 50B22-1                    | 15300        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B22-1-1/8                | 36548        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B22-1-3/16               | 36550        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B22-1-1/4                | 15302        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B22-1-3/8                | 36552        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B22-1-7/16               | 36554        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B22-1-1/2                | 15304        |                               |              |
| 23                      | 4.590         | 3/4    | 3           | 1                      | 50B23-3/4                  | 36558        | 50B23                         | 15828        |
|                         |               | 1      |             |                        | 50B23-1                    | 15308        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B23-1-1/8                | 36560        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B23-1-3/16               | 36562        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B23-1-1/4                | 15310        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B23-1-3/8                | 36564        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B23-1-7/16               | 36566        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B23-1-1/2                | 15312        |                               |              |
| 24                      | 4.788         | 3/4    | 3           | 1-1/4                  | 50B24-3/4                  | 36570        | 50B24                         | 15830        |
|                         |               | 1      |             |                        | 50B24-1                    | 15316        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B24-1-1/8                | 36572        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B24-1-3/16               | 36574        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B24-1-1/4                | 15318        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B24-1-3/8                | 36576        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B24-1-7/16               | 36578        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B24-1-1/2                | 15320        |                               |              |
| 25                      | 4.987         | 3/4    | 3           | 1-1/4                  | 50B25-3/4                  | 36582        | 50B25                         | 15832        |
|                         |               | 1      |             |                        | 50B25-1                    | 36584        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B25-1-1/8                | 36586        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B25-1-3/16               | 36588        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B25-1-1/4                | 36590        |                               |              |
|                         |               | 1-3/8  |             |                        | 50B25-1-3/8                | 36592        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B25-1-7/16               | 36594        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B25-1-1/2                | 36596        |                               |              |
| 26                      | 5.185         | 3/4    | 3           | 1-1/4                  | 50B26-3/4                  | 36602        | 50B26                         | 36598        |
|                         |               | 1      |             |                        | 50B26-1                    | 36604        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B26-1-1/8                | 36606        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B26-1-3/16               | 36608        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B26-1-1/4                | 36610        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B26-1-7/16               | 36612        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B26-1-1/2                | 36614        |                               |              |
| 28                      | 5.582         | 3/4    | 3           | 1-1/4                  | 50B28-3/4                  | 36638        | 50B28                         | 36634        |
|                         |               | 1      |             |                        | 50B28-1                    | 36640        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B28-1-1/8                | 36642        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B28-1-3/16               | 36644        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B28-1-1/4                | 36646        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B28-1-7/16               | 36648        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B28-1-1/2                | 36650        |                               |              |
| 30                      | 5.979         | 3/4    | 3           | 1-1/4                  | 50B30-3/4                  | 36674        | 50B30                         | 16488        |
|                         |               | 1      |             |                        | 50B30-1                    | 36676        |                               |              |
|                         |               | 1-1/8  |             |                        | 50B30-1-1/8                | 36678        |                               |              |
|                         |               | 1-3/16 |             |                        | 50B30-1-3/16               | 36680        |                               |              |
|                         |               | 1-1/4  |             |                        | 50B30-1-1/4                | 36682        |                               |              |
|                         |               | 1-7/16 |             |                        | 50B30-1-7/16               | 36684        |                               |              |
|                         |               | 1-1/2  |             |                        | 50B30-1-1/2                | 36686        |                               |              |



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .594"**

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|-----------|
| Bore      | All ±.001 |

### Reference Pages

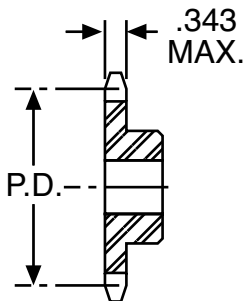
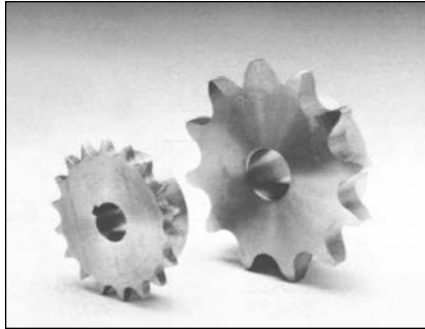
Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway.  
All sprockets have 5/16–18 setscrews located over keyway except at 90° where marked.

# Roller Chain Sprockets

## Single Strand

No. 50 5/8" Pitch; Steel



### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

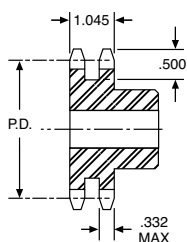
\*All sprockets have standard keyway.  
All sprockets have 5/16–18 setscrews located over keyway except at 90° where marked.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore    | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|---------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |         |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |         |             |                        |                            |              |                               |              |
| 32                      | 6.376         | 3/4     | 3-1/4       | 1-1/4                  | —                          | —            | 50B32                         | 16490        |
| 35                      | 6.972         | —       | 3-1/4       | 1-1/4                  | —                          | —            | —                             | —            |
|                         |               | 3/4     |             |                        | 50B35-3/4                  | 36748        | 50B35                         | 36744        |
|                         |               | 1       |             |                        | 50B35-1                    | 36750        |                               |              |
|                         |               | 1-1/4   |             |                        | 50B35-1-1/4                | 36752        |                               |              |
|                         |               | 1-7/16  |             |                        | 50B35-1-7/16               | 36754        |                               |              |
|                         |               | 1-1/2   |             |                        | 50B35-1-1/2                | 36756        |                               |              |
| 36                      | 7.171         | 3/4     | 3-1/4       | 1-1/4                  | —                          | —            | 50B36                         | 16490        |
| 40                      | 7.966         | 3/4     | 3-1/4       | 1-1/4                  | 50B40-3/4                  | 36808        | 50B40                         | 16494        |
|                         |               | 1       |             |                        | 50B40-1                    | 36810        |                               |              |
|                         |               | 1-1/4   |             |                        | 50B40-1-1/4                | 36812        |                               |              |
|                         |               | 1-7/16  |             |                        | 50B40-1-7/16               | 36814        |                               |              |
|                         |               | 1-1/2   |             |                        | 50B40-1-1/2                | 36816        |                               |              |
|                         |               | 1-15/16 |             |                        | 50B40-1-15/16*             | 36818        |                               |              |
| 42                      | 8.363         | 3/4     | 3-1/4       | 1-1/4                  | —                          | —            | 50B42                         | 16496        |
| 45                      | 8.960         | 3/4     | 3-3/4       | 1-1/4                  | 50B45-3/4                  | 36876        | 50B45                         | 16498        |
|                         |               | 1       |             |                        | 50B45-1                    | 36878        |                               |              |
|                         |               | 1-1/4   |             |                        | 50B45-1-1/4                | 36880        |                               |              |
|                         |               | 1-7/16  |             |                        | 50B45-1-7/16               | 36882        |                               |              |
|                         |               | 1-1/2   |             |                        | 50B45-1-1/2                | 36884        |                               |              |
|                         |               | 1-15/16 |             |                        | 50B45-1-15/16*             | 36886        |                               |              |
| 48                      | 9.556         | 1       | 3-3/4       | 1-1/4                  | 50B48-1                    | 36892        | 50B48                         | 16500        |
|                         |               | 1-1/4   |             |                        | 50B48-1-1/4                | 36894        |                               |              |
|                         |               | 1-7/16  |             |                        | 50B48-1-7/16               | 36896        |                               |              |
|                         |               | 1-1/2   |             |                        | 50B48-1-1/2                | 36898        |                               |              |
|                         |               | 1-15/16 |             |                        | 50B48-1-15/16*             | 35942        |                               |              |
| 54                      | 10.749        | 1       | 3-3/4       | 1-1/4                  | —                          | —            | 50B54                         | 16502        |
| 60                      | 11.942        | 1       | 3-3/4       | 1-1/4                  | 50B60-1                    | 35920        | 50B60                         | 16504        |
|                         |               | 1-1/4   |             |                        | 50B60-1-1/4                | 35922        |                               |              |
|                         |               | 1-7/16  |             |                        | 50B60-1-7/16               | 35924        |                               |              |
|                         |               | 1-1/2   |             |                        | 50B60-1-1/2                | 35926        |                               |              |
|                         |               | 1-15/16 |             |                        | 50B60-1-15/16*             | 35928        |                               |              |
| 72                      | 14.328        | 1       | 3-3/4       | 1-3/4                  | —                          | —            | 50B72                         | 16508        |
| 84                      | 16.715        | 1       | 4-1/4       | 1-3/4                  | —                          | —            | 50B84                         | 16512        |
| 96                      | 19.102        | 1       | 4-1/4       | 1-3/4                  | —                          | —            | 50B96                         | 16514        |
| 112                     | 21.885        | 1       | 4-1/4       | 1-3/4                  | —                          | —            | 50B112                        | 16516        |

## Double Strand

No. 50-2 5/8" Pitch; Steel



### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore   | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              |
|-------------------------|---------------|--------|-------------|------------------------|----------------------------|--------------|
|                         |               |        |             |                        | Catalog<br>Number          | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |        |             |                        |                            |              |
| 15                      | 3.006         | 3/4    | 2-5/16      | 1-3/4                  | D50B15                     | 15970        |
| 16                      | 3.204         |        | 2-1/2       |                        | D50B16                     | 15972        |
| 17                      | 3.401         |        | 2-11/16     |                        | D50B17                     | 15974        |
| 18                      | 3.599         |        | 2-15/16     |                        | D50B18                     | 15976        |
| 20                      | 3/995         | 1      | 3-1/4       | 1-3/4                  | D50B20                     | 15980        |
| 21                      | 4.193         |        | 3-1/2       |                        | D50B21                     | 15982        |
| 22                      | 4.392         | 1      | 3-9/16      | 1-7/8                  | D50B22                     | 15984        |
| 24                      | 4.788         |        | 3-5/8       |                        | D50B24                     | 15988        |
| 25                      | 4.987         |        | 3-5/8       |                        | D50B25                     | 15990        |
| 30                      | 5.979         |        | 3-3/4       |                        | D50B30                     | 68166        |
| 40                      | 7.966         | 1-3/16 | 4           | 2-1/8                  | D50B40                     | 68173        |

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |       |
|------------|-----------|-------|
| Bore       | All       | ±.001 |

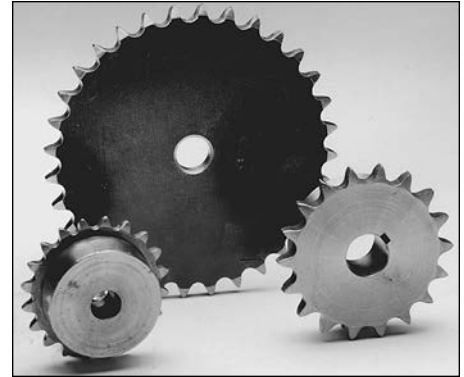
**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .594"**

# Roller Chain Sprockets

## Single Strand No. 60 3/4" Pitch; Steel

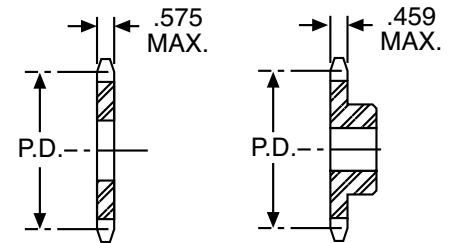
### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth               | Pitch Dia. | Bore  | Catalog Number | Item Code |
|----------------------------|------------|-------|----------------|-----------|
| <b>TYPE A NO HUB STEEL</b> |            |       |                |           |
| 17                         | 4.082      | 3/4   | 60A17          | 56759     |
| 18                         | 4.319      |       | 60A18          | 56760     |
| 19                         | 4.557      |       | 60A19          | 56761     |
| 20                         | 4.794      |       | 60A20          | 56762     |
| 21                         | 5.032      |       | 60A21          | 16320     |
| 22                         | 5.270      |       | 60A22          | 16322     |
| 23                         | 5.508      |       | 60A23          | 16324     |
| 24                         | 5.746      | 23/32 | 60A24          | 16326     |
| 25                         | 5.984      |       | 60A25          | 16328     |
| 26                         | 6.222      |       | 60A26          | 61894     |
| 28                         | 6.699      |       | 60A28          | 46466     |
| 30                         | 7.175      |       | 60A30          | 16330     |
| 32                         | 7.652      |       | 60A32          | 16332     |
| 35                         | 8.367      | 15/16 | 60A35          | 46471     |
| 36                         | 8.605      |       | 60A36          | 16334     |
| 40                         | 9.559      |       | 60A40          | 16336     |
| 45                         | 10.752     |       | 60A45          | 16340     |
| 48                         | 11.467     |       | 60A48          | 16342     |
| 54                         | 12.899     |       | 60A54          | 16344     |
| 60                         | 14.330     | 1-1/4 | 60A60          | 16346     |
| 72                         | 17.194     |       | 60A72          | 16350     |



TYPE A

TYPE B



### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore   | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|--------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |        |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |        |             |                        |                            |              |                               |              |
| 8                       | 1.960         | 5/8    | 1-15/32†    | 1-1/4                  | 60B8-3/4*                  | 49483        | 60B8                          | 15834        |
| 9                       | 2.193         | 3/4    | 1-9/16†     | 1-1/4                  | 60B9-3/4*                  | 15324        | 60B9                          | 15836        |
| 10                      | 2.023         | 3/4    | 1-9/16†     | 1-1/4                  | 60B10-3/4                  | 15326        | 60B10                         | 15838        |
|                         |               | 7/8    |             |                        | 60B10-7/8                  | 36180        |                               |              |
|                         |               | 1      |             |                        | 60B10-1                    | 15328        |                               |              |
|                         |               | 1-1/8  |             |                        | 60B10-1-1/8*               | 36182        |                               |              |
|                         |               | 1-3/16 |             |                        | 60B10-1-3/16*              | 36184        |                               |              |
|                         |               | 1-3/4  |             |                        | 60B10-1-1/4*               | 36162        |                               |              |
| 11                      | 2.662         | 3/4    | 2-1/16†     | 1-1/4                  | 60B11-3/4                  | 15334        | 60B11                         | 15840        |
|                         |               | 7/8    |             |                        | 60B11-7/8                  | 36164        |                               |              |
|                         |               | 1      |             |                        | 60B11-1                    | 15332        |                               |              |
|                         |               | 1-1/8  |             |                        | 60B11-1-1/8*               | 56740        |                               |              |
|                         |               | 1-3/16 |             |                        | 60B11-1-3/16*              | 36494        |                               |              |
|                         |               | 1-3/4  |             |                        | 60B11-1-1/4*               | 15330        |                               |              |
| 12                      | 2.898         | 3/4    | 2-3/8†      | 1-1/4                  | 60B12-3/4                  | 15336        | 60B12                         | 15842        |
|                         |               | 7/8    |             |                        | 60B12-7/8                  | 36616        |                               |              |
|                         |               | 1      |             |                        | 60B12-1                    | 15338        |                               |              |
|                         |               | 1-1/8  |             |                        | 60B12-1-1/8                | 15340        |                               |              |
|                         |               | 1-3/16 |             |                        | 60B12-1-3/16               | 15342        |                               |              |
|                         |               | 1-3/4  |             |                        | 60B12-1-1/4                | 15344        |                               |              |
| 13                      | 3.134         | 1-7/16 | 2-11/32     | 1-1/4                  | 60B12-1-7/16*              | 36618        |                               |              |
|                         |               | 3/4    |             |                        | 60B13-3/4                  | 15346        | 60B13                         | 15844        |
|                         |               | 7/8    |             |                        | 60B13-7/8                  | 36620        |                               |              |
|                         |               | 1      |             |                        | 60B13-1                    | 15348        |                               |              |
|                         |               | 1-1/8  |             |                        | 60B13-1-1/8                | 15350        |                               |              |
|                         |               | 1-3/16 |             |                        | 60B13-1-3/16               | 15352        |                               |              |
| 14                      | 3.370         | 1-1/4  | 2-9/16      | 1-1/4                  | 60B13-1-1/4                | 15354        |                               |              |
|                         |               | 1-3/8  |             |                        | 60B13-1-3/8                | 15356        |                               |              |
|                         |               | 1-7/16 |             |                        | 60B13-1-7/16*              | 15358        |                               |              |
|                         |               | 1-1/2  |             |                        | 60B13-1-1/2*               | 15360        |                               |              |
|                         |               | 3/4    |             |                        | 60B14-3/4                  | 15362        | 60B14                         | 15846        |
|                         |               | 7/8    |             |                        | 60B14-7/8                  | 36144        |                               |              |
| 14                      | 3.370         | 1      | 2-9/16      | 1-1/4                  | 60B14-1                    | 15364        |                               |              |
|                         |               | 1-1/8  |             |                        | 60B14-1-1/8                | 36146        |                               |              |
|                         |               | 1-3/16 |             |                        | 60B14-1-3/16               | 15366        |                               |              |
|                         |               | 1-1/4  |             |                        | 60B14-1-1/4                | 15368        |                               |              |
|                         |               | 1-3/8  |             |                        | 60B14-1-3/8                | 15370        |                               |              |
|                         |               | 1-7/16 |             |                        | 60B14-1-7/16               | 15372        |                               |              |
| 14                      | 3.370         | 1-1/2  | 2-9/16      | 1-1/4                  | 60B14-1-1/2                | 15374        |                               |              |
|                         |               | 1-9/16 |             |                        | 60B14-1-9/16*              | 36148        |                               |              |
|                         |               | 1-5/8  |             |                        | 60B14-1-5/8*               | 36150        |                               |              |
|                         |               | 3/4    |             |                        | 60B14-3/4                  | 15362        | 60B14                         | 15846        |
|                         |               | 7/8    |             |                        | 60B14-7/8                  | 36144        |                               |              |
|                         |               | 1      |             |                        | 60B14-1                    | 15364        |                               |              |
| 14                      | 3.370         | 1-1/8  | 2-9/16      | 1-1/4                  | 60B14-1-1/8                | 36146        |                               |              |
|                         |               | 1-3/16 |             |                        | 60B14-1-3/16               | 15366        |                               |              |
|                         |               | 1-1/4  |             |                        | 60B14-1-1/4                | 15368        |                               |              |
|                         |               | 1-3/8  |             |                        | 60B14-1-3/8                | 15370        |                               |              |
|                         |               | 1-7/16 |             |                        | 60B14-1-7/16               | 15372        |                               |              |
|                         |               | 1-1/2  |             |                        | 60B14-1-1/2                | 15374        |                               |              |
| 14                      | 3.370         | 1-9/16 | 2-9/16      | 1-1/4                  | 60B14-1-9/16*              | 36148        |                               |              |
|                         |               | 1-5/8  |             |                        | 60B14-1-5/8*               | 36150        |                               |              |

**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .703"**

### STANDARD TOLERANCES

| DIMENSION |      | TOLERANCE |               |
|-----------|------|-----------|---------------|
| Type A    | Bore | All       | + .002 - .001 |
| Type B    | Bore | All       | ± .001        |

### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

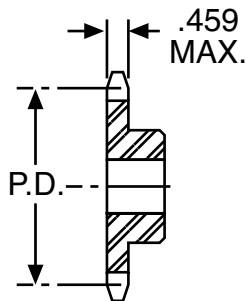
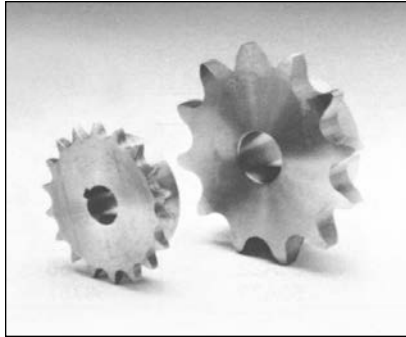
\*All sprockets have standard keyway. All sprockets have 1/4–20 setscrew, 9 to 12 tooth sprockets have 5/16–18 setscrew and 13 and 14 tooth sprockets have 3/8–16 setscrew, located over keyway except at 90° where marked.

†Has recessed groove in hub for chain clearance.

# Roller Chain Sprockets

## Single Strand

No. 60 3/4" Pitch; Steel



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .703"**

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |       |
|------------|-----------|-------|
| Bore       | All       | ±.001 |

## Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway. All sprockets have 3/8–16 setscrew, located over keyway except at 90° where marked.

### ORDER BY CATALOG NUMBER OR ITEM CODE

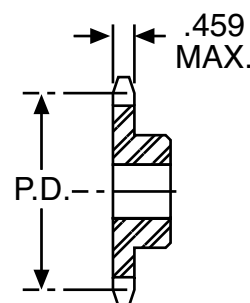
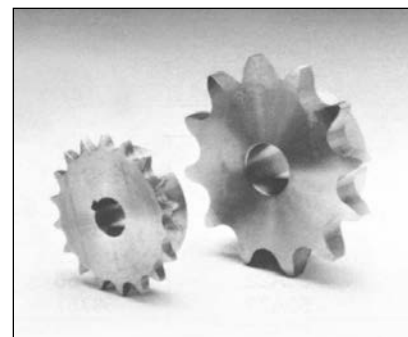
| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore   | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |       |       |
|-------------------------|---------------|--------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|-------|-------|
|                         |               |        |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |       |       |
| TYPE B SINGLE HUB STEEL |               |        |             |                        |                            |              |                               |              |       |       |
| 15                      | 3.607         | 3/4    | 2-7/8       | 1-1/4                  | 60B15-3/4                  | 36152        | 60B15                         | 15848        |       |       |
|                         |               | 7/8    |             |                        | 60B15-7/8                  | 36154        |                               |              |       |       |
|                         |               | 1      |             |                        | 60B15-1                    | 15376        |                               |              |       |       |
|                         |               | 1-1/8  |             |                        | 60B15-1-1/8                | 36156        |                               |              |       |       |
|                         |               | 1-3/16 |             |                        | 60B15-1-3/16               | 15378        |                               |              |       |       |
|                         |               | 1-1/4  |             |                        | 60B15-1-1/4                | 15380        |                               |              |       |       |
|                         |               | 1-3/8  |             |                        | 60B15-1-3/8                | 15382        |                               |              |       |       |
|                         |               | 1-7/16 |             |                        | 60B15-1-7/16               | 15384        |                               |              |       |       |
|                         |               | 1-1/2  |             |                        | 60B15-1-1/2                | 15386        |                               |              |       |       |
|                         |               | 1-9/16 |             |                        | 60B15-1-9/16               | 36158        |                               |              |       |       |
|                         |               | 1-5/8  |             |                        | 60B15-1-5/8                | 15388        |                               |              |       |       |
|                         |               | 1-3/4  |             |                        | 60B15-1-3/4                | 15390        |                               |              |       |       |
|                         |               | 3/4    |             |                        | 60B16-3/4                  | 36160        |                               |              | 60B16 | 15850 |
|                         |               | 7/8    |             |                        | 60B16-7/8                  | 36166        |                               |              |       |       |
| 1                       | 60B16-1       | 15392  |             |                        |                            |              |                               |              |       |       |
| 1-1/8                   | 60B16-1-1/8   | 36168  |             |                        |                            |              |                               |              |       |       |
| 1-3/16                  | 60B16-1-3/16  | 15394  |             |                        |                            |              |                               |              |       |       |
| 1-1/4                   | 60B16-1-1/4   | 15396  |             |                        |                            |              |                               |              |       |       |
| 1-3/8                   | 60B16-1-3/8   | 15398  |             |                        |                            |              |                               |              |       |       |
| 1-7/16                  | 60B16-1-7/16  | 15400  |             |                        |                            |              |                               |              |       |       |
| 1-1/2                   | 60B16-1-1/2   | 15402  |             |                        |                            |              |                               |              |       |       |
| 1-9/16                  | 60B16-1-9/16  | 36170  |             |                        |                            |              |                               |              |       |       |
| 1-5/8                   | 60B16-1-5/8   | 15404  |             |                        |                            |              |                               |              |       |       |
| 1-3/4                   | 60B16-1-3/4   | 36172  |             |                        |                            |              |                               |              |       |       |
| 1-15/16                 | 60B16-1-15/16 | 15406  |             |                        |                            |              |                               |              |       |       |
| 17                      | 4.082         | 3/4    | 3-1/4       | 1-1/4                  | 60B17-3/4                  | 49484        | 60B17                         | 15852        |       |       |
|                         |               | 1      |             |                        | 60B17-1                    | 15408        |                               |              |       |       |
|                         |               | 1-1/8  |             |                        | 60B17-1-1/8                | 21782        |                               |              |       |       |
|                         |               | 1-3/16 |             |                        | 60B17-1-3/16               | 21784        |                               |              |       |       |
|                         |               | 1-1/4  |             |                        | 60B17-1-1/4                | 15410        |                               |              |       |       |
|                         |               | 1-3/8  |             |                        | 60B17-1-3/8                | 21816        |                               |              |       |       |
|                         |               | 1-7/16 |             |                        | 60B17-1-7/16               | 21818        |                               |              |       |       |
|                         |               | 1-1/2  |             |                        | 60B17-1-1/2*               | 15412        |                               |              |       |       |
|                         |               | 1-9/16 |             |                        | 60B17-1-9/16*              | 45666        |                               |              |       |       |
|                         |               | 1-5/8  |             |                        | 60B17-1-5/8*               | 45667        |                               |              |       |       |
|                         |               | 1-3/4  |             |                        | 60B17-1-3/4*               | 15414        |                               |              |       |       |
|                         |               | 3/4    |             |                        | 60B18-3/4                  | 49485        |                               |              | 60B18 | 15854 |
|                         |               | 1      |             |                        | 60B18-1                    | 15416        |                               |              |       |       |
|                         |               | 1-1/8  |             |                        | 60B18-1-1/8                | 21866        |                               |              |       |       |
| 1-3/16                  | 60B18-1-3/16  | 21896  |             |                        |                            |              |                               |              |       |       |
| 1-1/4                   | 60B18-1-1/4   | 15418  |             |                        |                            |              |                               |              |       |       |
| 1-3/8                   | 60B18-1-3/8   | 21906  |             |                        |                            |              |                               |              |       |       |
| 1-7/16                  | 60B18-1-7/16  | 21910  |             |                        |                            |              |                               |              |       |       |
| 1-1/2                   | 60B18-1-1/2   | 15420  |             |                        |                            |              |                               |              |       |       |
| 1-9/16                  | 60B18-1-9/16  | 21920  |             |                        |                            |              |                               |              |       |       |
| 1-5/8                   | 60B18-1-5/8   | 21924  |             |                        |                            |              |                               |              |       |       |
| 1-3/4                   | 60B18-1-3/4   | 15422  |             |                        |                            |              |                               |              |       |       |
| 3/4                     | 60B19-3/4     | 21928  | 60B19       | 15856                  |                            |              |                               |              |       |       |
| 1                       | 60B19-1       | 15424  |             |                        |                            |              |                               |              |       |       |
| 1-1/8                   | 60B19-1-1/8   | 45656  |             |                        |                            |              |                               |              |       |       |
| 1-3/16                  | 60B19-1-3/16  | 46625  |             |                        |                            |              |                               |              |       |       |
| 1-1/4                   | 60B19-1-1/4   | 15426  |             |                        |                            |              |                               |              |       |       |
| 1-3/8                   | 60B19-1-3/8   | 45990  |             |                        |                            |              |                               |              |       |       |
| 1-7/16                  | 60B19-1-7/16  | 45657  |             |                        |                            |              |                               |              |       |       |
| 1-1/2                   | 60B19-1-1/2   | 15428  |             |                        |                            |              |                               |              |       |       |
| 1-9/16                  | 60B19-1-9/16  | 45658  |             |                        |                            |              |                               |              |       |       |
| 1-5/8                   | 60B19-1-5/8   | 45659  |             |                        |                            |              |                               |              |       |       |
| 1-3/4                   | 60B19-1-3/4   | 15430  |             |                        |                            |              |                               |              |       |       |
| 1-15/16                 | 60B19-1-15/16 | 45660  |             |                        |                            |              |                               |              |       |       |

# Roller Chain Sprockets

## Single Strand No. 60 3/4" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore    | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|---------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |         |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |         |             |                        |                            |              |                               |              |
| 20                      | 4.794         | 3/4     | 3-7/8       | 1-1/4                  | 60B20-3/4                  | 46576        | 60B20                         | 15858        |
|                         |               | 1       |             |                        | 60B20-1                    | 17152        |                               |              |
|                         |               | 1-1/8   |             |                        | 60B20-1-1/8                | 46577        |                               |              |
|                         |               | 1-3/16  |             |                        | 60B20-1-3/16               | 45661        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B20-1-1/4                | 15432        |                               |              |
|                         |               | 1-3/8   |             |                        | 60B20-1-3/8                | 46578        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B20-1-7/16               | 45662        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B20-1-1/2                | 15434        |                               |              |
|                         |               | 1-9/16  |             |                        | 60B20-1-9/16               | 45663        |                               |              |
|                         |               | 1-5/8   |             |                        | 60B20-1-5/8                | 45664        |                               |              |
|                         |               | 1-3/4   |             |                        | 60B20-1-3/4                | 15436        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B20-1-15/16              | 46579        |                               |              |
| 21                      | 5.032         | 3/4     | 4           | 1-1/4                  | 60B21-3/4                  | 20034        | 60B21                         | 15860        |
|                         |               | 1       |             |                        | 60B21-1                    | 20040        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B21-1-1/4                | 20132        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B21-1-7/16               | 20142        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B21-1-1/2                | 20846        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B21-1-15/16              | 20858        |                               |              |
| 22                      | 5.270         | 3/4     | 4           | 1-1/4                  | 60B22-3/4                  | 21550        | 60B22                         | 15862        |
|                         |               | 1       |             |                        | 60B22-1                    | 21570        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B22-1-1/4                | 45669        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B22-1-7/16               | 45688        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B22-1-1/2                | 45689        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B22-1-15/16              | 45690        |                               |              |
| 23                      | 5.508         | 3/4     | 4           | 1-1/4                  | 60B23-3/4                  | 45744        | 60B23                         | 15864        |
|                         |               | 1       |             |                        | 60B23-1                    | 45691        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B23-1-1/4                | 45698        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B23-1-7/16               | 45699        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B23-1-1/2                | 45700        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B23-1-15/16              | 45702        |                               |              |
| 24                      | 5.746         | 3/4     | 4           | 1-1/4                  | 60B24-3/4                  | 36020        | 60B24                         | 15866        |
|                         |               | 1       |             |                        | 60B24-1                    | 45703        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B24-1-1/4                | 45704        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B24-1-7/16               | 45705        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B24-1-1/2                | 45706        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B24-1-15/16              | 45707        |                               |              |
| 25                      | 5.984         | 3/4     | 4           | 1-1/4                  | 60B25-3/4                  | 36022        | 60B25                         | 15868        |
|                         |               | 1       |             |                        | 60B25-1                    | 45745        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B25-1-1/4                | 45711        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B25-1-7/16               | 45712        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B25-1-1/2                | 45713        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B25-1-15/16              | 45714        |                               |              |
| 26                      | 6.222         | 3/4     | 4           | 1-1/4                  | 60B26-3/4                  | 36024        | 60B26                         | 45747        |
|                         |               | 1       |             |                        | 60B26-1                    | 45746        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B26-1-1/4                | 45715        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B26-1-7/16               | 45716        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B26-1-1/2                | 45717        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B26-1-15/16              | 45718        |                               |              |
| 28                      | 6.699         | 3/4     | 4           | 1-1/4                  | 60B28-3/4                  | 36030        | 60B28                         | 45720        |
|                         |               | 1       |             |                        | 60B28-1                    | 45721        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B28-1-1/4                | 45722        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B28-1-7/16               | 45734        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B28-1-1/2                | 45735        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B28-1-15/16              | 45736        |                               |              |
| 30                      | 7.175         | 3/4     | 4           | 1-1/4                  | 60B30-3/4                  | 36036        | 60B30                         | 16518        |
|                         |               | 1       |             |                        | 60B30-1                    | 45738        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B30-1-1/4                | 45749        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B30-1-7/16               | 45765        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B30-1-1/2                | 45795        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B30-1-15/16              | 45775        |                               |              |



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .703"**

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|-----------|
| Bore      | All ±.001 |

### Reference Pages

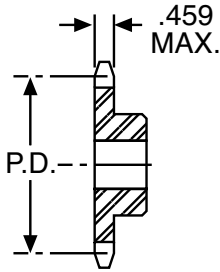
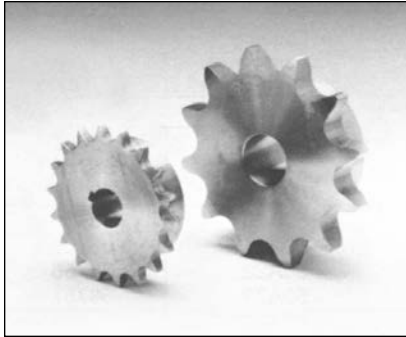
Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway. All sprockets have 3/8–16 setscrew, located over keyway except at 90° where marked.

# Roller Chain Sprockets

## Single Strand

No. 60 3/4" Pitch; Steel



### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

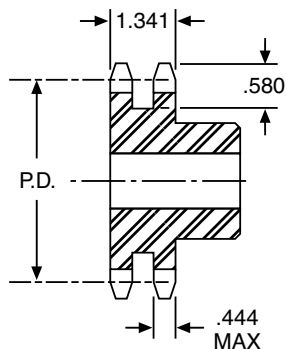
\*All sprockets have standard keyway. All sprockets have 3/8-16 setscrew, located over keyway.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore    | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|---------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |         |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |         |             |                        |                            |              |                               |              |
| 32                      | 7.652         | 3/4     | 4           | 1-1/4                  | 60B32-3/4                  | 49486        | 60B32                         | 16520        |
|                         |               | 1       |             |                        | 60B32-1                    | 49847        |                               |              |
|                         |               | 1-1/4   |             |                        | 60B32-1-1/4                | 49488        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B32-1-7/16               | 49489        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B32-1-1/2                | 49490        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B32-1-15/16              | 49491        |                               |              |
| 35                      | 8.367         | —       | 4           | 1-1/4                  | —                          | —            | —                             | —            |
|                         |               | 1       |             |                        | 60B35-1                    | 45779        | 60B35                         | 45778        |
|                         |               | 1-1/4   |             |                        | 60B35-1-1/4                | 45780        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B35-1-7/16               | 45793        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B35-1-1/2                | 45784        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B35-1-15/16              | 45796        |                               |              |
| 36                      | 8.605         | 1       | 4           | 1-1/4                  | —                          | —            | 60B36                         | 16522        |
| 40                      | 9.559         | 1-3/16  | 4-1/4       | 1-1/4                  | 60B40-1-3/16               | 45843        | 60B40                         | 16524        |
|                         |               | 1-1/4   |             |                        | 60B40-1-1/4                | 45844        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B40-1-7/16               | 45845        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B40-1-1/2                | 45846        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B40-1-15/16              | 45848        |                               |              |
|                         |               | 2-7/16  |             |                        | 60B40-2-7/16               | 45849        |                               |              |
| 45                      | 10.752        | 1-3/16  | 4-1/4       | 1-1/4                  | 60B45-1-3/16               | 61668        | 60B45                         | 16528        |
|                         |               | 1-1/4   |             |                        | 60B45-1-1/4                | 61673        |                               |              |
|                         |               | 1-7/16  |             |                        | 60B45-1-7/16               | 46463        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B45-1-1/2                | 61677        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B45-1-15/16              | 61679        |                               |              |
|                         |               | 2-7/16  |             |                        | 60B45-2-7/16               | 61680        |                               |              |
| 48                      | 11.467        | 1-3/16  | 4-1/4       | 1-1/4                  | —                          | —            | 60B48                         | 16530        |
| 54                      | 12.899        | 1-3/16  | 4-1/4       | 1-3/4                  | —                          | —            | 60B54                         | 16532        |
| 60                      | 14.330        | 1-3/16  | 4-1/4       | 1-3/4                  | —                          | —            | 60B60                         | 16534        |
|                         |               | 1-7/16  |             |                        | 60B60-1-7/16               | 46464        |                               |              |
|                         |               | 1-1/2   |             |                        | 60B60-1-1/2                | 46465        |                               |              |
|                         |               | 1-15/16 |             |                        | 60B60-1-15/16              | 61869        |                               |              |
|                         |               | 2-7/16  |             |                        | 60B60-2-7/16               | 61870        |                               |              |
| 72                      | 17.194        | 1-1/4   | 4-1/4       | 2                      | —                          | —            | 60B72                         | 16538        |

## Double Strand

No. 60 2-3/4" Pitch; Steel



### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore | Hub<br>Dia. | Length<br>thru<br>Bore | Without Keyway<br>& Setscrew* |              |
|-------------------------|---------------|------|-------------|------------------------|-------------------------------|--------------|
|                         |               |      |             |                        | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |      |             |                        |                               |              |
| 15                      | 3.607         | 1    | 2-13/16     | 2-1/8                  | D60B15                        | 15992        |
| 16                      | 3.844         |      | 3           |                        | D60B16                        | 15994        |
| 17                      | 4.082         |      | 3-1/4       |                        | D60B17                        | 15996        |
| 18                      | 4.319         |      | 3-1/2       |                        | D60B18                        | 15998        |
| 19                      | 4.557         |      | 3-11/16     |                        | D60B19                        | 16000        |
| 20                      | 4.794         |      | 3-3/4       |                        | D60B20                        | 16002        |
| 21                      | 5.032         |      | 4-1/8       |                        | D60B21                        | 16004        |
| 25                      | 5.984         |      | 4-1/4       |                        | D60B25                        | 16006        |

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |       |
|------------|-----------|-------|
| Bore       | All       | ±.001 |

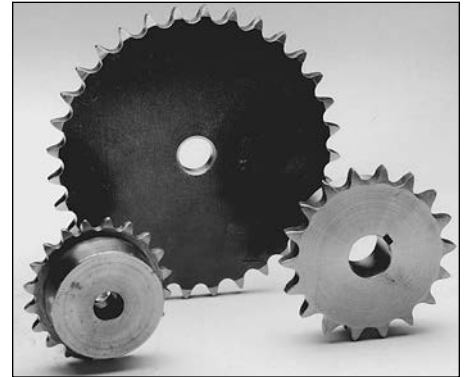
**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .703"**

# Roller Chain Sprockets

## Single Strand No. 80 1" Pitch; Steel

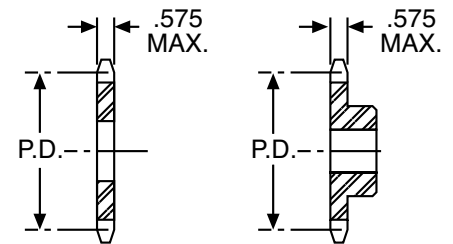
### ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth               | Pitch Dia. | Bore   | Catalog Number | Item Code |
|----------------------------|------------|--------|----------------|-----------|
| <b>TYPE A NO HUB STEEL</b> |            |        |                |           |
| 16                         | 5.126      | 15/16  | 80A16          | 16356     |
| 17                         | 5.442      |        | 80A17          | 16358     |
| 18                         | 5.759      |        | 80A18          | 16360     |
| 19                         | 6.079      |        | 80A19          | 16362     |
| 20                         | 6.392      |        | 80A20          | 16364     |
| 21                         | 6.710      |        | 80A21          | 16366     |
| 22                         | 7.027      |        | 80A22          | 16368     |
| 23                         | 7.344      |        | 80A23          | 16370     |
| 24                         | 7.661      |        | 80A24          | 16372     |
| 25                         | 7.979      |        | 80A25          | 16374     |
| 26                         | 8.296      | 1-3/16 | 80A26          | 16376     |
| 30                         | 9.567      |        | 80A30          | 16378     |
| 36                         | 11.474     |        | 80A36          | 16382     |
| 40                         | 12.745     |        | 80A40          | 16384     |
| 48                         | 15.290     | 1-1/4  | 80A48          | 16388     |
| 50                         | 15.926     |        | 80A54          | 46555     |
| 60                         | 19.107     |        | 80A60          | 16392     |



TYPE A

TYPE B



### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore   | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|---------------|--------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |               |        |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |               |        |             |                        |                            |              |                               |              |
| 8                       | 2.613         | 1      | 1-15/16     | 1-5/8                  | 80B8-1*                    | 46489        | 80B8                          | 15870        |
| 9                       | 2.924         | 1      | 2-1/4†      | 1-5/8                  | 80B9-1*                    | 46490        | 80B9                          | 15872        |
|                         |               | 1-1/8  |             |                        | 80B9-1-1/8*                | 46491        |                               |              |
|                         |               | 1-3/16 |             |                        | 80B9-1-3/16*               | 15438        |                               |              |
|                         |               | 1-1/4  |             |                        | 80B9-1-1/4*                | 46492        |                               |              |
| 10                      | 3.236         | 1      | 2-9/16†     | 1-5/8                  | 80B10-1                    | 15440        | 80B10                         | 15874        |
|                         |               | 1-1/8  |             |                        | 80B10-1-1/8                | 46493        |                               |              |
|                         |               | 1-3/16 |             |                        | 80B10-1-3/16               | 46494        |                               |              |
|                         |               | 1-1/4  |             |                        | 80B10-1-1/4                | 15442        |                               |              |
| 11                      | 3.549         | 1      | 2-13/16†    | 1-5/8                  | 80B11-1                    | 46495        | 80B11                         | 15876        |
|                         |               | 1-1/8  |             |                        | 80B11-1-1/8                | 46496        |                               |              |
|                         |               | 1-3/16 |             |                        | 80B11-1-3/16               | 15444        |                               |              |
|                         |               | 1-1/4  |             |                        | 80B11-1-1/4                | 15446        |                               |              |
|                         |               | 1-3/8  |             |                        | 80B11-1-3/8                | 63651        |                               |              |
|                         |               | 1-7/16 |             |                        | 80B11-1-7/16               | 15448        |                               |              |
|                         |               | 1-1/2  |             |                        | 80B11-1-1/2*               | 15450        |                               |              |
|                         |               | 1-9/16 |             |                        | 80B11-1-9/16*              | 46497        |                               |              |
|                         |               | 1-5/8  |             |                        | 80B11-1-5/8*               | 15452        |                               |              |
|                         |               | 12     |             |                        | 3.864                      | 1            | 3-1/8†                        | 1-5/8        |
| 1-1/8                   | 80B12-1-1/8   |        | 63654       |                        |                            |              |                               |              |
| 1-3/16                  | 80B12-1-3/16  |        | 63655       |                        |                            |              |                               |              |
| 1-1/4                   | 80B12-1-1/4   |        | 15454       |                        |                            |              |                               |              |
| 1-3/8                   | 80B12-1-3/8   |        | 63656       |                        |                            |              |                               |              |
| 1-7/16                  | 80B12-1-7/16  |        | 15456       |                        |                            |              |                               |              |
| 1-1/2                   | 80B12-1-1/2   |        | 15458       |                        |                            |              |                               |              |
| 1-9/16                  | 80B12-1-9/16  |        | 63657       |                        |                            |              |                               |              |
| 1-5/8                   | 80B12-1-5/8   |        | 15460       |                        |                            |              |                               |              |
| 1-3/4                   | 80B12-1-3/4   |        | 15462       |                        |                            |              |                               |              |

**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .875"**

### STANDARD TOLERANCES

| DIMENSION |      | TOLERANCE |              |
|-----------|------|-----------|--------------|
| Type A    | Bore | All       | +.002 - .001 |
| Type B    | Bore | All       | ±.001        |

### Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

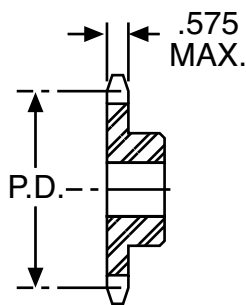
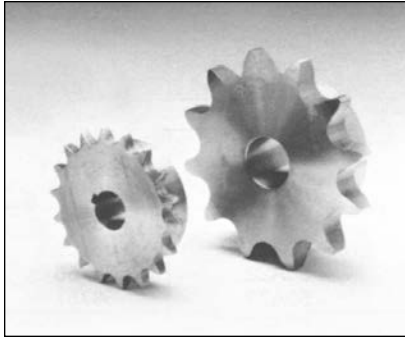
\*All sprockets have standard keyway. All sprockets have 3/8–16 setscrew, located over keyway except at 90° where marked.

†Has recessed groove in hub for chain clearance.

# Roller Chain Sprockets

## Single Strand

No. 80 1" Pitch; Steel



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .875"**

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |       |
|------------|-----------|-------|
| Bore       | All       | ±.001 |

## Reference Pages

Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway. All sprockets have 3/8–16 setscrew, located over keyway.

†Has recessed groove in hub for chain clearance.

### ORDER BY CATALOG NUMBER OR ITEM CODE

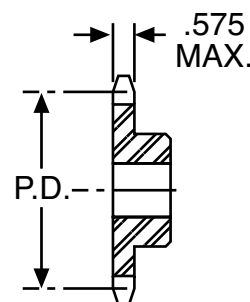
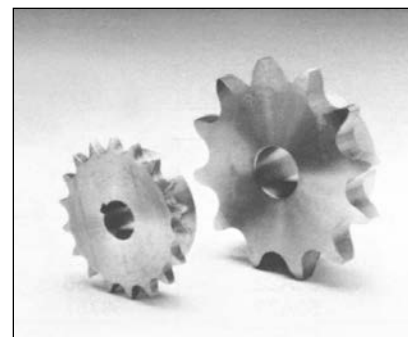
| No.<br>of<br>Teeth      | Pitch<br>Dia. | Bore    | Hub<br>Dia.   | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |             |       |         |       |       |       |
|-------------------------|---------------|---------|---------------|------------------------|----------------------------|--------------|-------------------------------|--------------|-------------|-------|---------|-------|-------|-------|
|                         |               |         |               |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |             |       |         |       |       |       |
| TYPE B SINGLE HUB STEEL |               |         |               |                        |                            |              |                               |              |             |       |         |       |       |       |
| 13                      | 4.179         | 1       | 3             | 1-1/2                  | 80B13-1                    | 63658        | 80B13                         | 15880        |             |       |         |       |       |       |
|                         |               | 1-1/8   |               |                        | 80B13-1-1/8                | 63659        |                               |              |             |       |         |       |       |       |
|                         |               | 1-3/16  |               |                        | 80B13-1-3/16               | 63662        |                               |              |             |       |         |       |       |       |
|                         |               | 1-1/4   |               |                        | 80B13-1-1/4                | 15464        |                               |              |             |       |         |       |       |       |
|                         |               | 1-3/8   |               |                        | 80B13-1-3/8                | 63664        |                               |              |             |       |         |       |       |       |
|                         |               | 1-7/16  |               |                        | 80B13-1-7/16               | 15466        |                               |              |             |       |         |       |       |       |
|                         |               | 1-1/2   |               |                        | 80B13-1-1/2                | 15468        |                               |              |             |       |         |       |       |       |
|                         |               | 1-9/16  |               |                        | 80B13-1-9/16               | 63666        |                               |              |             |       |         |       |       |       |
|                         |               | 1-5/8   |               |                        | 80B13-1-5/8                | 15470        |                               |              |             |       |         |       |       |       |
|                         |               | 1-3/4   |               |                        | 80B13-1-3/4                | 15472        |                               |              |             |       |         |       |       |       |
|                         |               | 1-7/8   |               |                        | 80B13-1-7/8                | 63667        |                               |              |             |       |         |       |       |       |
|                         |               | 1-15/16 |               |                        | 80B13-1-15/16              | 15474        |                               |              |             |       |         |       |       |       |
|                         |               | 2       |               |                        | 80B13-2                    | 15476        |                               |              |             |       |         |       |       |       |
|                         |               | 14      |               |                        | 4.494                      | 1            |                               |              | 3-1/4       | 1-1/2 | 80B14-1 | 63669 | 80B14 | 15882 |
| 1-1/8                   | 80B14-1-1/8   |         | 63670         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-3/16                  | 80B14-1-3/16  |         | 63708         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-1/4                   | 80B14-1-1/4   |         | 15478         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-3/8                   | 80B14-1-3/8   |         | 63709         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-7/16                  | 80B14-1-7/16  |         | 15480         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-1/2                   | 80B14-1-1/2   |         | 15482         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-9/16                  | 80B14-1-9/16  |         | 63710         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-5/8                   | 80B14-1-5/8   |         | 15484         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-3/4                   | 80B14-1-3/4   |         | 15486         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-7/8                   | 80B14-1-7/8   |         | 63711         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 1-15/16                 | 80B14-1-15/16 |         | 15488         |                        |                            |              |                               |              |             |       |         |       |       |       |
| 15                      | 4.810         |         | 1             | 3-13/16                |                            | 1-1/2        | 80B15-1                       | 63712        |             |       | 80B15   | 15884 |       |       |
|                         |               |         | 1-1/8         |                        |                            |              | 80B15-1-1/8                   | 46498        |             |       |         |       |       |       |
|                         |               | 1-3/16  | 80B15-1-3/16  |                        | 46499                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-1/4   | 80B15-1-1/4   |                        | 15492                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-7/16  | 80B15-1-7/16  |                        | 15494                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-1/2   | 80B15-1-1/2   |                        | 15496                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-9/16  | 80B15-1-9/16  |                        | 63725                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-5/8   | 80B15-1-5/8   |                        | 15498                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-3/4   | 80B15-1-3/4   |                        | 15500                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-7/8   | 80B15-1-7/8   |                        | 63726                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-15/16 | 80B15-1-15/16 |                        | 15502                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 2       | 80B15-2       |                        | 15504                      |              |                               |              |             |       |         |       |       |       |
|                         |               | 16      | 5.126         |                        | 1                          |              | 4                             | 1-1/2        | 80B16-1     | 35932 |         |       | 80B16 | 15886 |
|                         |               |         |               |                        | 1-1/4                      |              |                               |              | 80B16-1-1/4 | 63734 |         |       |       |       |
| 1-3/8                   | 80B16-1-3/8   |         |               | 63735                  |                            |              |                               |              |             |       |         |       |       |       |
| 1-7/16                  | 80B16-1-7/16  |         |               | 63736                  |                            |              |                               |              |             |       |         |       |       |       |
| 1-1/2                   | 80B16-1-1/2   |         |               | 63737                  |                            |              |                               |              |             |       |         |       |       |       |
| 1-9/16                  | 80B16-1-9/16  |         |               | 63738                  |                            |              |                               |              |             |       |         |       |       |       |
| 1-5/8                   | 80B16-1-5/8   |         |               | 46500                  |                            |              |                               |              |             |       |         |       |       |       |
| 1-3/4                   | 80B16-1-3/4   |         |               | 46501                  |                            |              |                               |              |             |       |         |       |       |       |
| 1-15/16                 | 80B16-1-15/16 |         |               | 63765                  |                            |              |                               |              |             |       |         |       |       |       |
| 17                      | 5.442         |         |               | 1                      | 4                          | 1-1/2        |                               |              | 80B17-1     | 63775 | 80B17   | 15888 |       |       |
|                         |               | 1-1/4   | 80B17-1-1/4   | 63776                  |                            |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-3/8   | 80B17-1-3/8   | 63777                  |                            |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-7/16  | 80B17-1-7/16  | 46502                  |                            |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-1/2   | 80B17-1-1/2   | 46503                  |                            |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-9/16  | 80B17-1-9/16  | 46504                  |                            |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-5/8   | 80B17-1-5/8   | 46505                  |                            |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-3/4   | 80B17-1-3/4   | 46506                  |                            |              |                               |              |             |       |         |       |       |       |
|                         |               | 1-15/16 | 80B17-1-15/16 | 46507                  |                            |              |                               |              |             |       |         |       |       |       |

# Roller Chain Sprockets

## Single Strand No. 80 1" Pitch; Steel

### ORDER BY CATALOG NUMBER OR ITEM CODE

| No.<br>of<br>Teeth      | Pitch<br>Diameter | Bore    | Hub<br>Dia. | Length<br>thru<br>Bore | With Keyway<br>& Setscrew* |              | Without Keyway<br>or Setscrew |              |
|-------------------------|-------------------|---------|-------------|------------------------|----------------------------|--------------|-------------------------------|--------------|
|                         |                   |         |             |                        | Catalog<br>Number          | Item<br>Code | Catalog<br>Number             | Item<br>Code |
| TYPE B SINGLE HUB STEEL |                   |         |             |                        |                            |              |                               |              |
| 18                      | 5.759             | 1       | 4-1/4       | 1-1/2                  | 80B18-1                    | 46509        | 80B18                         | 15890        |
|                         |                   | 1-1/4   |             |                        | 80B18-1-1/4                | 46510        |                               |              |
|                         |                   | 1-3/8   |             |                        | 80B18-1-3/8                | 46511        |                               |              |
|                         |                   | 1-7/16  |             |                        | 80B18-1-7/16               | 46512        |                               |              |
|                         |                   | 1-1/2   |             |                        | 80B18-1-1/2                | 46513        |                               |              |
|                         |                   | 1-9/16  |             |                        | 80B18-1-9/16               | 63816        |                               |              |
|                         |                   | 1-5/8   |             |                        | 80B18-1-5/8                | 63820        |                               |              |
|                         |                   | 1-3/4   |             |                        | 80B18-1-3/4                | 63903        |                               |              |
|                         |                   | 1-15/16 |             |                        | 80B18-1-15/16              | 46514        |                               |              |
|                         |                   | 2       |             |                        | 80B18-2                    | 63905        |                               |              |
| 19                      | 6.076             | 1       | 4-1/4       | 1-1/2                  | 80B19-1                    | 63911        | 80B19                         | 15892        |
|                         |                   | 1-1/4   |             |                        | 80B19-1-1/4                | 63912        |                               |              |
|                         |                   | 1-7/16  |             |                        | 80B19-1-7/16               | 63935        |                               |              |
|                         |                   | 1-1/2   |             |                        | 80B19-1-1/2                | 63936        |                               |              |
|                         |                   | 1-5/8   |             |                        | 80B19-1-5/8                | 63951        |                               |              |
|                         |                   | 1-3/4   |             |                        | 80B19-1-3/4                | 63953        |                               |              |
|                         |                   | 1-15/16 |             |                        | 80B19-1-15/16              | 63954        |                               |              |
|                         |                   | 2       |             |                        | 80B19-2                    | 63955        |                               |              |
|                         |                   | 2-7/16  |             |                        | 80B19-2-7/16               | 63956        |                               |              |
|                         |                   | 20      |             |                        | 6.076                      | 1            | 4-1/4                         | 1-1/2        |
| 1-1/4                   | 80B20-1-1/4       |         | 63962       |                        |                            |              |                               |              |
| 1-7/16                  | 80B20-1-7/16      |         | 63963       |                        |                            |              |                               |              |
| 1-1/2                   | 80B20-1-1/2       |         | 63964       |                        |                            |              |                               |              |
| 1-5/8                   | 80B20-1-5/8       |         | 63965       |                        |                            |              |                               |              |
| 1-3/4                   | 80B20-1-3/4       |         | 63966       |                        |                            |              |                               |              |
| 1-15/16                 | 80B20-1-15/16     |         | 63967       |                        |                            |              |                               |              |
| 2                       | 80B20-2           |         | 63969       |                        |                            |              |                               |              |
| 2-7/16                  | 80B20-2-7/16      |         | 63970       |                        |                            |              |                               |              |
| 21                      | 6.710             |         | 1           | 4-1/4                  |                            | 1-3/4        |                               |              |
| 22                      | 7.027             | 1       | 4-1/4       | 1-3/4                  | —                          | —            | 80B22                         | 15898        |
| 23                      | 7.344             | 1       | 4-1/4       | 1-3/4                  | —                          | —            | 80B23                         | 16544        |
| 24                      | 7.661             | 1       | 4-1/4       | 1-3/4                  | —                          | —            | 80B24                         | 16546        |
| 25                      | 7.979             | 1       | 4-1/4       | 1-3/4                  | —                          | —            | 80B25                         | 16548        |
| 26                      | 8.296             | 1-1/4   | 4-3/4       | 2                      | —                          | —            | 80B26                         | 16550        |
| 30                      | 9.567             | 1-3/16  | 4-3/4       | 2                      | —                          | —            | 80B30                         | 16552        |
| 36                      | 11.474            | 1-3/16  | 4-3/4       | 2                      | —                          | —            | 80B36                         | 16556        |
| 40                      | 12.745            | 1-3/16  | 4-3/4       | 2                      | —                          | —            | 80B40                         | 16558        |
| 48                      | 15.290            | 1-1/4   | 4-3/4       | 2                      | —                          | —            | 80B48                         | 16562        |
| 60                      | 19.107            | 1-1/4   | 5-1/4       | 2                      | —                          | —            | 80B60                         | 16566        |



**MAXIMUM DIA. OF CHAIN OVER SPROCKET = SPROCKET P.D. + .875"**

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE      |
|-----------|----------------|
| Bore      | All $\pm .001$ |

### Reference Pages

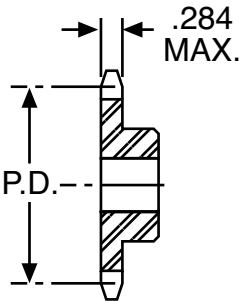
Alterations – 324  
Horsepower Ratings – 268-270  
Lubrication – 267  
Materials – 324  
Selection Procedure – 266  
ANSI Diameters – 325

\*All sprockets have standard keyway. All sprockets have 3/8–16 setscrew, located over keyway.

# Block Chain Sprockets

## Type B Single Hub for 5/16" Wide B504 Block Chain

Block Chain Sprockets\*; Steel and Iron



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

| Teeth     | Pitch<br>Diam. | Bore | Hub      |         | Style | Catalog<br>Number | Item<br>Code |
|-----------|----------------|------|----------|---------|-------|-------------------|--------------|
|           |                |      | Diameter | Project |       |                   |              |
| STEEL     |                |      |          |         |       |                   |              |
| 6         | 1.94           | 5/8  | 1-3/8    | 3/4     | A     | H917              | 14876        |
| 7         | 2.25           | 5/8  | 1-11/16  | 3/4     | A     | H918              | 14878        |
| 8         | 2.57           | 5/8  | 2        | 3/4     | A     | H919              | 14880        |
| CAST IRON |                |      |          |         |       |                   |              |
| 9         | 2.88           | 5/8  | 1-1/2    | 3/4     | A     | H920              | 16594        |
| 10        | 3.20           | 5/8  | 1-1/2    | 5/8     | B     | H921              | 16596        |
| 12        | 3.83           | 5/8  | 1-3/4    | 5/8     | B     | H922              | 16598        |

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |              |
|------------|-----------|--------------|
| Bore       | All       | ±.001 - .000 |

### Reference Pages

Alterations – 324

Materials – 324

\*For Block Chain refer to Page 253.

# Ladder Chain Sprockets

## Type B Single Hub

Nos. 1A and 1; Bronze and Steel (All Sprockets Equipped with Standard Setscrews, Except CBA 8)

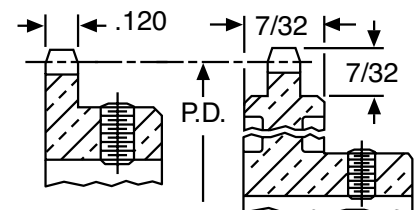
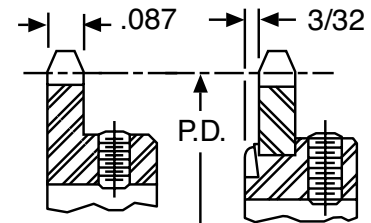
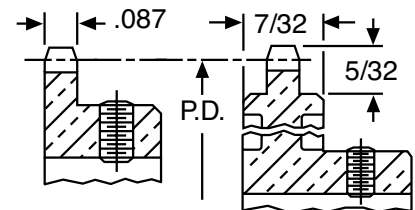
ORDER BY CATALOG NUMBER OR ITEM CODE

| Teeth            | Pitch<br>Diam. | Bore | Hub      |         | Style | Catalog<br>Number | Item<br>Code |
|------------------|----------------|------|----------|---------|-------|-------------------|--------------|
|                  |                |      | Diameter | Project |       |                   |              |
| No. 1A           |                |      |          |         |       |                   |              |
| BRONZE SPROCKETS |                |      |          |         |       |                   |              |
| 8                | .48            | 1/8  | 5/16†    | 7/32    | Plain | CBA8              | 16856        |
| 10               | .60            | 1/8  | 3/8      | 7/32    | Plain | CBA10             | 16858        |
| 12               | .71            | 3/16 | 7/16     | 7/32    | Plain | CBA12             | 16860        |
| 15               | .88            | 3/16 | 7/16     | 7/32    | Plain | CBA15B            | 16862        |
| 18               | 1.06           | 3/16 | 1/2      | 1/4     | Plain | CBA18B            | 16864        |
| 20               | 1.18           | 3/16 | 5/8      | 1/4     | Plain | CBA20B            | 16866        |
| 24               | 1.41           | 3/16 | 3/4      | 1/4     | Plain | CBA24B            | 16868        |
| 32               | 1.88           | 1/4  | 5/8      | 5/16    | Plain | CBA32             | 16870        |
| 36               | 2.12           | 5/16 | 3/4      | 3/8     | Plain | CBA36             | 16872        |
| STEEL SPROCKETS  |                |      |          |         |       |                   |              |
| 7                | .42            | 3/16 | 3/8†     | 1/2     | Plain | CA7               | 14780        |
| 8                | .48            | 3/16 | 7/16†    | 1/2     | Plain | CA8               | 14782        |
| 9                | .54            | 1/4  | 1/2†     | 1/2     | Plain | CA9               | 14784        |
| 10               | .60            | 1/4  | 9/16†    | 1/2     | Plain | CA10              | 14786        |
| 12               | .71            | 1/4  | 11/16†   | 1/2     | Plain | CA12              | 14788        |
| 14               | .83            | 1/4  | 3/4†     | 1/2     | Plain | CA14              | 14790        |
| 16               | .95            | 5/16 | 7/8†     | 1/2     | Plain | CA16              | 14792        |
| 20               | 1.18           | 5/16 | 7/8      | 13/32   | Plain | CA20              | 14794        |
| 24               | 1.41           | 5/16 | 7/8      | 13/32   | Plain | CA24              | 14796        |
| 34               | 2.00           | 3/8  | 1-1/4    | 1/2     | Plain | CA34              | 14798        |
| 42               | 2.47           | 3/8  | 1-1/4    | 1/2     | Plain | CA42              | 14800        |
| No. 1            |                |      |          |         |       |                   |              |
| BRONZE SPROCKETS |                |      |          |         |       |                   |              |
| 6                | .57            | 3/16 | 11/32†   | 1/4     | Plain | CB1 6             | 16878        |
| 8                | .75            | 3/16 | 1/2      | 1/4     | Plain | CB1 8             | 16880        |
| 10               | .93            | 3/16 | 1/2      | 1/4     | Plain | CB1 10            | 16882        |
| 11               | 1.01           | 3/16 | 1/2      | 1/4     | Plain | CB1 11            | 16884        |
| 12               | 1.10           | 3/16 | 1/2      | 1/4     | Plain | CB1 12            | 16886        |
| 14               | 1.28           | 1/4  | 5/8      | 5/16    | Plain | CB1 14            | 16890        |
| 24               | 2.19           | 5/16 | 3/4      | 3/8     | Plain | CB1 24            | 16900        |
| 32               | 2.92           | 5/16 | 3/4      | 3/8     | Plain | CB1 32            | 16904        |

†Has Recessed Groove in Hub for Chain Clearance

### STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|-----------|
| Bore      | All ±.001 |



H

# Ladder Chain Sprockets

## Type B Single Hub

Nos. 1-2 and 2-1/2; Bronze and Steel (*All Sprockets Have Standard Setscrews*)



ALL DIMENSIONS IN INCHES  
ORDER BY CATALOG NUMBER OR ITEM CODE

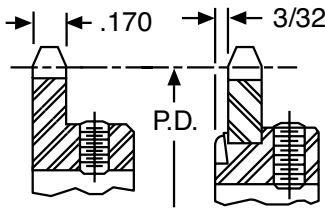
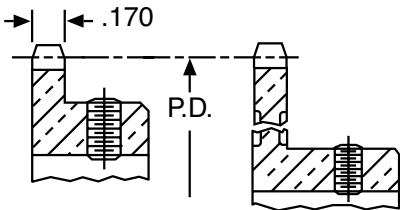
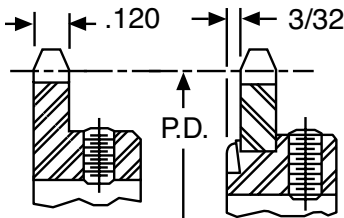
| Teeth            | Pitch<br>Diam. | Bore | Hub      |         | Style | Catalog<br>Number | Item<br>Code |
|------------------|----------------|------|----------|---------|-------|-------------------|--------------|
|                  |                |      | Diameter | Project |       |                   |              |
| No. 1            |                |      |          |         |       |                   |              |
| STEEL SPROCKETS  |                |      |          |         |       |                   |              |
| 6                | .57            | 1/4  | 1/2**    | 1/2     | Plain | C1 6              | 14810        |
| 7                | .66            | 1/4  | 9/16**   | 1/2     | Plain | C1 7              | 14812        |
| 8                | .75            | 5/16 | 11/16**  | 1/2     | Plain | C1 8              | 14814        |
| 10               | .93            | 5/16 | 7/8**    | 1/2     | Plain | C1 10             | 14818        |
| 12               | 1.10           | 5/16 | 7/8      | 1/2     | Plain | C1 12             | 14820        |
| 14               | 1.28           | 5/16 | 7/8      | 1/2     | Plain | C1 14             | 14822        |
| 16               | 1.46           | 5/16 | 7/8      | 1/2     | Plain | C1 16             | 14824        |
| 20               | 1.83           | 1/2  | 1-3/8    | 1/2     | Plain | C1 20             | 14826        |
| 26               | 2.37           | 1/2  | 1-3/8    | 1/2     | Plain | C1 26             | 14828        |
| 32               | 2.92           | 1/2  | 1-3/8    | 1/2     | Plain | C1 32             | 14830        |
| Nos. 2 and 2-1/2 |                |      |          |         |       |                   |              |
| BRONZE SPROCKETS |                |      |          |         |       |                   |              |
| 10               | 1.14           | 3/16 | 9/16     | 5/16    | Web   | CB3 10            | 16920        |
| 12               | 1.36           | 1/4  | 5/8      | 5/16    | Web   | CB3 12            | 16922        |
| 16               | 1.81           | 1/4  | 5/8      | 5/16    | Web   | CB3 16            | 16924        |
| 20               | 2.26           | 5/16 | 3/4      | 3/8     | Web   | CB3 20            | 16926        |
| 22               | 2.48           | 5/16 | 3/4      | 3/8     | Web   | CB3 22            | 16928        |
| 24               | 2.70           | 5/16 | 3/4      | 3/8     | Web   | CB3 24            | 16930        |
| 45               | 5.06           | 3/8  | 7/8      | 7/16    | Spoke | CB3 45            | 16936        |
| STEEL SPROCKETS  |                |      |          |         |       |                   |              |
| 8                | .92            | 3/8  | 13/16†   | 11/16   | Plain | C3 8              | 14842        |
| 9                | 1.03           | 3/8  | 15/16†   | 11/16   | Plain | C3 9              | 14844        |
| 10               | 1.14           | 3/8  | 1-1/32†  | 11/16   | Plain | C3 10             | 14846        |
| 12               | 1.36           | 1/2  | 1-1/4†   | 11/16   | Plain | C3 12             | 14850        |
| 14               | 1.59           | 1/2  | 1-1/4    | 11/16   | Plain | C3 14             | 14852        |
| 16               | 1.81           | 1/2  | 1-15/32  | 11/16   | Plain | C3 16             | 14854        |
| 20               | 2.26           | 1/2  | 1-1/2    | 11/16   | Plain | C3 20             | 14856        |
| 30               | 3.38           | 1/2  | 1-5/8    | 11/16   | Plain | C3 30             | 14860        |

\*\*Blind hole—3/4" deep from Hub End.

†Has Recessed Groove in Hub for Chain Clearance

### STANDARD TOLERANCES

| DIMENSIONS | TOLERANCE |       |
|------------|-----------|-------|
| Bore       | All       | ±.001 |



# Roller Chain Drive Tensioners

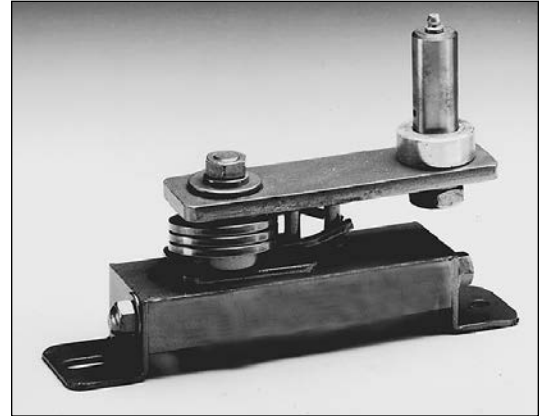
## Screw Adjustable/Spring Adjustable/Shaft Mounted Non-Adjustable (Drive Positioners)

Boston Gear chain drive tensioners improve drive performance by eliminating whipping and slipping of loose chains. They reduce vibration, noise and maintenance and provide additional life to drive components. They are also suitable for flat-face and V-Belt drive systems and are provided with a grease fitting for lubricating idler bearings other than Bost-Bronz.

All tensioners are constructed of structural steel and are available for use with Roller Chains up to 1-1/2" Pitch. No. 120.

### Installation Instructions

- Idlers should be located on the slack side of the drive chain.
- Chain idlers should be run on the outside of the chain.
- Idler sprockets should have at least three teeth engaged with the chain.
- Idlers, when used on the outside of the drive, should be located approximately 1/3 of the center distance from the large sprocket.
- Idlers, when used on the inside of the drive, should be located approximately 1/3 of the center distance from the large sprocket.
- Tensioning that is too tight causes excessive wear on the chain and bearings.
- Tensioning that is too loose allows chain vibration, causing loss of horsepower or wear.

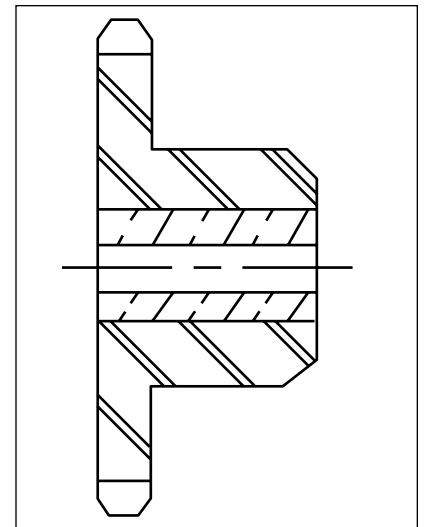


### Idler Sprockets

#### ORDER BY CATALOG NUMBER OR ITEM CODE

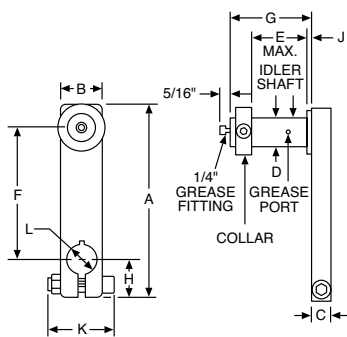
| For Use with Chain No. | Hole Diameter | No. of Teeth | Catalog Number | Item Code |
|------------------------|---------------|--------------|----------------|-----------|
| 35                     | 1/2           | 12           | 35B12TI-8      | 48901     |
|                        |               | 15           | 35B15TI-8      | 48902     |
|                        |               | 18           | 35B18TI-8      | 48903     |
| 40                     | 1/2           | 9            | 40B9TI-8       | 48904     |
|                        |               | 12           | 40B12TI-8      | 48905     |
|                        |               | 15           | 40B15TI-8      | 48906     |
|                        | 7/8           | 12           | 40B12TI-14     | 48910     |
|                        |               | 15           | 40B15TI-14     | 48911     |
|                        |               | 18           | 40B18TI-14     | 48912     |
| 41                     | 1/2           | 9            | 41B9TI-8       | 48907     |
|                        |               | 12           | 41B12TI-8      | 48908     |
|                        |               | 15           | 41B15TI-8      | 48909     |
|                        | 7/8           | 15           | 41B15TI-14     | 48913     |
|                        |               | 18           | 41B18TI-14     | 48914     |
|                        |               | 18           | 41B18TI-14     | 48914     |
| 50                     | 7/8           | 12           | 50B12TI-14     | 48915     |
|                        |               | 15           | 50B15TI-14     | 48916     |
|                        |               | 18           | 50B18TI-14     | 48917     |
| 60                     | 7/8           | 12           | 60B12TI-14     | 48918     |
|                        |               | 15           | 60B15TI-14     | 48919     |
|                        |               | 18           | 60B18TI-14     | 48920     |
|                        | 1-1/8         | 12           | 60B12TI-18     | 48921     |
|                        |               | 15           | 60B15TI-18     | 48922     |
|                        |               | 18           | 60B18TI-18     | 48923     |
| 80                     | 1-1/8         | 12           | 80B12TI-18     | 48924     |
|                        |               | 15           | 80B15TI-18     | 48925     |
|                        |               | 18           | 80B18TI-18     | 48926     |

Boston stocks a wide range of idler sprockets for use with its chain drive tensioners and positioners. In addition special sizes and configurations can be furnished to order. All idlers are equipped with Bost-Bronz, oil impregnated bushings. Grease lubrication is not recommended. Use normal relubrication procedure for oil-impregnated bearings.



# Roller Chain Drive Tensioners

## Type LG Shaft Mounted



This shaft-mounted tensioner is best suited for applications where it is impractical to bolt the tensioner on a frame. This tensioner can be mounted at any point on a shaft and is adjustable to any location in a 360° arc on the shaft.

### ORDER BY CATALOG NUMBER OR ITEM CODE

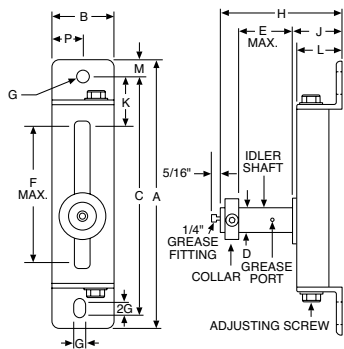
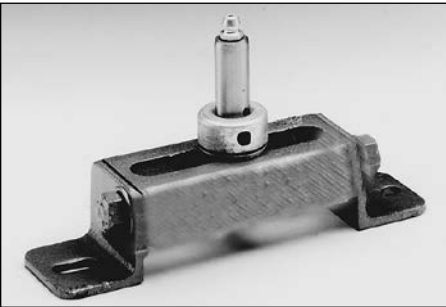
| Suggested Chain Number* | Catalog Number | Item Code |
|-------------------------|----------------|-----------|
| 35, 40, 41              | 0-LG           | 48888     |
| 40, 50, 60              | 1-LG           | 48889     |
| 80, 100, 120            | 2-LG           | 48890     |

\*Single-strand chain. For multiple strand chain, use larger tensioner.

### ALL DIMENSIONS IN INCHES

| Size | A | B     | C     | D     | E     | F     | G       | H      | J    | K     | L     |
|------|---|-------|-------|-------|-------|-------|---------|--------|------|-------|-------|
| 0-LG | 4 | 7/8   | 3/4   | .500  | 1     | 2-1/2 | 1-9/16  | 7/8    | 1/16 | 1-5/8 | .500  |
| 1-LG | 6 | 1-1/4 | 1     | .875  | 1-3/4 | 4     | 2-15/32 | 1-3/16 | 3/32 | 2-1/8 | .875  |
| 2-LG | 8 | 1-1/2 | 1-1/4 | 1.125 | 2-7/8 | 5-1/2 | 3-21/32 | 1-3/8  | 1/8  | 2-3/4 | 1.125 |

## Type BG Screw Adjustable



These Boston Gear tensioners use a screw for precise, easily adjustable tension, to provide maximum life for the sprocket and chain. These tensioners are useful on vertical drives to prevent lower sprocket disengagement and on heavy chains where slack is normally taken up by hand, while making the adjustment. With these tensioners chain take-up and tension are both controlled with the screw.

Many drive systems are enclosed for safety reasons. With conventional tensioners, the enclosure must be removed for drive adjustment. With Boston tensioners adjustments can be made to the head of the screw, substantially reducing cost maintenance and drive down time. The screw is adjustable from either end of the tensioner.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Suggested Chain Number* | Catalog Number | Item Code |
|-------------------------|----------------|-----------|
| 35, 40, 41              | 0-BG           | 48878     |
| 40, 50, 60              | 1-BG           | 48879     |
| 80, 100, 120            | 2-BG           | 48880     |

\*Single-strand chain. For multiple strand chain, use larger tensioner.

### ALL DIMENSIONS IN INCHES

| Size | A     | B     | C      | D     | E     | F     | G     | 2G  | H       | J      | K     | L     | M   | P     | Wgt.      |
|------|-------|-------|--------|-------|-------|-------|-------|-----|---------|--------|-------|-------|-----|-------|-----------|
| 0-BG | 5-7/8 | 1-1/2 | 5-1/4  | .500  | 1     | 2-1/2 | 9/32  | 3/8 | 2-13/16 | 1-5/16 | 1-3/8 | 1-1/4 | 3/8 | 3/4   | 1 LB.     |
| 1-BG | 9     | 2     | 8-1/8  | .875  | 1-3/4 | 4-1/2 | 11/32 | 1/2 | 4       | 1-5/8  | 1-3/4 | 1-1/2 | 1/2 | 1     | 2-1/2 LB. |
| 2-BG | 13    | 3     | 11-7/8 | 1.125 | 2-7/8 | 6     | 9/16  | 3/4 | 5-11/16 | 2-5/32 | 2-7/8 | 2     | 5/8 | 1-1/2 | 6 LB.     |

# Roller Chain Drive Tensioners

## Type BG Spring Adjustable

The Boston Gear Series 50 Tensioner is a screw-adjustable tensioner with a spring-loaded pivot arm. The arm maintains tension on the chain and automatically takes up the slack due to cycle loading or wear. It offers all the advantages of the screw adjustable tensioner plus the automatic take-up feature, which substantially reduces maintenance. The double-coil spring is loaded by turning the adjustment screw in the base of the unit, forcing the idler arm against the slack side of the chain.

The Series 60 Tensioner has a spring-loaded pivot arm but does not have the screw-type adjustment. It is used in lighter applications (#35-#60 chain) when automatic take-up is desired. Since the pivot arm must be adjusted by hand, the mounting location of the tensioner is important.

On both the Series 50 and 60 Tensioners, the pivot arm swings 90° from the center line in either direction, however, it must be positioned to swing in the direction of chain travel.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Suggested Chain Number* | Available Load at Idler Shaft @90° | Catalog Number | Item Code |
|-------------------------|------------------------------------|----------------|-----------|
| 40, 50, 60              | 63 Lbs.                            | 51-BG          | 48883     |
| 80, 100, 120            | 105 Lbs.                           | 52-BG          | 48884     |
| 35, 40, 41              | 32.2 Lbs.                          | 60-BG          | 48886     |
| 50, 60                  | 33.3 Lbs.                          | 61-BG          | 48887     |

\*Single-strand chain. For multiple strand chain, use large tensioner.

Available load at idler shaft is the maximum amount of force on the chain developed by the spring loaded arm when deflected 90° to either side of the neutral position.

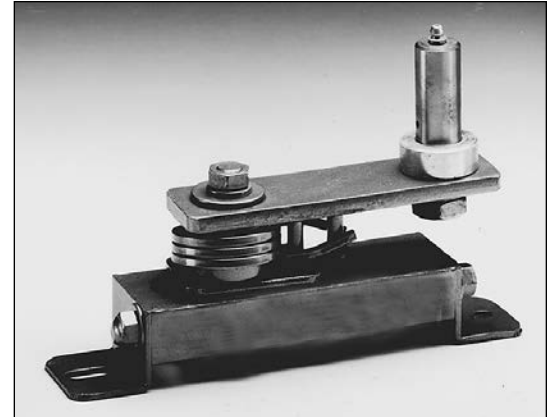
The basic spring preload is 20% of the total capability. The load curve is a straight line proportion of load to angle of deflection. Upon request, lighter springs can be supplied for all units. Heavier springs (to 150% of above capacity) can be furnished for all units except #60BG and #61BG.

Depending on application, please allow a service factor for spring capacity.

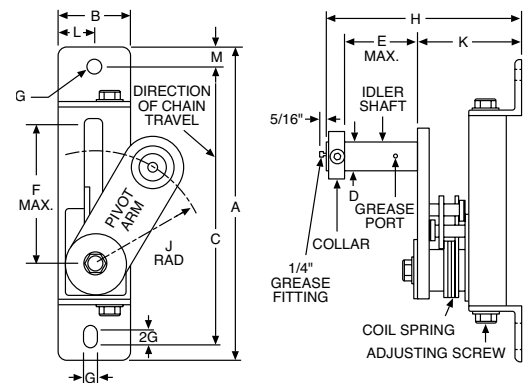
Springs are shot-peened for longer life.

### ALL DIMENSIONS IN INCHES

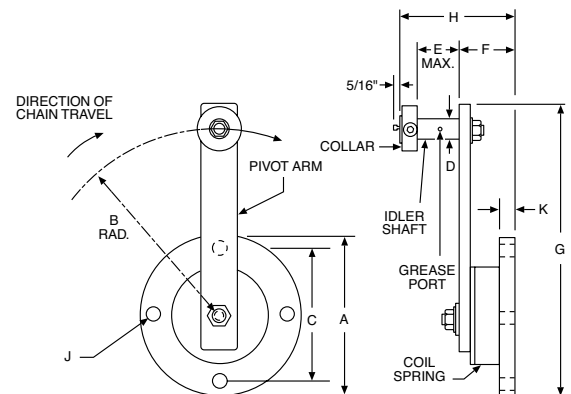
| Size | A  | B | C      | D     | E     | F     | G     | 2G  | H       | J     | K     | L     | M   | Wgt.   |
|------|----|---|--------|-------|-------|-------|-------|-----|---------|-------|-------|-------|-----|--------|
| 51BG | 9  | 2 | 8-1/8  | .875  | 1-3/4 | 2-1/2 | 11/32 | 1/2 | 5-3/8   | 4-1/4 | 3     | 1     | 1/2 | 5 Lb.  |
| 52BG | 13 | 3 | 11-7/8 | 1.125 | 2-7/8 | 4     | 9/16  | 3/4 | 7-13/16 | 4-3/4 | 3-7/8 | 1-1/2 | 5/8 | 10 Lb. |



### Series 50 dimensions



### Series 60 Dimensions



### ALL DIMENSIONS IN INCHES

| Size | A     | B     | C     | D    | E     | F     | G     | 2G | H     | J     | K    | L | M | Wgt.  |
|------|-------|-------|-------|------|-------|-------|-------|----|-------|-------|------|---|---|-------|
| 60BG | 4     | 4-3/4 | 3-3/8 | .500 | 1     | 1-3/8 | 7-3/8 | —  | 2-7/8 | 9/32  | 1/4  | — | — | 2 Lb. |
| 61BG | 5-1/2 | 6     | 4-3/4 | .875 | 1-3/4 | 1-7/8 | 9-1/2 | —  | 4-1/4 | 13/32 | 5/16 | — | — | 5 Lb. |

# Roller Chain Drive Tensioners

## Type HG Drive Positioners

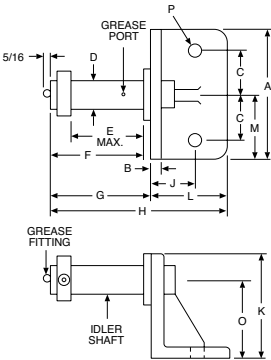


The Type HG is an angle-mounted positioner which can be mounted on any flat horizontal surface. Its variety of sizes provides advantages not enjoyed from competitive brands.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Suggested Chain Number* | Catalog Number | Item Code |
|-------------------------|----------------|-----------|
| 35, 40, 41              | 0-HG           | 48897     |
| 40, 50, 60              | 1-HG           | 48898     |
| 80, 100, 120            | 2-HG           | 48899     |

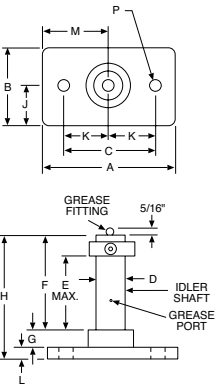
\*Single-strand chain. For multiple strand chain, use larger tensioner.



### ALL DIMENSIONS IN INCHES

| Size | A     | B    | C     | D     | E     | F       | G       | H       | J     | K | L     | M      | O      | P     |
|------|-------|------|-------|-------|-------|---------|---------|---------|-------|---|-------|--------|--------|-------|
| 0-HG | 2-3/4 | 1/4  | 1     | 1/2   | 1     | 1-1/2   | 1-9/16  | 3-1/16  | 7/8   | 2 | 1-1/2 | 1--3/8 | 1-1/2  | 11/32 |
| 1-HG | 4     | 5/16 | 1-1/2 | 7/8   | 1-3/4 | 2-3/8   | 2-15/32 | 4-15/32 | 1-1/8 | 3 | 2     | 2      | 2-1/16 | 13/32 |
| 2-HG | 5     | 7/16 | 1-3/4 | 1-1/8 | 2-7/8 | 3-17/32 | 3-5/8   | 6-21/32 | 1-3/4 | 4 | 3     | 2-1/2  | 3      | 9/16  |

## Type UG Drive Positioners



The Type UG drive positioner is a fixed idler bracket which provides chain support. Available in a variety of sizes. Type UG positioners can be mounted on any flat, vertical surface.

### ORDER BY CATALOG NUMBER OR ITEM CODE

| Suggested Chain Number* | Catalog Number | Item Code |
|-------------------------|----------------|-----------|
| 35, 40, 41              | 0-UG           | 48893     |
| 40, 50, 60              | 1-UG           | 48894     |
| 80, 100, 120            | 2-UG           | 48895     |

\*Single-strand chain. For multiple strand chain, use larger tensioner.

### ALL DIMENSIONS IN INCHES

| Size | A     | B     | C     | D     | E     | F       | G    | H       | J     | K     | L    | M     | P     |
|------|-------|-------|-------|-------|-------|---------|------|---------|-------|-------|------|-------|-------|
| 0-UG | 2-3/4 | 1-1/2 | 2     | 1/2   | 1     | 1-1/2   | 7/16 | 2-3/16  | 3/4   | 1     | 1/4  | 1-3/8 | 11/32 |
| 1-UG | 4     | 2     | 3     | 7/8   | 1-3/4 | 2-3/8   | 9/16 | 3-1/4   | 1     | 1-1/2 | 5/16 | 2     | 13/32 |
| 2-UG | 5     | 3     | 3-1/2 | 1-1/8 | 2-7/8 | 3-17/32 | 3/4  | 4-25/32 | 1-1/2 | 1-3/4 | 1/2  | 2-1/2 | 9/16  |

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## Spur Gears

### Gear Nomenclature

**ADDENDUM** (a) is the height by which a tooth projects beyond the pitch circle or pitch line.

**BASE DIAMETER** ( $D_b$ ) is the diameter of the base cylinder from which the involute portion of a tooth profile is generated.

**BACKLASH** (B) is the amount by which the width of a tooth space exceeds the thickness of the engaging tooth on the pitch circles. As actually indicated by measuring devices, backlash may be determined variously in the transverse, normal, or axial-planes, and either in the direction of the pitch circles or on the line of action. Such measurements should be corrected to corresponding values on transverse pitch circles for general comparisons.

**BORE LENGTH** is the total length through a gear, sprocket, or coupling bore.

**CIRCULAR PITCH** (p) is the distance along the pitch circle or pitch line between corresponding profiles of adjacent teeth.

**CIRCULAR THICKNESS** (t) is the length of arc between the two sides of a gear tooth on the pitch circle, unless otherwise specified.

**CLEARANCE-OPERATING** (c) is the amount by which the dedendum in a given gear exceeds the addendum of its mating gear.

**CONTACT RATIO** ( $m_c$ ) in general, the number of angular pitches through which a tooth surface rotates from the beginning to the end of contact.

**DEDENDUM** (b) is the depth of a tooth space below the pitch line. It is normally greater than the addendum of the mating gear to provide clearance.

**DIAMETRAL PITCH** (P) is the ratio of the number of teeth to the pitch diameter.

**FACE WIDTH** (F) is the length of the teeth in an axial plane.

**FILLET RADIUS** ( $r_f$ ) is the radius of the fillet curve at the base of the gear tooth.

**FULL DEPTH TEETH** are those in which the working depth equals 2.000 divided by the normal diametral pitch.

**GEAR** is a machine part with gear teeth. When two gears run together, the one with the larger number of teeth is called the gear.

**HUB DIAMETER** is outside diameter of a gear, sprocket or coupling hub.

**HUB PROJECTION** is the distance the hub extends beyond the gear face.

**INVOLUTE TEETH** of spur gears, helical gears and worms are those in which the active portion of the profile in the transverse plane is the involute of a circle.

**LONG- AND SHORT-ADDENDUM TEETH** are those of engaging gears (on a standard designed center distance) one of which has a long addendum and the other has a short addendum.

**KEYWAY** is the machined groove running the length of the bore. A similar groove is machined in the shaft and a key fits into this opening.

**NORMAL DIAMETRAL PITCH** ( $P_n$ ) is the value of the diametral pitch as calculated in the normal plane of a helical gear or worm.

**NORMAL PLANE** is the plane normal to the tooth surface at a pitch point and perpendicular to the pitch plane. For a helical gear this plane can be normal to one tooth at a point laying in the plane surface. At such point, the normal plane contains the line normal to the tooth surface and this is normal to the pitch circle.

**NORMAL PRESSURE ANGLE** ( $\phi_n$ ) in a normal plane of helical tooth.

**OUTSIDE DIAMETER** ( $D_o$ ) is the diameter of the addendum (outside) circle.

## Spur Gears

### Gear Nomenclature (Continued)

**PITCH CIRCLE** is the circle derived from a number of teeth and a specified diametral or circular pitch. Circle on which spacing or tooth profiles is established and from which the tooth proportions are constructed.

**PITCH CYLINDER** is the cylinder of diameter equal to the pitch circle.

**PINION** is a machine part with gear teeth. When two gears run together, the one with the smaller number of teeth is called the pinion.

**PITCH DIAMETER (D)** is the diameter of the pitch circle. In parallel shaft gears, the pitch diameters can be determined directly from the center distance and the number of teeth.

**PRESSURE ANGLE ( $\phi$ )** is the angle at a pitch point between the line of pressure which is normal to the tooth surface, and the plane tangent to the pitch surface. In involute teeth, pressure angle is often described also as the angle between the line of action and the line tangent to the pitch circle. Standard pressure angles are established in connection with standard gear-tooth proportions.

**ROOT DIAMETER (D<sub>r</sub>)** is the diameter at the base of the tooth space.

**PRESSURE ANGLE—OPERATING ( $\phi$ )** is determined by the center distance at which the gears operate. It is the pressure angle at the operating pitch diameter.

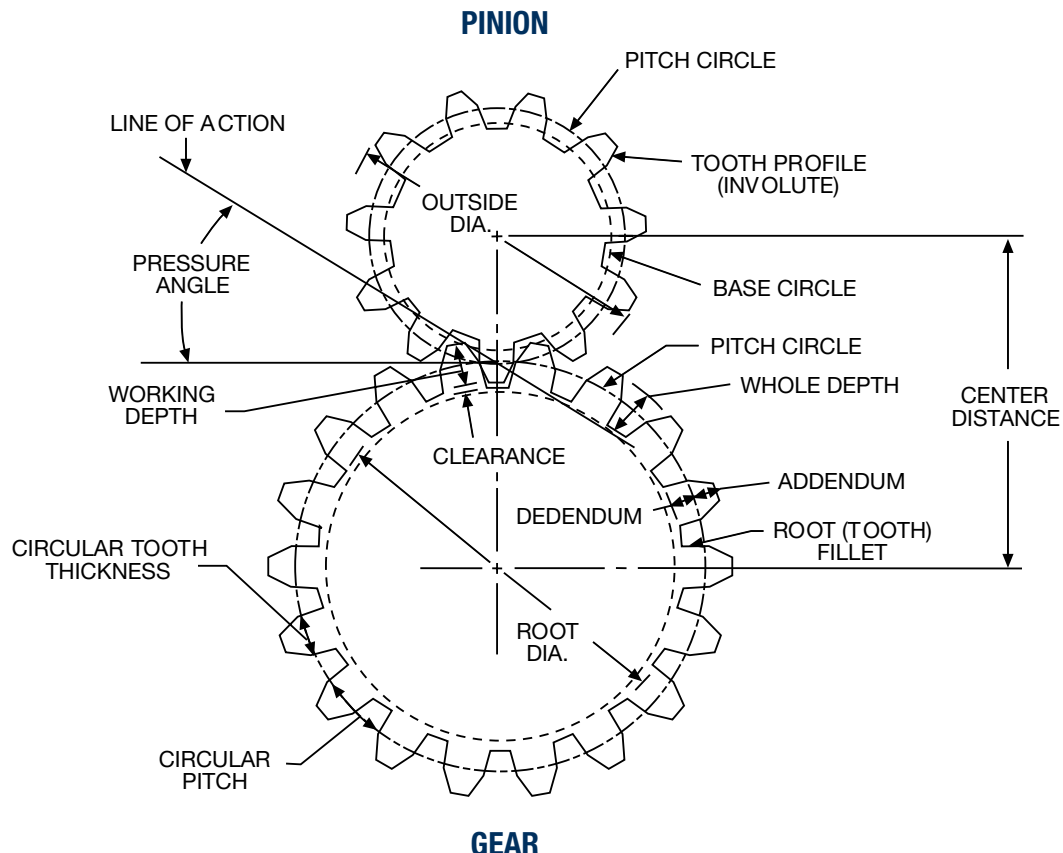
**TIP RELIEF** is an arbitrary modification of a tooth profile whereby a small amount of material is removed near the tip of the gear tooth.

**UNDERCUT** is a condition in generated gear teeth when any part of the fillet curve lies inside a line drawn tangent to the working profile at its point of juncture with the fillet.

**WHOLE DEPTH ( $h_t$ )** is the total depth of a tooth space, equal to addendum plus dedendum, equal to the working depth plus variance.

**WORKING DEPTH ( $h_k$ )** is the depth of engagement of two gears; that is, the sum of their addendums.

### Tooth Parts



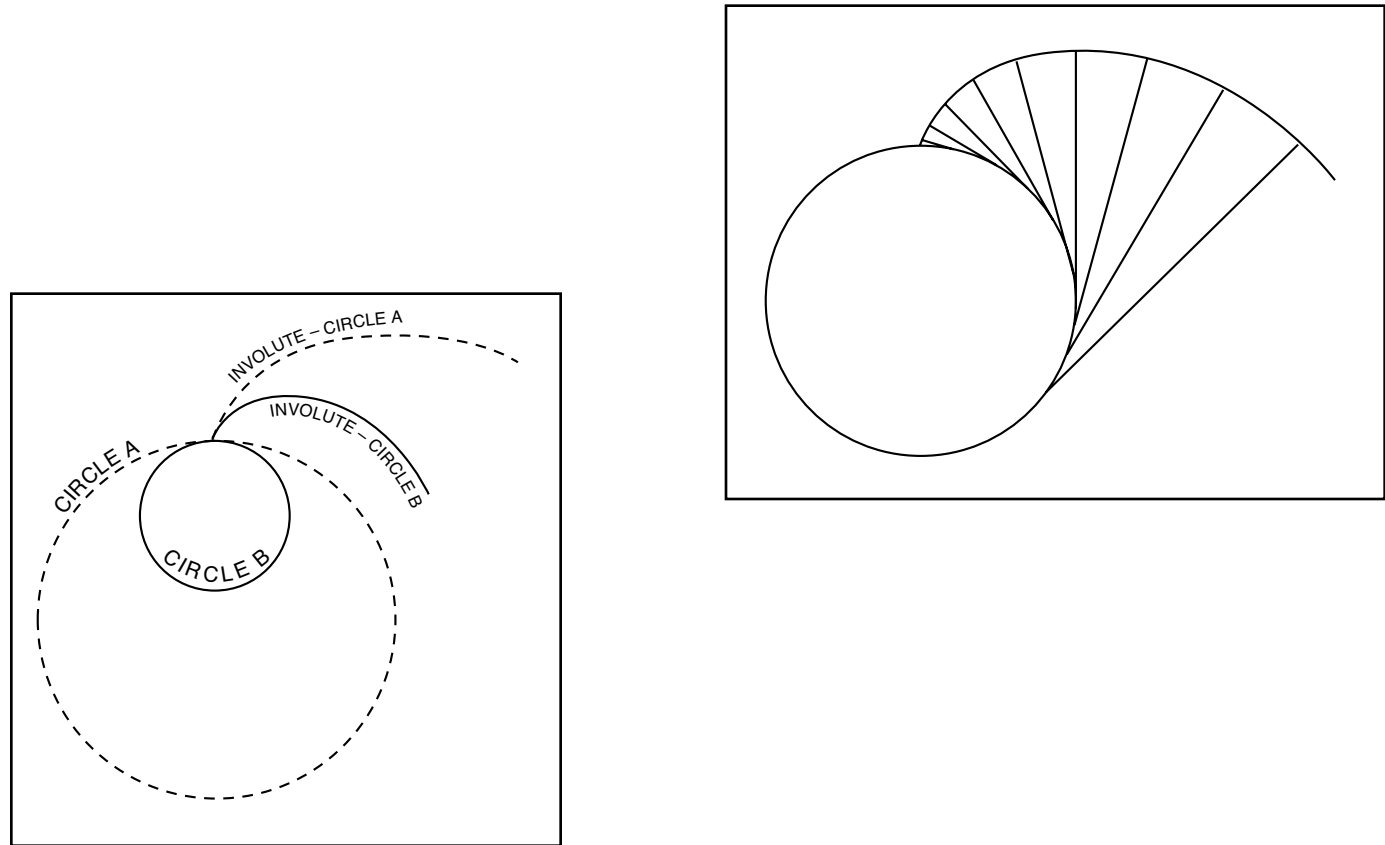
## Spur Gears

### Involute Form

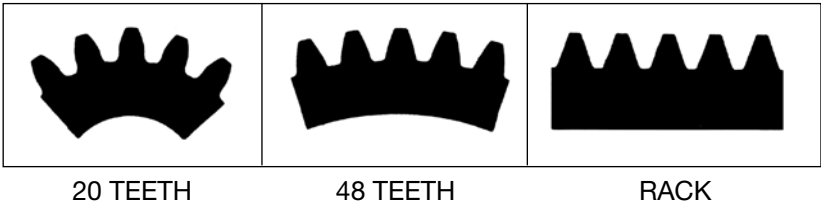
Gear teeth could be manufactured with a wide variety of shapes and profiles. The involute profile is the most commonly used system for gearing today, and all Boston spur and helical gears are of involute form.

An involute is a curve that is traced by a point on a taut cord unwinding from a circle, which is called a BASE CIRCLE. The involute is a form of spiral, the curvature of which becomes straighter as it is drawn from a base circle and eventually would become a straight line if drawn far enough.

An involute drawn from a larger base circle will be less curved (straighter) than one drawn from a smaller base circle. Similarly, the involute tooth profile of smaller gears is considerably curved, on larger gears is less curved (straighter), and is straight on a rack, which is essentially an infinitely large gear.



Involute gear tooth forms and standard tooth proportions are specified in terms of a basic rack which has straight-sided teeth, for involute systems.



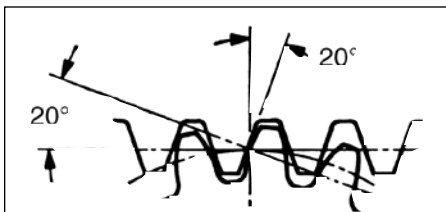
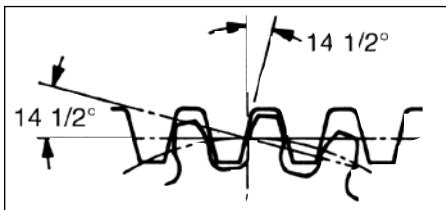
### Diametral Pitch System

All stock gears are made in accordance with the diametral pitch system. The diametral pitch of a gear is the number of teeth in the gear for each inch of pitch diameter. Therefore, the diametral pitch determines the size of the gear tooth.

### Pressure Angle

Pressure angle is the angle at a pitch point between the line of pressure which is normal to the tooth surface, and the plane tangent to the pitch surface. The pressure angle, as defined in this catalog, refers to the angle when the gears are mounted on their standard center distances.

Boston Gear manufactures both 14-1/2° and 20° PA, involute, full depth system gears. While 20°PA is generally recognized as having higher load carrying capacity, 14-1/2°PA gears have extensive use. The lower pressure angle results in less change in backlash due to center distance variation and concentricity errors. It also provides a higher contact ratio and consequent smoother, quieter operation provided that undercut of teeth is not present.



### Tooth dimensions

For convenience, Tooth Proportions of various standard diametral pitches of Spur Gears are given below.

| Diametral Pitch | Circular Pitch (Inches) | Thickness of Tooth on Pitch Line (Inches) | Depth to be Cut in Gear (Inches) (Hobbed Gears) | Addendum (Inches) |
|-----------------|-------------------------|-------------------------------------------|-------------------------------------------------|-------------------|
| 3               | 1.0472                  | .5236                                     | .7190                                           | .3333             |
| 4               | .7854                   | .3927                                     | .5393                                           | .2500             |
| 5               | .6283                   | .3142                                     | .4314                                           | .2000             |
| 6               | .5236                   | .2618                                     | .3565                                           | .1667             |
| 8               | .3927                   | .1963                                     | .2696                                           | .1250             |
| 10              | .3142                   | .1571                                     | .2157                                           | .1000             |
| 12              | .2618                   | .1309                                     | .1798                                           | .0833             |
| 16              | .1963                   | .0982                                     | .1348                                           | .0625             |
| 20              | .1571                   | .0785                                     | .1120                                           | .0500             |
| 24              | .1309                   | .0654                                     | .0937                                           | .0417             |
| 32              | .0982                   | .0491                                     | .0708                                           | .0312             |
| 48              | .0654                   | .0327                                     | .0478                                           | .0208             |
| 64              | .0491                   | .0245                                     | .0364                                           | .0156             |

| 20°P.A.                                                                                         | 14 1/2°P.A.                                                                                     |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <br>64 D.P.  |                                                                                                 |
| <br>48 D.P.  | <br>48 D.P.  |
| <br>32 D.P.  | <br>32 D.P.  |
| <br>24 D.P.  | <br>24 D.P.  |
| <br>20 D.P.  | <br>20 D.P.  |
| <br>16 D.P.  | <br>16 D.P.  |
| <br>12 D.P.  | <br>12 D.P.  |
| <br>10 D.P.  | <br>10 D.P.  |
| <br>8 D.P.   | <br>8 D.P.   |
| <br>6 D.P.  | <br>6 D.P.  |
| <br>5 D.P. | <br>5 D.P. |
| <br>4 D.P. | <br>4 D.P. |
| Tooth Gauge Chart is for Reference Purposes Only.                                               |                                                                                                 |
|                                                                                                 | <br>3 D.P. |

## Spur Gears

### Backlash

Stock spur gears are cut to operate at standard center distances. The standard center distance being defined by:

$$\text{Standard Center Distance} = \frac{\text{Pinion PD} + \text{Gear PD}}{2}$$

When mounted at this center distance, stock spur gears will

| Diametral Pitch | Backlash (Inches) | Diametral Pitch | Backlash (Inches) |
|-----------------|-------------------|-----------------|-------------------|
| 3               | .013              | 8-9             | .005              |
| 4               | .010              | 10-13           | .004              |
| 5               | .008              | 14-32           | .003              |
| 6               | .007              | 33-64           | .0025             |
| 7               | .006              |                 |                   |

have the following average backlash:

An increase or decrease in center distance will cause an increase or decrease in backlash.

Since, in practice, some deviation from the theoretical standard center distance is inevitable and will alter the backlash, such deviation should be as small as possible. For most applications, it would be acceptable to limit the deviation to an increase over the nominal center distance of one half the average backlash. Varying the center distance may afford a practical means of varying the backlash to a limited extent.

The approximate relationship between center distance and backlash change of 14-1/2° and 20° pressure angle gears is shown below:

$$\begin{aligned} \text{For } 14\text{-}1/2^\circ \text{—Change in Center Distance} &= 1.933 \times \text{Change in Backlash} \\ \text{For } 20^\circ \text{—Change in Center Distance} &= 1.374 \times \text{Change in Backlash} \end{aligned}$$

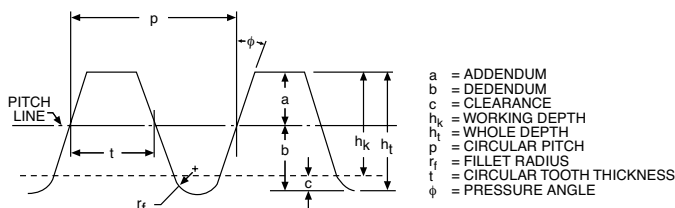
From this, it is apparent that a given change in center distance, 14-1/2° gears will have a smaller change in backlash than 20° gears. This fact should be considered in cases where backlash is critical.

### Undercut

When the number of teeth in a gear is small, the tip of the mating gear tooth may interfere with the lower portion of the tooth profile. To prevent this, the generating process removes material at this point. This results in loss of a portion of the involute adjacent to the tooth base, reducing tooth contact and tooth strength.

On 14-1/2°PA gears undercutting occurs where a number of teeth is less than 32 and for 20°PA less than 18. Since this condition becomes more severe as tooth numbers decrease, it is recommended that the minimum number of teeth be 16 for 14-1/2°PA and 13 for 20°PA.

In a similar manner INTERNAL Spur Gear teeth may interfere when the pinion gear is too near the size of its mating internal gear. The following may be used as a guide to assure proper operation of the gear set. For 14-1/2°PA, the difference in tooth numbers between the gear and pinion should not be less than 15. For 20°PA the difference in tooth numbers should not be less than 12.



### Spur Gear Formulas

FOR FULL DEPTH INVOLUTE TEETH

| To Obtain                                        | Having                                                             | Formula                                                                               |
|--------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Diametral Pitch (P)                              | Circular Pitch (p)                                                 | $P = \frac{3.1416}{p}$                                                                |
|                                                  | Number of Teeth (N) & Pitch Diameter (D)                           | $P = \frac{N}{D}$                                                                     |
|                                                  | Number of Teeth (N) & Outside Diameter (D <sub>o</sub> )           | $P = \frac{N + 2}{D_o}$ (Approx.)                                                     |
| Circular Pitch (p)                               | Diametral Pitch (P)                                                | $p = \frac{3.1416}{P}$                                                                |
| Pitch Diameter (D)                               | Number of Teeth (N) & Diametral Pitch (P)                          | $D = \frac{N}{P}$                                                                     |
|                                                  | Outside Diameter (D <sub>o</sub> ) & Diametral Pitch (P)           | $D = D_o - \frac{2}{P}$                                                               |
| Base Diameter (D <sub>b</sub> )                  | Pitch Diameter (D) and Pressure Angle (φ)                          | $D_b = D \cos \phi$                                                                   |
| Number of Teeth (N)                              | Diametral Pitch (P) & Pitch Diameter (D)                           | $N = P \times D$                                                                      |
| Tooth Thickness (t) @Pitch Diameter (D)          | Diametral Pitch (P)                                                | $t = \frac{1.5708}{P}$                                                                |
| Addendum (a)                                     | Diametral Pitch (P)                                                | $a = \frac{1}{P}$                                                                     |
| Outside Diameter (D <sub>o</sub> )               | Pitch Diameter (D) & Addendum (a)                                  | $D_o = D + 2a$                                                                        |
| Whole Depth (h <sub>t</sub> ) (20P & Finer)      | Diametral Pitch (P)                                                | $h_t = \frac{2.2}{P} + .002$                                                          |
| Whole Depth (h <sub>t</sub> ) (Coarser than 20P) | Diametral Pitch (P)                                                | $h_t = \frac{2.157}{P}$                                                               |
| Working Depth (h <sub>k</sub> )                  | Addendum (a)                                                       | $h_k = 2(a)$                                                                          |
| Clearance (c)                                    | Whole Depth (h <sub>t</sub> ) & Addendum (a)                       | $c = h_t - 2a$                                                                        |
| Dedendum (b)                                     | Whole Depth (h <sub>t</sub> ) & Addendum (a)                       | $b = h_t - a$                                                                         |
| Contact Ratio (M <sub>c</sub> )                  | Outside Radii, Base Radii, Center Distance and Pressure Angle+C.P. | $M_c = \frac{\sqrt{R_o^2 - R_b^2} + \sqrt{r_o^2 - r_b^2} - C \sin \phi}{p \cos \phi}$ |
| Root Diameter (D <sub>r</sub> )                  | Pitch Diameter (D) and Dedendum (b)                                | $D_r = D - 2b$                                                                        |
| Center Distance (C)                              | Pitch Diameter (D) or No. of Teeth and Pitch                       | $C = \frac{D_1 + D_2}{2}$<br>or $\frac{N_1 + N_2}{2P}$                                |

$R_o$  = Outside Radius, Gear  
 $r_o$  = Outside Radius, Pinion  
 $R_b$  = Base Circle Radius, Gear  
 $r_b$  = Base Circle Radius, Pinion

### Lewis Formula (Barth Revision)

Gear failure can occur due to tooth breakage (tooth stress) or surface failure (surface durability) as a result of fatigue and wear. Strength is determined in terms of tooth-beam stresses for static and dynamic conditions, following well established formula and procedures. Satisfactory results may be obtained by the use of Barth's Revision to the Lewis Formula, which considers beam strength but not wear. The formula is satisfactory for commercial gears at Pitch Circle velocities of up to 1500 FPM. It is this formula that is the basis for all Boston Spur Gear ratings.

#### METALLIC SPUR GEARS

$$W = \frac{SFY}{P} \left( \frac{600}{600 + V} \right)$$

W = Tooth Load, Lbs. (along the Pitch Line)  
 S = Safe Material Stress (static) Lbs. per Sq. In. (Table II)  
 F = Face Width, In.  
 Y = Tooth Form Factor (Table I)  
 P = Diametral Pitch  
 D = Pitch Diameter  
 V = Pitch Line Velocity, Ft. per Min. = .262 x D x RPM

For NON-METALLIC GEARS, the modified Lewis Formula shown below may be used with (S) values of 6000 PSI for Phenolic Laminated material.

$$W = \frac{SFY}{P} \left( \frac{150}{200 + V} + .25 \right)$$

TABLE II-VALUES OF SAFE STATIC STRESS (s)

| Material                         | (s) Lb. per Sq. In. |
|----------------------------------|---------------------|
| Plastic .....                    | 5000                |
| Bronze .....                     | 10000               |
| Cast Iron.....                   | 12000               |
| .20 Carbon (Untreated).....      | 20000               |
| .20 Carbon (Case-hardened).....  | 25000               |
| .40 Carbon (Untreated).....      | 25000               |
| .40 Carbon (Heat-treated).....   | 30000               |
| .40 C. Alloy (Heat-treated)..... | 40000               |

Max. allowable torque (T) that should be imposed on a gear will be the safe tooth load (W) multiplied by  $\frac{D}{2}$  or  $T = \frac{W \times D}{2}$

The safe horsepower capacity of the gear (at a given RPM) can be calculated from  $HP = \frac{T \times RPM}{63,025}$  or directly from (W) and (V);

$$HP = \frac{WV}{33,000}$$

$$\text{For a known HP, } T = \frac{63025 \times HP}{RPM}$$

TABLE I TOOTH FORM FACTOR (Y)

| Number of Teeth | 14-1/2° Full Depth Involute | 20° Full Depth Involute |
|-----------------|-----------------------------|-------------------------|
| 10              | 0.176                       | 0.201                   |
| 11              | 0.192                       | 0.226                   |
| 12              | 0.210                       | 0.245                   |
| 13              | 0.223                       | 0.264                   |
| 14              | 0.236                       | 0.276                   |
| 15              | 0.245                       | 0.289                   |
| 16              | 0.255                       | 0.295                   |
| 17              | 0.264                       | 0.302                   |
| 18              | 0.270                       | 0.308                   |
| 19              | 0.277                       | 0.314                   |
| 20              | 0.283                       | 0.320                   |
| 22              | 0.292                       | 0.330                   |
| 24              | 0.302                       | 0.337                   |
| 26              | 0.308                       | 0.344                   |
| 28              | 0.314                       | 0.352                   |
| 30              | 0.318                       | 0.358                   |
| 32              | 0.322                       | 0.364                   |
| 34              | 0.325                       | 0.370                   |
| 36              | 0.329                       | 0.377                   |
| 38              | 0.332                       | 0.383                   |
| 40              | 0.336                       | 0.389                   |
| 45              | 0.340                       | 0.399                   |
| 50              | 0.346                       | 0.408                   |
| 55              | 0.352                       | 0.415                   |
| 60              | 0.355                       | 0.421                   |
| 65              | 0.358                       | 0.425                   |
| 70              | 0.360                       | 0.429                   |
| 75              | 0.361                       | 0.433                   |
| 80              | 0.363                       | 0.436                   |
| 90              | 0.366                       | 0.442                   |
| 100             | 0.368                       | 0.446                   |
| 150             | 0.375                       | 0.458                   |
| 200             | 0.378                       | 0.463                   |
| 300             | 0.382                       | 0.471                   |
| Rack            | 0.390                       | 0.484                   |

## Helical Gears

### Gear Nomenclature

The information contained in the Spur Gear section is also pertinent to Helical Gears with the addition of the following:

**HELIX ANGLE ( $\psi$ )** is the angle between any helix and an element of its cylinder. In helical gears, it is at the pitch diameter unless otherwise specified.

**LEAD (L)** is the axial advance of a helix for one complete turn, as in the threads of cylindrical worms and teeth of helical gears.

**NORMAL DIAMETRAL PITCH ( $P_n$ )** is the Diametral Pitch as calculated in the normal plane.

**HAND** – Helical Gears of the same hand operate at right angles, see Fig. 1

Helical Gears of opposite hands run on parallel shafts. Fig. 2

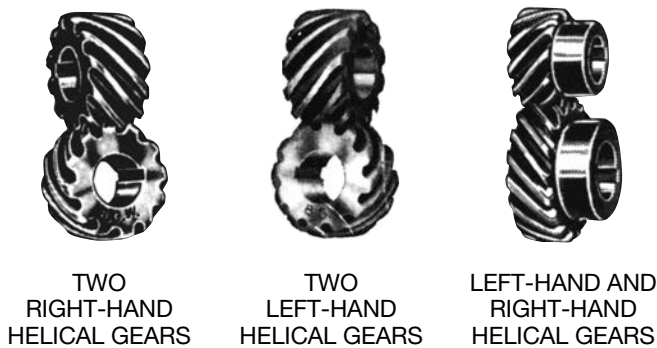


Figure 1

Figure 2

LEFT HAND HELICAL GEAR

RIGHT HAND HELICAL GEAR

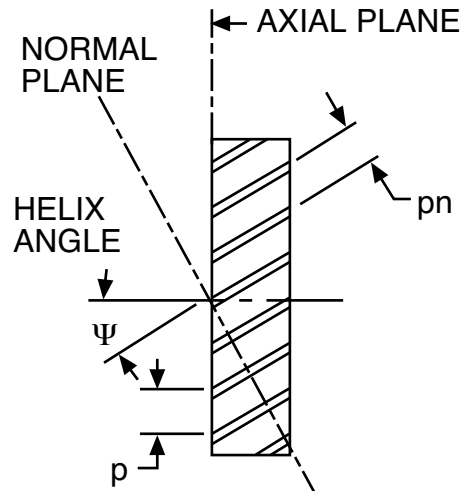


The teeth of a LEFT HAND Helical Gear lean to the left when the gear is placed flat on a horizontal surface.



The teeth of a RIGHT HAND Helical Gear lean to the right when the gear is placed flat on a horizontal surface.

### Helix Angle—



$p$  = AXIAL CIRCULAR PITCH  
 $p_n$  = NORMAL CIRCULAR PITCH

All Boston Helicals are cut to the Diametral Pitch system, resulting in a Normal Pitch which is lower in number than the Diametral Pitch.

**INVOLUTE**—The Helical tooth form is involute in the plane of rotation and can be developed in a manner similar to that of the Spur Gear. However, unlike the Spur Gear, which may be viewed as two-dimensional, the Helical Gear must be viewed as three-dimensional to show change in axial features.

Helical gears offer additional benefits relative to Spur Gears, those being:

- Improved tooth strength due to the elongated helical wrap-around.
- Increased contact ratio due to the axial tooth overlap.
- Helical Gears thus tend to have greater load carrying capacity than Spur Gears of similar size.
- Due to the above, smoother operating characteristics are apparent.

### Helical Gear Formulas

| To Obtain                                   | Having                                                     | Formula                       |
|---------------------------------------------|------------------------------------------------------------|-------------------------------|
| Transverse Diametral Pitch (P)              | Number of Teeth (N) & Pitch Diameter (D)                   | $P = \frac{N}{D}$             |
|                                             | Normal Diametral Pitch (P <sub>N</sub> ) & Helix Angle (ψ) | $P = P_N \cos \psi$           |
| Pitch Diameter (D)                          | Number of Teeth (N) & Transverse Diametral Pitch (P)       | $D = \frac{N}{P}$             |
| Normal Diametral Pitch (P <sub>N</sub> )    | Transverse Diametral Pitch (P) & Helix Angle (ψ)           | $P_N = \frac{P}{\cos \psi}$   |
| Normal Circular Tooth Thickness (τ)         | Normal Diametral Pitch (P <sub>N</sub> )                   | $\tau = \frac{1.5708}{P_N}$   |
| Transverse Circular Pitch (p <sub>t</sub> ) | Diametral Pitch (P) (Transverse)                           | $p_t = \frac{\pi}{P}$         |
| Normal Circular Pitch (p <sub>n</sub> )     | Transverse Circular Pitch (p)                              | $p_n = p_t \cos \psi$         |
| Lead (L)                                    | Pitch Diameter and Pitch Helix Angle                       | $L = \frac{\pi D}{\tan \psi}$ |

### Transverse Vs. Normal Diametral Pitch for Boston 45° Helical Gears

| P<br>Transverse<br>Diametral Pitch | P <sub>N</sub><br>Normal<br>Diametral Pitch |
|------------------------------------|---------------------------------------------|
| 24                                 | 33.94                                       |
| 20                                 | 28.28                                       |
| 16                                 | 22.63                                       |
| 12                                 | 16.97                                       |
| 10                                 | 14.14                                       |
| 8                                  | 11.31                                       |
| 6                                  | 8.48                                        |

### Helical Gear Lewis Formula

The beam strength of Helical Gears operating on *parallel shafts* can be calculated with the Lewis Formula revised to compensate for the difference between Spur and Helical Gears, with modified Tooth Form Factors Y.

$$W = \frac{SFY}{P_N} \left( \frac{600}{600 + V} \right)$$

W = Tooth Load, Lbs. (along the Pitch Line)  
 S = Safe Material Stress (static) Lbs. per Sq. In. (Table III)  
 F = Face Width, Inches  
 Y = Tooth Form Factor (Table IV)  
 P = Normal Diametral Pitch  
 (Refer to Conversion Chart)  
 D = Pitch Diameter  
 V = Pitch Line Velocity, Ft. Per Min. = .262 x D x RPM

**Table III – Values of Safe Static Stress (s)**

| Material                             | (s) Lb. per Sq. In. |
|--------------------------------------|---------------------|
| Bronze .....                         | 10000               |
| Cast Iron .....                      | 12000               |
| .20 Carbon (Untreated) .....         | 20000               |
| .20 Carbon (Case-hardened) .....     | 25000               |
| Steel { .40 Carbon (Untreated) ..... | 25000               |
| .40 Carbon (Heat-treated) .....      | 30000               |
| .40 C. Alloy (Heat-treated) .....    | 40000               |

**Table IV – Values of Tooth Form Factor (Y)**

| FOR 14-1/2°PA – 45° HELIX ANGLE GEAR |          |              |          |
|--------------------------------------|----------|--------------|----------|
| No. of Teeth                         | Factor Y | No. of Teeth | Factor Y |
| 8                                    | .295     | 25           | .361     |
| 9                                    | .305     | 30           | .364     |
| 10                                   | .314     | 32           | .365     |
| 12                                   | .327     | 36           | .367     |
| 15                                   | .339     | 40           | .370     |
| 16                                   | .342     | 48           | .372     |
| 18                                   | .345     | 50           | .373     |
| 20                                   | .352     | 60           | .374     |
| 24                                   | .358     | 72           | .377     |

### Horsepower and Torque

Max. allowable torque (T) that should be imposed on a gear will be the safe tooth load (W) multiplied by  $\frac{D}{2}$  or  $T = \frac{W \times D}{2}$

The safe horsepower capacity of the gear (at a given RPM) can be calculated from  $HP = \frac{T \times RPM}{63,025}$  or directly from (W) and (V);

$$HP = \frac{WV}{33,000}$$

$$\text{For a known HP, } T = \frac{63025 \times HP}{RPM}$$

## Helical Gears

When Helical gears are operated on other than Parallel shafts, the tooth load is concentrated at a point, with the result that very small loads produce very high pressures. The sliding velocity is usually quite high and, combined with the concentrated pressure, may cause galling or excessive wear, especially if the teeth are not well lubricated. For these reasons, the tooth load which may be applied to such drives is very limited and of uncertain value, and is perhaps best determined by trial under actual operating conditions. If one of the gears is made of bronze, the contact area and thereby the load carrying capacity, may be increased, by allowing the gears to "run-in" in their operating position, under loads which gradually increase to the maximum expected.

### Thrust Loads

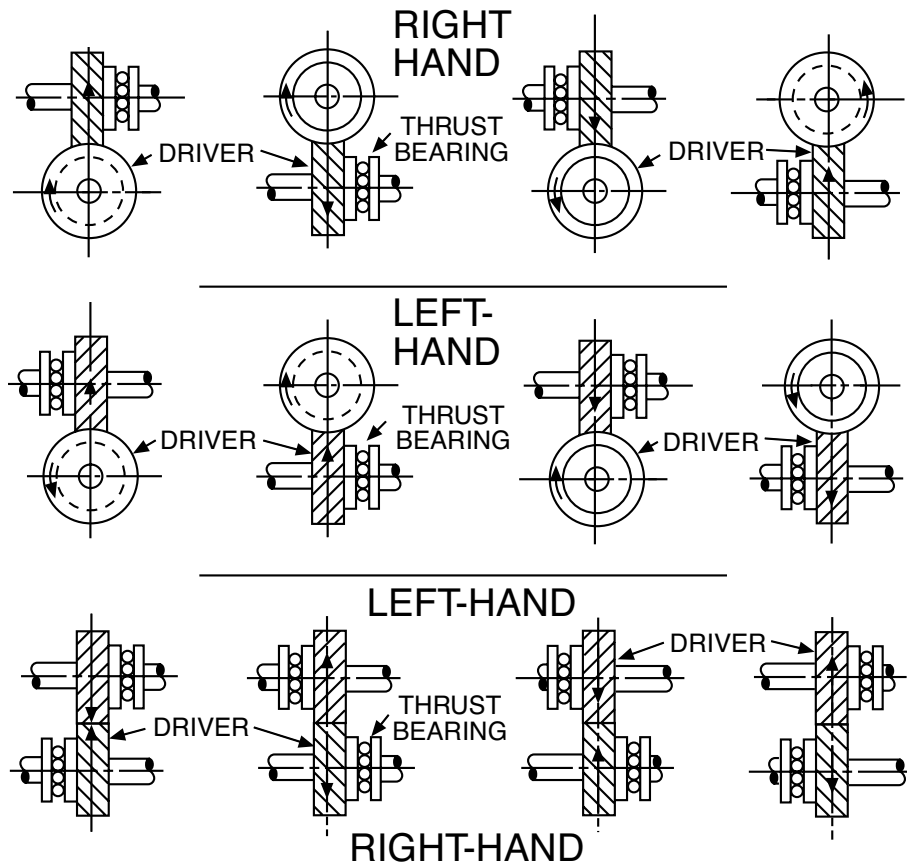
As a result of the design of the Helical Gear tooth, an axial or thrust load is developed. Bearings must be adequate to absorb this load. The thrust load direction is indicated below. The magnitude of the thrust load is based on calculated Horsepower.

$$\text{Axial Thrust Load} = \frac{126,050 \times \text{HP}}{\text{RPM} \times \text{Pitch Diameter}}$$

Boston Helicals are all 45° Helix Angle, producing a tangential force equal in magnitude to the axial thrust load. A separating force is also imposed on the gear set based on calculated Horsepower.

$$\text{Separating Load} = \text{Axial Thrust Load} \times .386$$

Above formulae based on Boston 45° Helix Angle and 14-1/2° Normal Pressure Angle.



See page 118 for hardened and ground Thrust Washers.

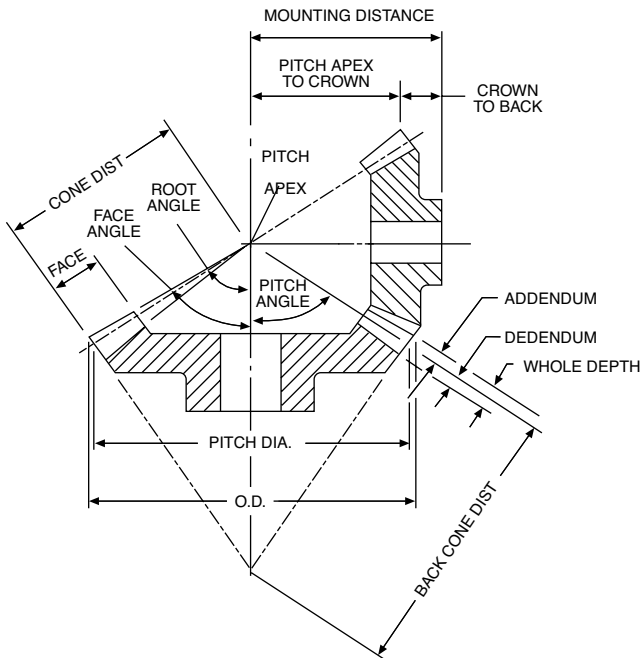
## Miter and Bevel Gears

Gear geometry for both straight and spiral tooth Miter and Bevel gears is of a complex nature and this text will not attempt to cover the topic in depth.

The basic tooth form is a modification to the involute form and is the common form used in production today. All Boston standard stock Miter and Bevel gears are manufactured with a 20° Pressure Angle. Bevel gears are made in accordance with A.G.M.A. specifications for long and short Addendum system for gears and pinions (pinion is cut long Addendum) which serves to reduce the amount of pinion tooth undercut and to nearly equalize the strength and durability of the gear set.

### Nomenclature

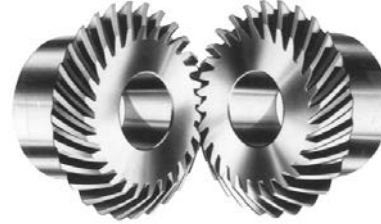
Nomenclature may best be understood by means of graphic representation depicted below:



Stock gears are cut to operate on an exact Mounting Distance with the following average backlash:

| Diametral Pitch | Backlash (Inches) |
|-----------------|-------------------|
| 4               | .008              |
| 5               | .007              |
| 6               | .006              |
| 8               | .005              |
| 10              | .004              |
| 12-20           | .003              |
| 24-48           | .002              |

Similar in nature to Helical gearing, Spiral Miters and Bevels must be run with a mating pinion or gear of opposite hand.



The teeth of a Right Hand gear lean to the right when the gear is placed on a horizontal surface.

The teeth of a Left Hand gear lean to the left when the gear is placed flat on a horizontal surface.

All Boston Spiral Miter and Bevel gears are made with 35° spiral angles with all pinions cut left hand.

### Straight Tooth Miter and Bevel Gear Formulas

| To Obtain                                           | Having                                                                                                                        | Formula                                          |                                |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------|
|                                                     |                                                                                                                               | Pinion                                           | Gear                           |
| Pitch Diameter (D,d)                                | No. of Teeth and Diametral Pitch (P)                                                                                          | $d = \frac{n}{P}$                                | $D = \frac{N}{P}$              |
| Whole Depth (h <sub>t</sub> )                       | Diametral Pitch (P)                                                                                                           | $h_t = \frac{2.188}{P} + .002$                   | $h_t = \frac{2.188}{P} + .002$ |
| Addendum (a)                                        | Diametral Pitch (P)                                                                                                           | $a = \frac{1}{P}$                                | $a = \frac{1}{P}$              |
| Dedendum (b)                                        | Whole Depth (h <sub>t</sub> ) & Addendum (a)                                                                                  | $b = h_t - a$                                    | $b = h_t - a$                  |
| Clearance                                           | Whole Depth (h <sub>t</sub> ) & Addendum (a)                                                                                  | $c = h_t - 2a$                                   | $c = h_t - 2a$                 |
| Circular Tooth Thickness (τ)                        | Diametral Pitch (P)                                                                                                           | $\tau = \frac{1.5708}{P}$                        | $\tau = \frac{1.5708}{P}$      |
| Pitch Angle                                         | Number of Teeth In Pinion (N <sub>p</sub> ) and Gear (N <sub>g</sub> )                                                        | $L_p = \tan^{-1} \left( \frac{N_p}{N_g} \right)$ | $L_g = 90 - L_p$               |
| Outside Diameter (D <sub>o</sub> , d <sub>o</sub> ) | Pinion & Gear Pitch Diameter (D <sub>p</sub> + D <sub>g</sub> ) Addendum (a) & Pitch Angle (L <sub>p</sub> + L <sub>g</sub> ) | $d_o = D_p + 2a(\cos L_p)$                       | $D_o = D_g + 2a(\cos L_g)$     |

## Miter and Bevel Gears

Straight tooth bevel (and miter) gears are cut with generated tooth form having a localized lengthwise tooth bearing known as the "Coniflex"® tooth form. The superiority of these gears over straight bevels with full length tooth bearing, lies in the control of tooth contact. The localization of contact permits minor adjustment of the gears in assembly and allows for some displacement due to deflection under operating loads, without concentration of the load on the end of the tooth. This results in increased life and quieter operation.

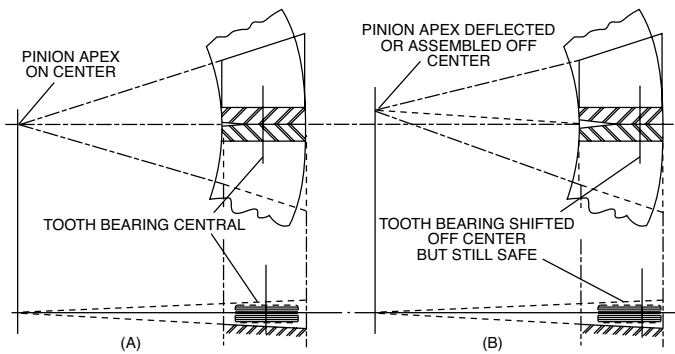


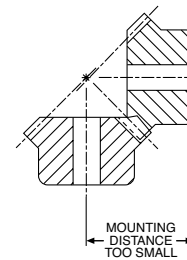
ILLUSTRATION OF LOCALIZED TOOTH BEARING  
IN STRAIGHT BEVEL CONIFLEX® GEARS

Boston Gear Bevel and Miter Gears will provide smooth, quiet operation and long life when properly mounted and lubricated. There are several important considerations in mounting these gears.

1. All standard stock bevel and miter gears must be mounted at right angles (90°) for proper tooth bearing.
2. Mounting Distance (MD) is the distance from the end of the hub of one gear to the center line of its mating gear. When mounted at the MD specified, the gears will have a proper backlash and the ends of the gear teeth will be flush with each other (see drawings).
3. All bevel and miter gears develop radial and axial thrust loads when transmitting power. See page 317. These loads must be accommodated by the use of bearings.

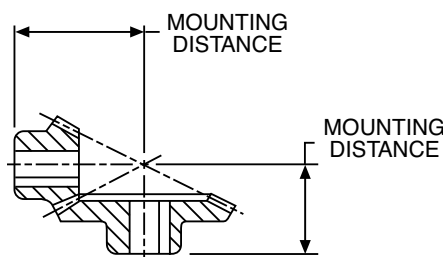
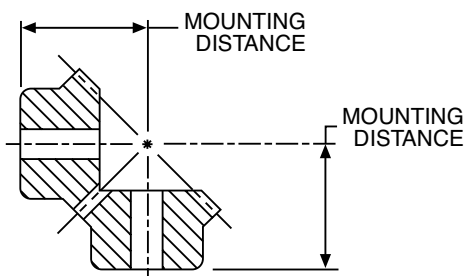
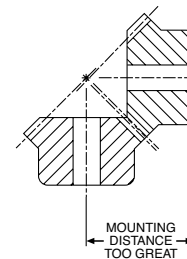
### Incorrect

If Mounting Distance of one or both gears is made less than dimension specified, the teeth may bind. Excessive wear or breakage can result. Drawing below shows gears mounted incorrectly with the Mounting Distance too short for one gear.



### Incorrect

If Mounting Distance of either gear is made longer than dimension specified, as shown in drawing below, the gears will not be in full mesh on a common pitch line and may have excessive backlash. Excessive backlash or play, if great enough, can cause a sudden impulse or shock load in starting or reversing which might cause serious tooth damage.



## Miter and Bevel Gears Tooth Strength (Straight Tooth)

The beam strength of Miter and Bevel gears (straight tooth) may be calculated using the Lewis Formula revised to compensate for the differences between Spur and Bevel gears. Several factors are often combined to make allowance for the tooth taper and the normal overhung mounting of Bevel gears.

$$W = \frac{SFY}{P} \left( \frac{600}{600 + V} \right) .75$$

W = Tooth Load, Lbs. (along the Pitch Line)  
S = Safe Material Stress (static) Lbs. per Sq. In. (Table 1)  
F = Face Width, In.  
Y = Tooth Form Factor (Table I)  
P = Diametral Pitch  
D = Pitch Diameter  
V = Pitch Line Velocity, Ft. per Min. = .262 x D x RPM

**TABLE I VALUES OF SAFE STATIC STRESS (s)**

| Material                    | (s) Lb. per Sq. In. |
|-----------------------------|---------------------|
| Plastic                     | .5000               |
| Bronze                      | .10000              |
| Cast Iron                   | .12000              |
| Steel                       |                     |
| .20 Carbon (Untreated)      | .20000              |
| .20 Carbon (Case-hardened)  | .25000              |
| .40 Carbon (Untreated)      | .25000              |
| .40 Carbon (Heat-treated)   | .30000              |
| .40 C. Alloy (Heat-treated) | .40000              |

**TABLE II TOOTH FORM FACTOR (Y)**

20°P.A. — LONG ADDENDUM PINIONS SHORT ADDENDUM GEARS

| No. Teeth<br>Pinion | Ratio |      |      |      |      |      |      |      |      |      |
|---------------------|-------|------|------|------|------|------|------|------|------|------|
|                     | 1     | 1.5  | 2    | 3    | 4    | 6    |      |      |      |      |
|                     | Pin.  | Gear | Pin. | Gear | Pin. | Gear | Pin. | Gear | Pin. | Gear |
| 12                  | —     | —    | .345 | .283 | .355 | .302 | .358 | .305 | .361 | .324 |
| 14                  | —     | .349 | .292 | .367 | .301 | .377 | .317 | .380 | .323 | .352 |
| 16                  | .333  | .367 | .311 | .386 | .320 | .396 | .333 | .402 | .339 | .443 |
| 18                  | .342  | .383 | .328 | .402 | .336 | .415 | .346 | .427 | .364 | .474 |
| 20                  | .352  | .402 | .339 | .418 | .349 | .427 | .355 | .456 | .386 | .500 |
| 24                  | .371  | .424 | .364 | .443 | .368 | .471 | .377 | .506 | .405 | —    |
| 28                  | .386  | .446 | .383 | .462 | .386 | .509 | .396 | .543 | .421 | —    |
| 32                  | .399  | .462 | .396 | .487 | .402 | .540 | .412 | —    | —    | —    |
| 36                  | .408  | .477 | .408 | .518 | .415 | .569 | .424 | —    | —    | —    |
| 40                  | .418  | —    | —    | .543 | .424 | .594 | .434 | —    | —    | —    |

### Horsepower and Torque

Max. allowable torque (T) that should be imposed on a gear will be the safe tooth load (W) multiplied by  $\frac{D}{2}$  or  $T = \frac{W \times D}{2}$

The safe horsepower capacity of the gear (at a given RPM) can be calculated from  $HP = \frac{T \times RPM}{63,025}$  or directly from (W) and (V);

$$HP = \frac{WV}{33,000}$$

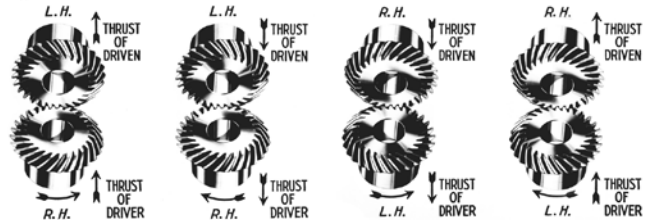
$$\text{For a known HP, } T = \frac{63025 \times HP}{RPM}$$

### Thrust

The axial thrust loads developed by straight tooth miter and bevel gears always tend to separate the gears.



For Spiral Bevel and Miter Gears, the direction of axial thrust loads developed by the driven gears will depend upon the hand and direction of rotation. Stock Spiral Bevel pinions cut Left Hand only, Gears Right Hand only.



The magnitude of the thrust may be calculated from the formulae below, based on calculated HP, and an appropriate Thrust Bearing selected.

### Straight Bevels and Miters

$$\text{Gear Thrust} = \frac{126,050 \times HP}{RPM \times \text{Pitch Diameter}} \times \tan \alpha \cos \beta$$

$$\text{Pinion Thrust} = \frac{126,050 \times HP}{RPM \times \text{Pitch Diameter}} \times \tan \alpha \sin \beta$$

### Spiral Bevels and Miters

|                             |                                                                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| R.H. SPIRAL<br>CLOCKWISE    | $T_P = \frac{126,050 \times HP}{RPM \times D} \left( \frac{\tan \alpha \sin \beta}{\cos \gamma} - \tan \gamma \cos \beta \right)$ |
| L.H. SPIRAL<br>C. CLOCKWISE | $T_G = \frac{126,050 \times HP}{RPM \times D} \left( \frac{\tan \alpha \cos \beta}{\cos \gamma} + \tan \gamma \sin \beta \right)$ |
| L.H. SPIRAL<br>CLOCKWISE    | $T_P = \frac{126,050 \times HP}{RPM \times D} \left( \frac{\tan \alpha \sin \beta}{\cos \gamma} + \tan \gamma \cos \beta \right)$ |
| R.H. SPIRAL<br>C. CLOCKWISE | $T_G = \frac{126,050 \times HP}{RPM \times D} \left( \frac{\tan \alpha \cos \beta}{\cos \gamma} + \tan \gamma \sin \beta \right)$ |

Thrust values for Pinions and Gears are given for four possible combinations.

$\alpha$  = Tooth Pressure Angle

$\beta$  = 1/2 Pitch Angle

$$\text{Pitch Angle} = \tan^{-1} \left( \frac{N_P}{N_G} \right)$$

$\gamma$  = Spiral Angle = 35°

## Worms and Worm Gears

Boston standard stock Worms and Worm Gears are used for the transmission of motion and/or power between non-intersecting shafts at right angles (90°). Worm Gear drives are considered the smoothest and quietest form of gearing when properly applied and maintained. They should be considered for the following requirements:

HIGH RATIO SPEED REDUCTION

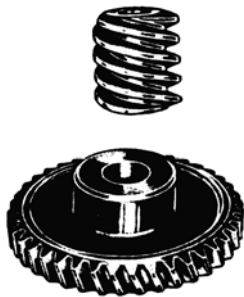
LIMITED SPACE

RIGHT ANGLE (NON-INTERSECTING) SHAFTS

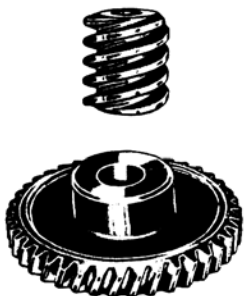
GOOD RESISTANCE TO BACK DRIVING

General nomenclature having been applied to Spur and Helical gear types, may also be applied to Worm Gearing with the addition of Worm Lead and Lead Angle, Number of Threads (starts) and Worm Gear Throat diameter.

### HOW TO TELL A LEFT-HAND OR RIGHT-HAND WORM OR WORM GEAR



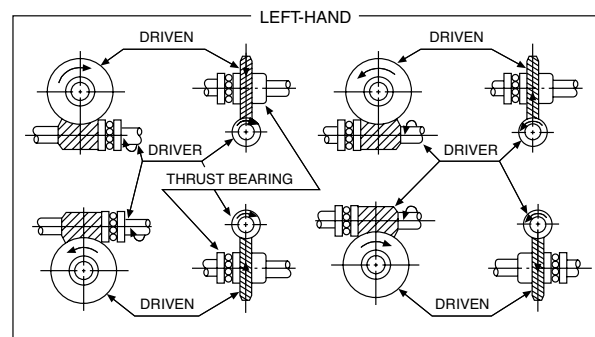
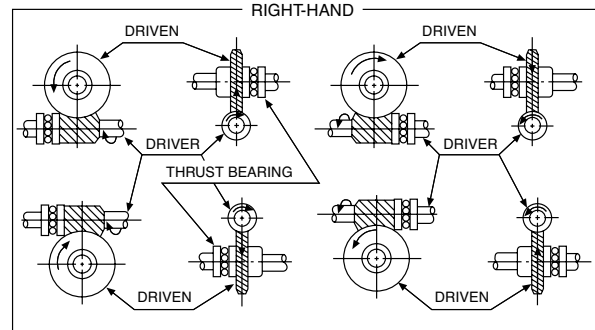
Threads of LEFT-HAND lean to the Left when standing on either end:



Threads of RIGHT-HAND lean to the Right when standing on either end:

### Thrust Loads

As is true with Helical and Bevel gearing, Worm gearing, when operating, produces Thrust loading. The Chart below indicates the direction of thrust of Worms and Worm Gears when they are rotated as shown. To absorb this thrust loading, bearings should be located as indicated.



### Efficiency

The efficiency of a worm gear drive depends on the lead angle of the worm. The angle decreases with increasing ratio and worm pitch diameter. For maximum efficiency the ratio should be kept low.

Due to the sliding action which occurs at the mesh of the Worm and Gear, the efficiency is dependent on the Lead Angle and the Coefficient of the contacting surface. A common formula for estimating efficiency of a given Worm Gear reduction is:

$$\text{EFFICIENCY} = E = \frac{\tan \gamma (1 - f \tan \gamma)}{f + \tan \gamma}$$

where  $\gamma$  = Worm Lead Angle  
 $f$  = Coefficient of Friction

For a Bronze Worm Gear and hardened Steel Worm, a Coefficient of Friction in the range of .03/.05 may be assumed for estimated value only.

### Worm and Worm Gear Formulas

| To Obtain                                     | Having                                                       | Formula                                               |
|-----------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------|
| Circular Pitch (p)                            | Diametral Pitch (P)                                          | $p = \frac{3.1416}{P}$                                |
| Diametral Pitch (P)                           | Circular Pitch (p)                                           | $P = \frac{3.1416}{p}$                                |
| Lead (of Worm) (L)                            | Number of Threads in Worm & Circular Pitch (p)               | $L = p(\text{No. of Threads})$                        |
| Addendum (a)                                  | Diametral Pitch (P)                                          | $a = \frac{1}{P}$                                     |
| Pitch Diameter (D) of Worm ( $D_w$ )          | Outside Diameter ( $d_o$ ) & Addendum (a)                    | $D_w = d_o - 2a$                                      |
| Pitch Diameter of Worm Gear ( $D_g$ )         | Circular Pitch (p) & Number of Teeth (N)                     | $D_g = \frac{N_{gp}}{3.1416}$                         |
| Center Distance Between Worm & Worm Gear (CD) | Pitch Diameter of Worm ( $d_w$ ) & Worm Gear ( $D_g$ )       | $CD = \frac{d_w + D_g}{2}$                            |
| Whole Depth of Teeth ( $h_T$ )                | Circular Pitch (p)                                           | $h_T = .6866 p$                                       |
|                                               | Diametral Pitch (P)                                          | $h_T = \frac{2.157}{P}$                               |
| Bottom Diameter of Worm ( $D_r$ )             | Whole Depth ( $h_T$ ) & Outside Diameter ( $d_w$ )           | $d_r = d_o - 2h_T$                                    |
| Throat Diameter of Worm Gear ( $D_T$ )        | Pitch Diameter of Worm Gear (D) & Addendum (a)               | $D_T = D_g + 2a$                                      |
| Lead Angle of Worm ( $\gamma$ )               | Pitch Diameter of Worm (D) & The Lead (L)                    | $\gamma = \tan^{-1} \left( \frac{L}{3.1416d} \right)$ |
| Ratio                                         | No. of Teeth on Gear ( $N_g$ ) and Number of Threads on Worm | $\text{Ratio} = \frac{N_g}{\text{No. of Threads}}$    |
| Gear O.D. ( $D_o$ )                           | Throat Dia. ( $D_T$ ) and Addendum (a)                       | $D_o = D_T + .6a$                                     |

### Self-Locking Ability

There is often some confusion as to the self-locking ability of a worm and gear set. Boston worm gear sets, under no condition should be considered to hold a load when at rest. The statement is made to cover the broad spectrum of variables effecting self-locking characteristics of a particular gear set in a specific application. Theoretically, a worm gear will not back drive if the friction angle is greater than the worm lead angle. However, the actual surface finish and lubrication may reduce this significantly. More important, vibration may cause motion at the point of mesh with further reduction in the friction angle.

Generally speaking, if the worm lead angle is less than  $5^\circ$ , there is reasonable expectation of self-locking. Again, no guarantee should be made and customer should be advised. If safety is involved, a positive brake should be used.

### Worm Gear Back-Driving

This is the converse of self-locking and refers to the ability of the worm gear to drive the worm. The same variables exist, making it difficult to predict. However, our experience indicates that for a hardened worm and bronze gear properly manufactured, mounted and lubricated, back-driving capability may be expected, if the lead angle is greater than  $11^\circ$ . Again, no guarantee is made and the customer should be so advised.

### Rating

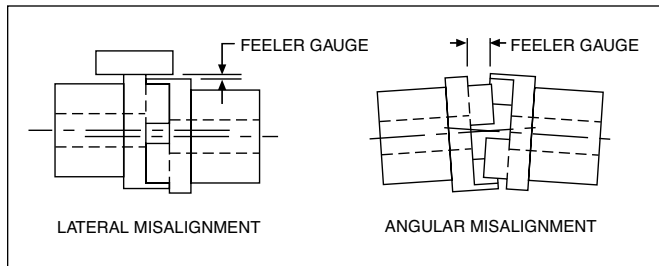
The high rate of sliding friction that takes place at the mesh of the Worm and Gear results in a more complex method of rating these Gears as opposed to the other Gear types. Material factors, friction factors and velocity factors must all be considered and applied to reflect a realistic durability rating.

## Couplings

### Alignment

Alignment of Boston couplings should be performed by the following steps to meet lateral and angular misalignment specifications below.

1. Align shafts and supports to give minimum lateral and angular misalignment.
2. Assemble coupling halves to shaft.
3. Slide couplings together and check lateral misalignment using straight edge and feeler gauge over coupling outside diameter. (On BF Series couplings, spider must be removed.) This should be within specifications below.
4. Lock couplings on shaft and check distance using feeler gauges between drive lug on one half and space between on other coupling half. Rotate coupling and check gap at a minimum of 3 other coupling positions. The difference between any two readings should be within specifications below.



**MISALIGNMENT TOLERANCES**

| Coupling Series    | Lateral / Parallel | Angular         |
|--------------------|--------------------|-----------------|
| FC—Bronze Insert   | .001               | See Chart below |
| FC—Urethane Insert | .002               |                 |
| FC—Rubber Insert   | .002               |                 |
| BF                 | .002               | 1-1/2°          |
| BG (Shear Type)    | 1/32               | 2°              |
| FA                 | .002               | 2°              |
| FCP (Plastic)      | .003               | 3°              |

### FC Series ANGULAR MISALIGNMENT

Chart reflects maximum angular misalignment of 1-1/2° for rubber, 1° for urethane and 1/2° for bronze.

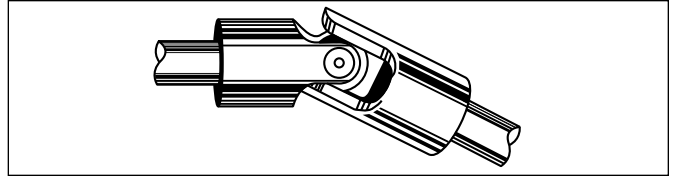
**MAXIMUM READING DIFFERENTIAL**

| Size | Rubber | Insert Urethane | Bronze |
|------|--------|-----------------|--------|
| FC12 | .033   | .022            | .011   |
| FC15 | .039   | .026            | .013   |
| FC20 | .053   | .035            | .018   |
| FC25 | .066   | .044            | .022   |
| FC30 | .078   | .052            | .026   |
| FC38 | .097   | .065            | .032   |
| FC45 | .117   | .078            | .039   |

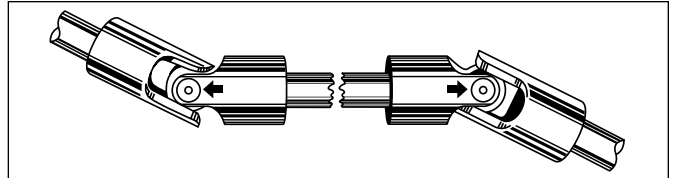
### Mounting

A single universal joint (rotating at uniform speed) operating at an angle will introduce periodic variations of angular velocity to the driven shaft. These cyclic speed fluctuations (two per revolution) cause vibration, higher shaft stresses and bearing loads which will be more severe with larger angles of operation.

## Universal Joints



The detrimental effects of these rotational deviations can be reduced, and uniform speed restored by using two joints (and an intermediate shaft) to connect shafts at an angle or misaligned in a parallel direction.



For connecting shafts in the same plane the joints should be arranged to operate at equal angles and with the bearing pins of the yokes on the intermediate shaft in line with each other.

### Lubrication

#### PIN and BLOCK TYPE

**These universal joints are not lubricated when shipped.**

Many applications are considered severe when in harsh environments and when a combination of speed, dirt contamination and inaccessible locations make it impractical to maintain proper lubrication.

It is in these instances when the Boot Kits become a desirable alternative. For satisfactory performance, all booted joints should be used with a LITH-EP-000 grease for an ambient temperature range of 40° to 225°F.

**VOLUME OF LUBRICATION FOR BOOTED JOINTS**

| Size | Volume (Ozs.) | Size | Volume (Ozs.) | Size | Volume (Ozs.) |
|------|---------------|------|---------------|------|---------------|
| 37   | .4            | 100  | 2.0           | 250  | 25.0          |
| 50   | .5            | 125  | 3.5           | 300  | 30.0          |
| 62   | .75           | 150  | 4.5           | 400  | 50.1          |
| 75   | 1.0           | 175  | 7.0           |      |               |
| 87   | 1.5           | 200  | 15.0          |      |               |

NOTE: Joints should be initially lubricated with a 90 weight oil before being packed with grease.

### UJAS/UJNL SERIES

**Universal joints are not lubricated when shipped.**

Lubricate these joints with a Lith EP-2 grease or equivalent. The center cross of these joints holds a generous supply of lubricant which is fed to the bearings by centrifugal action. Light-duty, low-angle operation may require only occasional lubrication. For high-angle, high-speed operation or in extreme dirt or moist conditions, daily regreasing may be required.

## HOW TO FIGURE HORSEPOWER AND TORQUE

| To Obtain                                             | Having                                                                            | Formula                                         |
|-------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------|
| Velocity (V)<br>Feet Per Minute                       | Pitch Diameter (D) of<br>Gear or sprocket – Inches<br>& Rev. Per Min. (RPM)       | $V = 2618 \times D \times \text{RPM}$           |
| Rev. per Min. (RPM)                                   | Velocity (V) Ft. Per Min.<br>& Pitch Diameter (D) of<br>Gear or Sprocket – Inches | $\text{RPM} = \frac{V}{.268 \times D}$          |
| Pitch Diameter (D)<br>of Gear or Sprocket<br>– Inches | Velocity (V) Ft. Per Min.<br>& Rev. Per Min. (RPM)                                | $D = \frac{V}{.2618 \times \text{RPM}}$         |
| Torque (T) In. Lbs.                                   | Force (W) Lbs. &<br>Radius (R) Inches                                             | $T = W \times R$                                |
| Horsepower (HP)                                       | Force (W) Lbs. &<br>Velocity (V) Ft. Per Min.                                     | $\text{HP} = \frac{W \times V}{33000}$          |
| Horsepower (HP)                                       | Torque (T) In Lbs. &<br>Rev. per Min. (RPM)                                       | $\text{HP} = \frac{T \times \text{RPM}}{63025}$ |
| Torque (T) In. Lbs.                                   | Horsepower (HP) &<br>Rev. Per Min. (RPM)                                          | $T = \frac{63025 \times \text{HP}}{\text{RPM}}$ |
| Force (W) Lbs.                                        | Horsepower (HP) &<br>Velocity (V) Ft. Per Min.                                    | $W = \frac{33000 \times \text{HP}}{V}$          |
| Rev. Per Min. (RPM)                                   | Horsepower (HP) &<br>Torque (TP) In. Lbs.                                         | $\text{RPM} = \frac{63025 \times \text{HP}}{T}$ |

**POWER** is the rate of doing work.

**WORK** is the exerting of a **FORCE** through a **DISTANCE**. ONE FOOT POUND is a unit of **WORK**. It is the **WORK** done in exerting a **FORCE** OF ONE POUND through a **DISTANCE** of ONE FOOT.

**THE AMOUNT OF WORK** done (Foot Pounds) is the **FORCE** (Pounds) exerted multiplied by the **DISTANCE**(Feet) through which the **FORCE** acts.

**THE AMOUNT OF POWER** used (Foot Pounds per Minute) is the **WORK** (Foot Pounds) done divided by the **TIME** (Minutes) required.

$$\text{POWER (Foot Pounds per Minute)} = \frac{\text{WORK (Ft. Lbs.)}}{\text{TIME (Minutes)}}$$

**POWER** is usually expressed in terms of **HORSEPOWER**.

**HORSEPOWER** is **POWER** (Foot Pounds per Minute) divided by 33,000.

$$\begin{aligned} \text{HORSEPOWER (HP)} &= \frac{\text{POWER (Ft. Lbs. per Minute)}}{33,000} \\ &= \frac{\text{WORK (Ft. Pounds)}}{33,000 \times \text{TIME (Min.)}} \\ &= \frac{\text{FORCE (Lbs.)} \times \text{DISTANCE (Feet)}}{33,000 \times \text{TIME (Min.)}} \end{aligned}$$

$$\begin{aligned} \text{HORSEPOWER (HP)} &= \frac{\text{FORCE (Lbs.)} \times \text{DISTANCE (Feet)}}{33,000 \times \text{TIME (Min.)}} \end{aligned}$$

## STANDARD KEYWAYS & SETSCREW

| Diam. of Hole    | Standard Keyway |       | Recommended<br>Setscrew |
|------------------|-----------------|-------|-------------------------|
|                  | W               | D     |                         |
| 5/16 to 7/16"    | 3/32"           | 3/64" | 10–32                   |
| 1/2 to 9/16      | 1/8             | 1/16  | 1/4–20                  |
| 5/8 to 7/8       | 3/16            | 3/32  | 5/16–18                 |
| 15/16 to 1-1/4   | 1/4             | 1/8   | 3/8–16                  |
| 1-5/16 to 1-3/8  | 5/16            | 5/32  | 7/16–14                 |
| 1-7/16 to 1-3/4  | 3/8             | 3/16  | 1/2–13                  |
| 1-13/16 to 2-1/4 | 1/2             | 1/4   | 9/16–12                 |
| 2-5/16 to 20-3/4 | 5/8             | 5/16  | 5/8–11                  |
| 2-13/16 to 3-1/4 | 3/4             | 3/8   | 3/4–10                  |
| 3-5/16 to 3-3/4  | 7/8             | 7/16  | 7/8–9                   |
| 3-13/16 to 4-1/2 | 1               | 1/2   | 1–8                     |
| 4-9/16 to 5-1/2  | 1-1/4           | 7/16  | 1-1/8–7                 |
| 5-9/16 to 6-1/2  | 1-1/2           | 1/2   | 1-1/4–6                 |

### FORMULA:

$$X = \sqrt{(D/2)^2 - (W/2)^2} + D + D/2$$

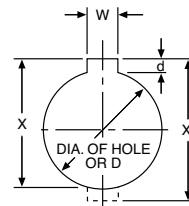
$$X' = 2X - D$$

### EXAMPLE:

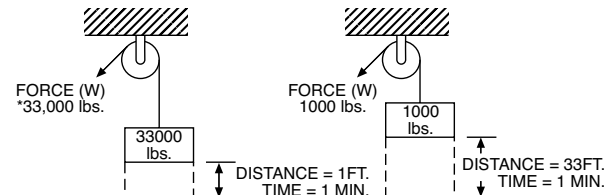
Hole 1"; Keyway 1/4" wide by 1/8" deep.

$$X = \sqrt{(1/2)^2 - (1/8)^2} + 1 + 1/2 = 1.109"$$

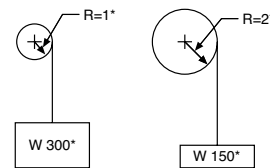
$$X' = 2.218 - 1.000 = \mathbf{1.218"} \quad \text{ANSWER}$$



## ILLUSTRATION OF HORSEPOWER



**TORQUE (T)** is the product of a **FORCE (W)** in pounds, times a **RADIUS (R)** in inches from the center of shaft (Lever Arm) and is expressed in Inch Pounds.



$$T = WR = 300 \times 1 = 300 \text{ In. Lbs.} \quad T = WR = 150 \times 2 = 300 \text{ In. Lbs.}$$

If the shaft is revolved, the **FORCE (W)** is moved through a distance, and **WORK** is done.

$$\text{WORK (Ft. Pounds)} = W \times \frac{2\pi R}{12} \times \text{No. of Rev. of Shaft.}$$

When this **WORK** is done in a specified **TIME**, **POWER** is used.

$$\text{POWER (Ft. Pounds per Min.)} = W \times \frac{2\pi R}{12} \times \text{RPM}$$

Since (1) **HORSEPOWER** = 33,000 Foot Pounds per minute

$$\text{HORSEPOWER (HP)} = W \times \frac{2\pi R}{12} \times \frac{\text{RPM}}{33,000} = \frac{W \times R \times \text{RPM}}{63,025}$$

but **TORQUE** (Inch Pounds) = **FORCE (W)** x **RADIUS (R)**

$$\text{Therefore HORSEPOWER (HP)} = \frac{\text{TORQUE (T)} \times (\text{RPM})}{63,025}$$

## General

### Mounting

#### SPUR & HELICAL

For proper functioning gears, gears must be accurately aligned and supported by a shaft and bearing system which maintains alignment under load. Deflection should not exceed .001 inch at the tooth mesh for general applications. The tolerance on Center Distance normally should be positive to avoid possibility of gear teeth binding. Tolerance value is dependent on acceptable system backlash. As a guide for average application, this tolerance might vary from .002 for Boston Gear's fine pitch gears to .005 for the coarsest pitch.

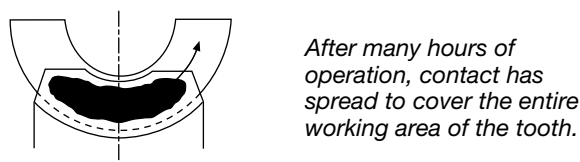
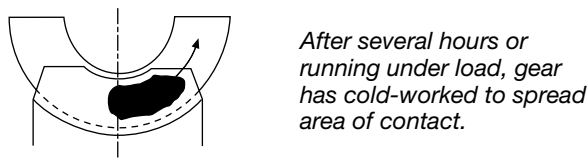
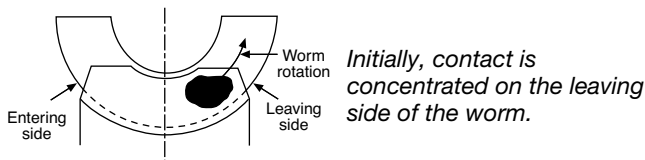
#### WORMS AND WORM GEAR

It is important that the mounting assures the central plane of the Worm gear passes essentially through the axis of the Worm. This can be accomplished by adjusting the Worm Gear axially. Boston Worm Gears are cut to close tolerancing of the Center Line of the Gear tooth to the flush side of the Gear. When properly mounted Worm Gears will become more efficient after initial break-in period.

#### HOW WORM GEARS "ADJUST" THEMSELVES

The gear in a worm gear reducer is made of a soft bronze material. Therefore, it can cold-work and wear-in to accommodate slight errors in misalignment.

#### Evolution of Contact in a Worm Gear



### Alterations

Boston Gear Service Centers are equipped to alter catalog sprockets (rebore, keyway, setscrew, etc.). For customers, choosing to make their own alterations, the guidelines listed below should be beneficial. Alterations to hardened gears should not be made without consultation with factory.

In setting up for reboring the most important consideration is to preserve the accuracy of concentricity and lateral runout provided in the original product. There are several methods for accomplishing this. One procedure is: mount the part on an arbor, machine hub diameter to provide a true running surface, remove from arbor and chuck on the hub diameter, check face and bore runout prior to reboring. As a basic rule of thumb, the maximum bore should not exceed 60% of the Hub Diameter and depending on Key size should be checked for minimum wall thickness. A minimum of one setscrew diameter over a keyway is considered adequate.

Boston Gear offers a service for hardening stock sprockets. This added treatment can provide increased horsepower capacity with resultant longer life and/or reduction in size and weight.

Customers wishing to do the hardening operation should refer to "Materials" below for information.

### Lubrication

The use of a straight mineral oil is recommended for most worm gear applications. This type of oil is applicable to gears of all materials, including non-metallic materials.

Mild E.P. (Extreme Pressure) lubricants may be used with Iron and Steel Gears. E.P. lubricants normally should be selected of the same viscosity as straight mineral oil. E.P. lubricants are not recommended for use with brass or bronze gears.

SAE80 or 90 gear oil should be satisfactory for splash lubricated gears. Where extremely high or low speed conditions are encountered, consult a lubricant manufacturer. Oil temperature of 150°F should not be exceeded for continuous duty applications. Temperatures up to 200°F can be safely tolerated for short periods of time.

Many specialty lubricants have been recently developed to meet the application demands of today's markets, including synthetics and both high and low temperature oils and greases. In those instances where Bath or Drip Feed is not practical, a moly-Disulphide grease may be used successfully, for low speed applications.

### Materials

Boston Gear stock steel gears are made from a .20 carbon steel with no subsequent treatment. For those applications requiring increased wearability. Case-hardening produces a wear resistant, durable surface and a higher strength core. Carburizing and hardening is the most common process used. Several proprietary nitriding processes are available for producing an essentially distortion-free part with a relatively shallow but wear-resistant case. Boston stock worms are made of either a .20 or .45 carbon steel. Selection of material is based on size and whether furnished as hardened or untreated.

Stock cast iron gears are manufactured from ASTM-CLASS 30 cast iron to Boston Gear specifications. This provides a fine-grained material with good wear-resistant properties.

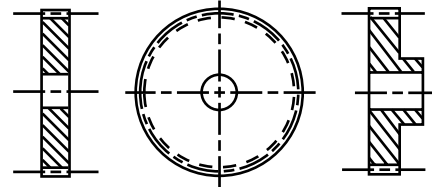
Bronze worm and helical gears are produced from several alloys selected for bearing and strength properties. Phosphor bronze is used for helicals and some worm gears (12P and coarser). Finer pitch worm gears are made from several different grades of bronze, dependent on size.

Non-metallic spur Gears listed in this Catalog are made from cotton reinforced phenolic normally referred to as Grade "C."

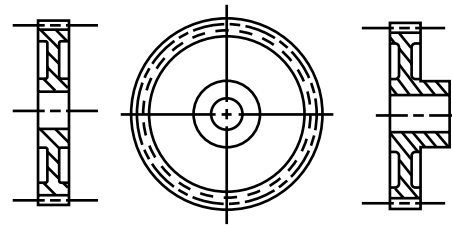
Plastic Gears listed are molded from either Delrin®, Acetal or Minlon®.

### Styles

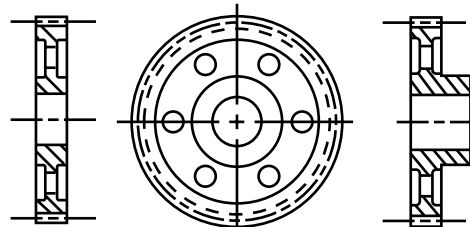
Boston Spur, Helical, and Worm Gears are carried in Plain, Web, or Spoke styles, as illustrated.



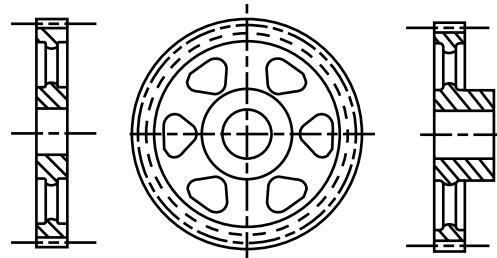
PLAIN – A



WEB – B



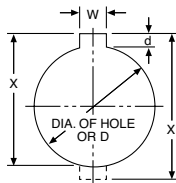
WEB WITH  
LIGHTNING HOLES – C



SPOKE – D

### STANDARD KEYWAYS AND SETSCREWS

| Diameter of Hole | Standard |       | Recommended<br>Setscrew |
|------------------|----------|-------|-------------------------|
|                  | W        | d     |                         |
| 5/16 to 7/16"    | 3/32"    | 3/64" | 10-32                   |
| 1/2 to 9/16      | 1/8      | 1/16  | 1/4-20                  |
| 5/8 to 7/8       | 3/16     | 3/32  | 5/16-18                 |
| 15/16 to 1-1/4   | 1/4      | 1/8   | 3/8-16                  |
| 1-5/16 to 1-3/8  | 5/16     | 5/32  | 7/16-14                 |
| 1-7/16 to 1-3/4  | 3/8      | 3/16  | 1/2-13                  |
| 1-13/16 to 2-1/4 | 1/2      | 1/4   | 9/16-12                 |
| 2-5/16 to 2-3/4  | 5/8      | 5/16  | 5/8-11                  |
| 2-13/16 to 3-1/4 | 3/4      | 3/8   | 3/4-10                  |
| 3-5/16 to 3-3/4  | 7/8      | 7/16  | 7/8-9                   |
| 3-13/16 to 4-1/2 | 1        | 1/2   | 1-8                     |
| 4-9/16 to 5-1/2  | 1-1/4    | 7/16  | 1-1/8-7                 |
| 5-9/16 to 6-1/2  | 1-1/2    | 1/2   | 1-1/4-6                 |



### Formula:

$$X = \sqrt{(D/2)^2 - (W/2)^2} + d + D/2$$

$$X' = 2X - D$$

### Example:

Hole 1"; Keyway 1/4" wide by 1/8" deep.

$$X = \sqrt{(1/2)^2 - (1/8)^2} + 1/8 + 1/2 = 1.109"$$

$$X' = 2.218 - 1.000 = 1.218"$$

# Engineering Information

## Sprockets

### Alterations

Boston Gear Service Centers are equipped to alter catalog sprockets (rebores, keyway, setscrew, etc.). For customers, choosing to make their own alterations, the guidelines listed below should be beneficial. Alterations to hardened gears should not be made without consultation with factory.

In setting up for reborring the most important consideration is to preserve the accuracy of concentricity and lateral runout provided in the original product. There are several methods for accomplishing this. One procedure is: mount the part on an arbor, machine hub diameter to provide a true running surface, remove from arbor and chuck on the hub diameter, check face and bore runout prior to reboring. As a basic rule of thumb, the maximum bore should not exceed 60% of the Hub Diameter and depending on Key size should be checked for minimum wall thickness. A minimum of one setscrew diameter over a keyway is considered adequate.

Boston Gear offers a service for hardening stock sprockets. This added treatment can provide increased horsepower capacity with resultant longer life and/or reduction in size and weight.

Customers wishing to do the hardening operation should refer to "Materials" below for information.

### Materials

#### Plastic

Plastic sprockets listed are molded from Nylatron GS.

#### Steel

Type B one-piece sprockets are furnished in a free-machining, low carbon steel.

Plate sprockets (Type A) and two-piece construction (Type B) are made of low carbon steel (basically AISI 1020).

1/4" pitch (Type B) up to 20 teeth is furnished from sintered metal powder conforming to ASTM-B-426-70 Grade 1, Type III with hardness of RB60 MIN.

#### Stainless Steel

1/4, 3/8 and 1/2" Pitches stock bore, single strand are furnished from 303 free-machining Stainless Steel.

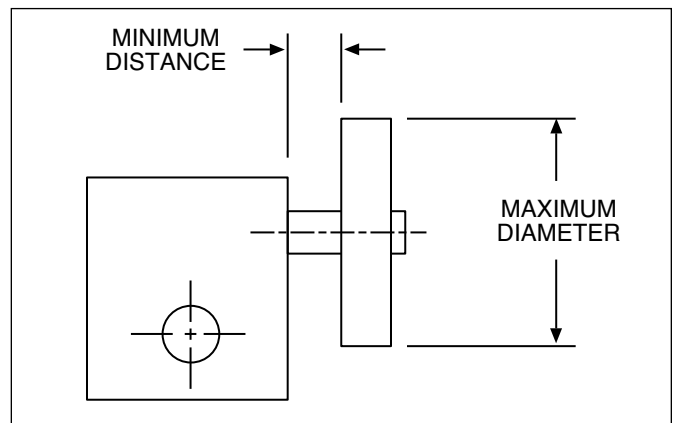
#### Cast Iron

Block Chain Sprockets are furnished in Cast Iron for 9 through 12 teeth, which conforms to ASTM-A48-Class 30 Cast Iron, providing a fine-grained material with good wear resistant properties.

### Overhung Load

Overhung load is introduced on a shaft by the sprocket, gear, or belt from which the shaft is driven. A shaft driven by a properly installed flexible coupling would not have an overhung load.

The magnitude of the overhung load is determined by the load at the driving or driven member and the distance this member is from the nearest shaft support bearing. Overhung load will reduce the safe power transmission capacity of any shaft, therefore, every effort must be made to reduce this load. There are two ways to reduce this load (1) reduce the support distance or (2) increase the diameter of the driving and driven member. In most cases, increasing the size of a drive is not possible and therefore, all effort should be made to reduce the support distance.



#### FORMULA:

$$X = \sqrt{(D/2)^2 - (W/2)^2} + D + D/2$$

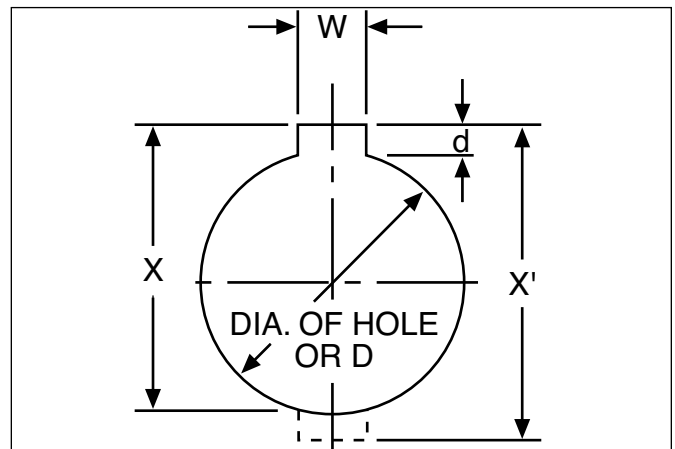
$$X' = 2X - D$$

#### EXAMPLE:

Hole 1"; Keyway 1/4" wide by 1/8" deep.

$$X = \sqrt{(1/2)^2 - (1/8)^2} + 1 + 1/2 = 1.109"$$

$$X' = 2.218 - 1.000 = 1.218"$$



| Diameter of Hole | Standard Keyway |       | Recommended Setscrew |
|------------------|-----------------|-------|----------------------|
|                  | W               | D     |                      |
| 5/16 to 7/16"    | 3/32"           | 3/64" | 10-32                |
| 1/2 to 9/16      | 1/8             | 1/16  | 1/4-20               |
| 5/8 to 7/8       | 3/16            | 3/32  | 5/16-18              |
| 15/16 to 1-1/4   | 1/4             | 1/8   | 3/8-16               |
| 1-5/16 to 1-3/8  | 5/16            | 5/32  | 7/16-14              |
| 1-7/16 to 1-3/4  | 3/8             | 3/16  | 1/2-13               |
| 1-13/16 to 2-1/4 | 1/2             | 1/4   | 9/16-12              |
| 2-5/16 to 2-3/4  | 5/8             | 5/16  | 5/8-11               |
| 2-13/16 to 3-1/4 | 3/4             | 3/8   | 3/4-10               |
| 3-5/16 to 3-3/4  | 7/8             | 7/16  | 7/8-9                |
| 3-13/16 to 4-1/2 | 1               | 1/2   | 1-8                  |
| 4-9/16 to 5-1/2  | 1-1/4           | 7/16  | 1-1/8-7              |
| 5-9/16 to 6-1/2  | 1-1/2           | 1/2   | 1-1/4-6              |

## Sprocket Diameters for ANSI Standard Series

| Number of Teeth | 1/4" Pitch—No. 25<br>.130" Roller Diameter |                  |                 | 3/8" Pitch—No. 35<br>.200" Roller Diameter |                  |                 | 1/2" Pitch—No. 40<br>.312" Roller Diameter |                  |                 | 1/2" Pitch—No. 41<br>.306" Roller Diameter |                  |                 |
|-----------------|--------------------------------------------|------------------|-----------------|--------------------------------------------|------------------|-----------------|--------------------------------------------|------------------|-----------------|--------------------------------------------|------------------|-----------------|
|                 | Pitch Diameter                             | Outside Diameter | Bottom Diameter | Pitch Diameter                             | Outside Diameter | Bottom Diameter | Pitch Diameter                             | Outside Diameter | Bottom Diameter | Pitch Diameter                             | Outside Diameter | Bottom Diameter |
| 9               | 0.731                                      | 0.83             | 0.601           | 1.096                                      | 1.26             | 0.896           | 1.462                                      | 1.67             | 1.149           | 1.462                                      | 1.67             | 1.156           |
| 10              | 0.809                                      | 0.91             | 0.679           | 1.214                                      | 1.38             | 1.014           | 1.618                                      | 1.84             | 1.305           | 1.618                                      | 1.84             | 1.312           |
| 11              | 0.887                                      | 1.00             | 0.757           | 1.331                                      | 1.50             | 1.131           | 1.775                                      | 2.00             | 1.462           | 1.775                                      | 2.00             | 1.469           |
| 12              | 0.966                                      | 1.08             | 0.836           | 1.449                                      | 1.63             | 1.249           | 1.932                                      | 2.17             | 1.619           | 1.932                                      | 2.17             | 1.626           |
| 13              | 1.045                                      | 1.16             | 0.915           | 1.567                                      | 1.75             | 1.367           | 2.089                                      | 2.33             | 1.776           | 2.089                                      | 2.33             | 1.783           |
| 14              | 1.124                                      | 1.24             | 0.994           | 1.685                                      | 1.87             | 1.485           | 2.247                                      | 2.49             | 1.934           | 2.247                                      | 2.49             | 1.941           |
| 15              | 1.203                                      | 1.32             | 1.073           | 1.804                                      | 1.99             | 1.604           | 2.405                                      | 2.65             | 2.092           | 2.405                                      | 2.65             | 2.099           |
| 16              | 1.282                                      | 1.40             | 1.152           | 1.922                                      | 2.11             | 1.722           | 2.563                                      | 2.81             | 2.250           | 2.563                                      | 2.81             | 2.257           |
| 17              | 1.361                                      | 1.48             | 1.231           | 2.041                                      | 2.23             | 1.841           | 2.721                                      | 2.98             | 2.408           | 2.721                                      | 2.98             | 2.415           |
| 18              | 1.440                                      | 1.56             | 1.310           | 2.160                                      | 2.35             | 1.960           | 2.879                                      | 3.14             | 2.566           | 2.879                                      | 3.14             | 2.573           |
| 19              | 1.519                                      | 1.64             | 1.389           | 2.278                                      | 2.47             | 2.078           | 3.038                                      | 3.30             | 2.725           | 3.038                                      | 3.30             | 2.732           |
| 20              | 1.598                                      | 1.72             | 1.468           | 2.397                                      | 2.59             | 2.197           | 3.196                                      | 3.46             | 2.883           | 3.196                                      | 3.46             | 2.890           |
| 21              | 1.678                                      | 1.80             | 1.548           | 2.516                                      | 2.71             | 2.316           | 3.355                                      | 3.62             | 3.042           | 3.355                                      | 3.62             | 3.049           |
| 22              | 1.757                                      | 1.88             | 1.627           | 2.635                                      | 2.83             | 2.435           | 3.513                                      | 3.78             | 3.200           | 3.513                                      | 3.78             | 3.207           |
| 23              | 1.836                                      | 1.96             | 1.706           | 2.754                                      | 2.95             | 2.554           | 3.672                                      | 3.94             | 3.359           | 3.672                                      | 3.94             | 3.366           |
| 24              | 1.915                                      | 2.04             | 1.785           | 2.873                                      | 3.07             | 2.673           | 3.831                                      | 4.10             | 3.518           | 3.831                                      | 4.10             | 3.525           |
| 25              | 1.995                                      | 2.12             | 1.865           | 2.992                                      | 3.19             | 2.792           | 3.989                                      | 4.26             | 3.676           | 3.989                                      | 4.26             | 3.683           |
| 26              | 2.074                                      | 2.20             | 1.944           | 3.111                                      | 3.31             | 2.911           | 4.148                                      | 4.42             | 3.835           | 4.148                                      | 4.42             | 3.842           |
| 27              | 2.154                                      | 2.28             | 2.024           | 3.230                                      | 3.43             | 3.030           | 4.307                                      | 4.58             | 3.994           | 4.307                                      | 4.58             | 4.001           |
| 28              | 2.233                                      | 2.36             | 2.103           | 3.349                                      | 3.55             | 3.149           | 4.466                                      | 4.74             | 4.153           | 4.466                                      | 4.74             | 4.159           |
| 30              | 2.392                                      | 2.52             | 2.262           | 3.588                                      | 3.79             | 3.388           | 4.783                                      | 5.06             | 4.470           | 4.783                                      | 5.06             | 4.477           |
| 31              | 2.471                                      | 2.60             | 2.341           | 3.707                                      | 3.91             | 3.507           | 4.942                                      | 5.22             | 4.629           | 4.942                                      | 5.22             | 4.636           |
| 32              | 2.551                                      | 2.68             | 2.421           | 3.826                                      | 4.03             | 3.626           | 5.101                                      | 5.38             | 4.789           | 5.101                                      | 5.38             | 4.794           |
| 33              | 2.630                                      | 2.76             | 2.500           | 3.945                                      | 4.15             | 3.745           | 5.260                                      | 5.54             | 4.947           | 5.260                                      | 5.54             | 4.954           |
| 34              | 2.710                                      | 2.84             | 2.580           | 4.064                                      | 4.27             | 3.864           | 5.419                                      | 5.70             | 5.106           | 5.419                                      | 5.70             | 5.113           |
| 35              | 2.789                                      | 2.92             | 2.659           | 4.183                                      | 4.39             | 3.983           | 5.578                                      | 5.86             | 5.265           | 5.578                                      | 5.86             | 5.272           |
| 36              | 2.869                                      | 3.00             | 2.739           | 4.303                                      | 4.51             | 4.103           | 5.737                                      | 6.02             | 5.424           | 5.737                                      | 6.02             | 5.431           |
| 38              | 3.028                                      | 3.16             | 2.898           | 4.541                                      | 4.75             | 4.341           | 6.055                                      | 6.33             | 5.742           | 6.055                                      | 6.33             | 5.749           |
| 39              | 3.107                                      | 3.24             | 2.977           | 4.660                                      | 4.87             | 4.460           | 6.214                                      | 6.49             | 5.901           | 6.214                                      | 6.49             | 5.908           |
| 40              | 3.187                                      | 3.32             | 3.093           | 4.779                                      | 4.99             | 4.579           | 6.373                                      | 6.65             | 6.060           | 6.373                                      | 6.65             | 6.016           |
| 41              | 3.266                                      | 3.40             | 3.136           | 4.899                                      | 5.11             | 4.699           | 6.532                                      | 6.81             | 6.219           | 6.532                                      | 6.81             | 6.226           |
| 42              | 3.346                                      | 3.48             | 3.216           | 5.018                                      | 5.23             | 4.818           | 6.691                                      | 6.97             | 6.378           | 6.691                                      | 6.97             | 6.385           |
| 44              | 3.505                                      | 3.64             | 3.375           | 5.257                                      | 5.47             | 5.057           | 7.009                                      | 7.29             | 6.696           | 7.009                                      | 7.29             | 6.703           |
| 45              | 3.584                                      | 3.72             | 3.454           | 5.336                                      | 5.55             | 5.136           | 7.088                                      | 7.37             | 6.775           | 7.088                                      | 7.37             | 6.782           |
| 48              | 3.823                                      | 3.96             | 3.693           | 5.734                                      | 5.95             | 5.534           | 7.645                                      | 7.93             | 7.332           | 7.645                                      | 7.93             | 7.339           |
| 52              | 4.141                                      | 4.28             | 4.011           | 6.211                                      | 6.43             | 6.011           | 8.281                                      | 8.57             | 7.968           | 8.281                                      | 8.57             | 7.975           |
| 54              | 4.300                                      | 4.44             | 4.170           | 6.449                                      | 6.66             | 6.249           | 8.599                                      | 8.89             | 8.286           | 8.599                                      | 8.89             | 8.294           |
| 56              | 4.459                                      | 4.60             | 4.329           | 6.688                                      | 6.90             | 6.488           | 8.917                                      | 9.20             | 8.605           | 8.917                                      | 9.20             | 8.611           |
| 60              | 4.777                                      | 4.92             | 4.647           | 7.165                                      | 7.38             | 6.965           | 9.554                                      | 9.84             | 9.241           | 9.554                                      | 9.84             | 9.246           |
| 64              | 5.095                                      | 5.23             | 4.965           | 7.643                                      | 7.86             | 7.443           | 10.190                                     | 10.48            | 9.877           | 10.190                                     | 10.48            | 9.883           |
| 65              | 5.175                                      | 5.31             | 5.045           | 7.722                                      | 7.94             | 7.522           | 10.349                                     | 10.64            | 10.036          | 10.349                                     | 10.64            | 10.044          |
| 66              | 5.254                                      | 5.39             | 5.124           | 7.801                                      | 8.02             | 7.601           | 10.508                                     | 10.80            | 10.195          | 10.508                                     | 10.80            | 10.202          |
| 70              | 5.572                                      | 5.71             | 5.442           | 8.358                                      | 8.58             | 8.158           | 11.145                                     | 11.43            | 10.832          | 11.145                                     | 11.43            | 10.840          |
| 72              | 5.732                                      | 5.87             | 5.602           | 8.597                                      | 8.81             | 8.397           | 11.463                                     | 11.75            | 11.150          | 11.463                                     | 11.75            | 11.156          |
| 80              | 6.368                                      | 6.51             | 6.238           | 9.552                                      | 9.77             | 9.352           | 12.736                                     | 13.03            | 12.423          | 12.736                                     | 13.03            | 12.430          |
| 84              | 6.686                                      | 6.83             | 6.556           | 10.029                                     | 10.25            | 9.829           | 13.372                                     | 13.66            | 13.059          | 13.372                                     | 13.66            | 13.067          |
| 96              | 7.641                                      | 7.78             | 7.511           | 11.461                                     | 11.68            | 11.261          | 15.281                                     | 15.57            | 14.969          | 15.281                                     | 15.57            | 14.976          |

## Sprocket Diameters for ANSI Standard Series Hubs

| No. of Teeth | 5/8" Pitch—No. 50<br>.400" Roller Diameter |                  |                 | 3/4" Pitch—No. 60<br>.468" Roller Diameter |                  |                 | 1" Pitch—No. 80<br>.625" Roller Diameter |                  |                 |
|--------------|--------------------------------------------|------------------|-----------------|--------------------------------------------|------------------|-----------------|------------------------------------------|------------------|-----------------|
|              | Pitch Diameter                             | Outside Diameter | Bottom Diameter | Pitch Diameter                             | Outside Diameter | Bottom Diameter | Pitch Diameter                           | Outside Diameter | Bottom Diameter |
| 9            | 1.87                                       | 2.09             | 1.427           | 2.193                                      | 2.51             | 1.724           | 2.924                                    | 3.35             | 2.299           |
| 10           | 2.023                                      | 2.30             | 1.623           | 2.427                                      | 2.76             | 1.958           | 3.236                                    | 3.68             | 2.611           |
| 11           | 2.218                                      | 2.50             | 1.818           | 2.662                                      | 3.00             | 2.193           | 2.549                                    | 4.01             | 2.924           |
| 12           | 2.415                                      | 2.71             | 2.015           | 2.898                                      | 3.25             | 2.429           | 3.864                                    | 4.33             | 3.239           |
| 13           | 2.612                                      | 2.91             | 2.212           | 3.134                                      | 3.49             | 2.665           | 4.179                                    | 4.66             | 3.554           |
| 14           | 2.809                                      | 3.11             | 2.409           | 3.371                                      | 3.74             | 2.902           | 4.494                                    | 4.98             | 3.869           |
| 15           | 3.006                                      | 3.32             | 2.606           | 3.607                                      | 3.98             | 3.138           | 4.180                                    | 5.31             | 4.185           |
| 16           | 3.204                                      | 3.52             | 2.804           | 3.844                                      | 4.22             | 3.375           | 5.126                                    | 5.63             | 4.501           |
| 17           | 3.401                                      | 3.72             | 3.001           | 4.082                                      | 4.46             | 3.613           | 5.442                                    | 5.95             | 4.817           |
| 18           | 3.599                                      | 3.92             | 3.199           | 4.319                                      | 4.70             | 3.850           | 5.759                                    | 6.27             | 5.134           |
| 19           | 3.797                                      | 4.12             | 3.397           | 4.557                                      | 4.95             | 4.088           | 6.076                                    | 6.59             | 5.451           |
| 20           | 3.995                                      | 4.32             | 3.595           | 4.794                                      | 5.19             | 4.325           | 6.393                                    | 6.91             | 5.768           |
| 21           | 4.193                                      | 4.52             | 3.793           | 5.032                                      | 5.43             | 4.563           | 6.710                                    | 7.24             | 6.085           |
| 22           | 4.392                                      | 4.72             | 3.992           | 5.270                                      | 5.67             | 4.801           | 7.027                                    | 7.56             | 6.402           |
| 23           | 4.590                                      | 4.92             | 4.190           | 5.508                                      | 5.91             | 5.039           | 7.344                                    | 7.88             | 6.719           |
| 24           | 4.788                                      | 5.12             | 4.388           | 5.746                                      | 6.15             | 5.277           | 7.661                                    | 8.20             | 7.036           |
| 25           | 4.987                                      | 5.32             | 4.587           | 5.984                                      | 6.39             | 5.515           | 7.979                                    | 8.52             | 7.354           |
| 26           | 5.185                                      | 5.52             | 4.785           | 6.222                                      | 6.63             | 5.753           | 8.296                                    | 8.84             | 7.671           |
| 28           | 5.582                                      | 5.92             | 5.182           | 6.699                                      | 7.11             | 6.230           | 8.931                                    | 9.48             | 8.306           |
| 30           | 5.979                                      | 6.32             | 5.579           | 7.175                                      | 7.59             | 6.706           | 9.567                                    | 10.11            | 8.942           |
| 32           | 6.376                                      | 6.72             | 5.976           | 7.652                                      | 8.07             | 7.183           | 10.202                                   | 10.75            | 9.577           |
| 34           | 6.774                                      | 7.12             | 6.374           | 8.128                                      | 8.54             | 7.659           | 10.838                                   | 11.39            | 10.213          |
| 35           | 6.972                                      | 7.32             | 6.572           | 8.367                                      | 8.78             | 7.898           | 11.156                                   | 11.71            | 10.531          |
| 36           | 7.171                                      | 7.52             | 6.771           | 8.605                                      | 9.02             | 8.136           | 11.474                                   | 12.03            | 10.849          |
| 37           | 7.370                                      | 7.72             | 6.970           | 8.844                                      | 9.26             | 8.375           | 11.792                                   | 12.35            | 11.167          |
| 38           | 7.569                                      | 7.92             | 7.169           | 9.082                                      | 9.50             | 8.613           | 12.110                                   | 12.67            | 11.485          |
| 40           | 7.966                                      | 8.32             | 7.566           | 9.559                                      | 9.98             | 9.090           | 12.746                                   | 13.31            | 12.121          |
| 42           | 8.363                                      | 8.72             | 7.963           | 10.036                                     | 10.46            | 9.567           | 13.382                                   | 13.94            | 12.757          |
| 44           | 8.761                                      | 9.11             | 8.361           | 10.513                                     | 10.94            | 10.044          | 14.018                                   | 14.58            | 13.393          |
| 45           | 8.960                                      | 9.31             | 8.560           | 10.752                                     | 11.18            | 10.283          | 14.336                                   | 14.90            | 13.711          |
| 48           | 9.556                                      | 9.91             | 9.156           | 11.467                                     | 11.89            | 10.998          | 15.290                                   | 15.86            | 14.665          |
| 49           | 9.755                                      | 10.11            | 9.355           | 11.706                                     | 12.13            | 11.237          | 15.608                                   | 16.18            | 14.983          |
| 50           | 9.954                                      | 10.31            | 9.554           | 11.945                                     | 12.37            | 11.476          | 15.926                                   | 16.50            | 15.301          |
| 52           | 10.351                                     | 10.71            | 9.951           | 12.422                                     | 12.85            | 11.953          | 16.562                                   | 17.13            | 15.937          |
| 54           | 10.749                                     | 11.11            | 10.349          | 12.899                                     | 13.33            | 12.430          | 17.198                                   | 17.77            | 16.573          |
| 56           | 11.147                                     | 11.50            | 10.747          | 13.376                                     | 13.81            | 12.907          | 17.835                                   | 18.41            | 17.210          |
| 60           | 11.942                                     | 12.30            | 11.542          | 13.330                                     | 14.76            | 13.861          | 19.107                                   | 19.68            | 18.482          |
| 64           | 12.738                                     | 13.10            | 12.338          | 15.285                                     | 15.72            | 14.816          | 20.380                                   | 20.96            | 19.755          |
| 70           | 13.931                                     | 14.29            | 13.531          | 16.717                                     | 17.15            | 16.248          | 22.289                                   | 22.87            | 21.664          |
| 72           | 14.329                                     | 14.69            | 13.929          | 17.194                                     | 17.63            | 16.725          | 22.926                                   | 23.50            | 22.301          |
| 76           | 15.124                                     | 15.49            | 14.724          | 18.149                                     | 18.58            | 17.680          | 24.199                                   | 24.78            | 23.574          |
| 80           | 15.920                                     | 16.28            | 15.520          | 19.103                                     | 19.54            | 18.634          | 25.471                                   | 26.05            | 24.846          |
| 84           | 16.715                                     | 17.08            | 16.315          | 20.058                                     | 20.49            | 19.589          | 26.744                                   | 27.33            | 26.119          |
| 90           | 17.909                                     | 18.27            | 17.509          | 21.490                                     | 21.93            | 21.021          | 28.654                                   | 29.24            | 28.029          |
| 96           | 19.102                                     | 19.47            | 18.702          | 22.922                                     | 23.36            | 22.453          | 30.563                                   | 31.15            | 29.938          |

## Horsepower & Torque Capacity of Shafting

| Diameter | Shaft Horsepower Based on Pure Torsion<br>at 10,000 PSI Maximum Shear Stress |       |       |       |       |      |      | Torque Capacity<br>(Lb. Ins.)<br>Based on 10,000 PSI<br>Shear Stress |
|----------|------------------------------------------------------------------------------|-------|-------|-------|-------|------|------|----------------------------------------------------------------------|
|          | 30                                                                           | 50    | 100   | 175   | 690   | 1150 | 1750 |                                                                      |
| 3/8      | 0.049                                                                        | 0.082 | 0.164 | 0.287 | 1.13  | 1.88 | 2.87 | 103                                                                  |
| 7/16     | 0.078                                                                        | 0.130 | 0.261 | 0.456 | 1.79  | 2.99 | 4.56 | 164                                                                  |
| 1/2      | 0.117                                                                        | 0.194 | 0.389 | 0.681 | 2.68  | 4.47 | 6.80 | 245                                                                  |
| 9/16     | 0.166                                                                        | 0.277 | 0.554 | 0.969 | 3.82  | 6.36 | 9.69 | 349                                                                  |
| 5/8      | 0.228                                                                        | 0.380 | 0.760 | 1.32  | 5.24  | 8.73 | 13.2 | 479                                                                  |
| 11/16    | 0.303                                                                        | 0.506 | 1.01  | 1.76  | 6.97  | 11.6 | 17.6 | 637                                                                  |
| 3/4      | 0.394                                                                        | 0.656 | 1.31  | 2.29  | 9.05  | 15.0 | 22.9 | 827                                                                  |
| 13/16    | 0.501                                                                        | 0.834 | 1.66  | 2.92  | 11.5  | 19.1 | 29.2 | 1052                                                                 |
| 7/8      | 0.625                                                                        | 1.04  | 2.08  | 3.64  | 14.3  | 23.9 | 36.4 | 1314                                                                 |
| 15/16    | 0.769                                                                        | 1.28  | 2.56  | 4.48  | 17.6  | 29.4 | 44.3 | 1616                                                                 |
| 1        | 0.933                                                                        | 1.55  | 3.11  | 5.44  | 21.4  | 35.7 | 54.4 | 1961                                                                 |
| 1-1/16   | 1.12                                                                         | 1.86  | 3.73  | 6.53  | 25.7  | 42.9 | 65.3 | 2352                                                                 |
| 1-1/8    | 1.32                                                                         | 2.21  | 4.43  | 7.75  | 30.5  | 50.9 | 77.5 | 2792                                                                 |
| 1-3/16   | 1.56                                                                         | 2.60  | 5.21  | 9.11  | 35.9  | 59.9 | 91.1 | 3283                                                                 |
| 1-1/4    | 1.82                                                                         | 3.03  | 6.07  | 10.6  | 41.9  | 69.8 | 106  | 3830                                                                 |
| 1-5/16   | 2.11                                                                         | 3.51  | 7.03  | 12.3  | 48.5  | 80   | 123  | 4433                                                                 |
| 1-3/8    | 2.42                                                                         | 4.04  | 8.08  | 11.1  | 55.8  | 93   | 141  | 5097                                                                 |
| 1-7/16   | 2.77                                                                         | 4.62  | 9.24  | 16.1  | 63.7  | 106  | 161  | 5824                                                                 |
| 1-1/2    | 3.15                                                                         | 5.25  | 10.5  | 18.3  | 72.4  | 120  | 183  | 6618                                                                 |
| 1-9/16   | 3.56                                                                         | 5.93  | 11.8  | 20.7  | 81.8  | 136  | 207  | 7480                                                                 |
| 1-5/8    | 4.00                                                                         | 6.67  | 13.3  | 23.3  | 92.1  | 153  | 233  | 8414                                                                 |
| 1-11/16  | 4.48                                                                         | 7.47  | 14.9  | 26.1  | 103.1 | 171  | 261  | 9422                                                                 |
| 1-3/4    | 5.00                                                                         | 8.33  | 16.6  | 29.1  | 115.0 | 191  | 291  | 10509                                                                |
| 1-13/16  | 5.55                                                                         | 9.26  | 18.5  | 32.4  | 127.8 | 213  | 324  | 11675                                                                |
| 1-7/8    | 6.15                                                                         | 10.2  | 20.5  | 35.8  | 141.5 | 235  | 358  | 12925                                                                |
| 1-15/16  | 6.78                                                                         | 11.3  | 22.6  | 39.6  | 156.1 | 260  | 396  | 14261                                                                |
| 2        | 7.46                                                                         | 12.4  | 24.8  | 43.5  | 171.7 | 286  | 435  | 15686                                                                |
| 2-1/16   | 8.18                                                                         | 13.6  | 27.2  | 47.7  | 188.3 | 313  | 477  | 17203                                                                |
| 2-1/8    | 8.95                                                                         | 14.9  | 29.8  | 52.2  | 206.0 | 343  | 522  | 18815                                                                |
| 2-3/16   | 9.77                                                                         | 16.2  | 32.5  | 56.9  | 224.7 | 374  | 569  | 20525                                                                |
| 2-1/4    | 10.6                                                                         | 17.7  | 35.4  | 62.0  | 244.5 | 407  | 620  | 22335                                                                |
| 2-5/16   | 11.5                                                                         | 19.2  | 38.4  | 67.3  | 265.4 | 442  | 673  | 24248                                                                |
| 2-3/8    | 12.5                                                                         | 20.8  | 41.6  | 72.9  | 287.6 | 479  | 729  | 26268                                                                |
| 2-7/16   | 13.5                                                                         | 22.5  | 45.0  | 78.8  | 310.9 | 518  | 788  | 29396                                                                |
| 2-1/2    | 14.5                                                                         | 24.3  | 48.6  | 85.0  | 335.1 | 559  | 850  | 30637                                                                |
| 2-9/16   | 15.7                                                                         | 26.1  | 52.3  | 91.6  | 361.2 | 602  | 916  | 32993                                                                |
| 2-5/8    | 16.8                                                                         | 28.1  | 56.2  | 98.4  | 388.3 | 647  | 984  | 35466                                                                |

The above table is computed based on a torsional stress of 10,000 PSI. For applications involving bending moments (gears, sprockets, etc.) the horsepower capacity must be reduced accordingly.

The stress level of 10,000 PSI is representative of medium carbon steel shafting. For other materials, a correction must be made accordingly.

Temperature Conversion Table  
Degrees Celcius “C”; Degrees Fahrenheit “F”

| Degree C. | Degree F. | Degree C. | Degree F. | Degree C. | Degree F. | Degree C. | Degree F. | Degree C. | Degree F. |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| -40       | -40.0     | 8         | 46.4      | 56        | 132.8     | 104       | 219.2     | 152       | 305.6     |
| -39       | -38.2     | 9         | 48.2      | 57        | 134.6     | 105       | 221.0     | 153       | 307.4     |
| -38       | -36.4     | 10        | 50.0      | 58        | 136.4     | 106       | 222.8     | 154       | 309.2     |
| -37       | -34.6     | 11        | 51.8      | 59        | 138.2     | 107       | 224.6     | 155       | 311.0     |
| -36       | -32.8     | 12        | 53.6      | 60        | 140.0     | 108       | 226.4     | 156       | 312.8     |
| -35       | -31.0     | 13        | 55.4      | 61        | 141.8     | 109       | 228.2     | 157       | 314.6     |
| -34       | -29.2     | 14        | 57.2      | 62        | 143.6     | 110       | 230.0     | 158       | 316.4     |
| -33       | -27.4     | 15        | 59.0      | 63        | 145.4     | 111       | 231.8     | 159       | 318.2     |
| -32       | -25.6     | 16        | 60.8      | 64        | 147.2     | 112       | 233.6     | 160       | 320.0     |
| -31       | -23.8     | 17        | 62.6      | 65        | 149.0     | 113       | 235.4     | 161       | 321.8     |
| -30       | -22.0     | 18        | 64.4      | 66        | 150.8     | 114       | 237.2     | 162       | 323.6     |
| -29       | -20.2     | 19        | 66.2      | 67        | 152.6     | 115       | 239.0     | 163       | 325.4     |
| -28       | -18.4     | 20        | 68.0      | 68        | 154.4     | 116       | 240.8     | 164       | 327.2     |
| -27       | -16.6     | 21        | 69.8      | 69        | 156.2     | 117       | 242.6     | 165       | 329.0     |
| -26       | -14.8     | 22        | 71.6      | 70        | 158.0     | 118       | 244.4     | 166       | 330.8     |
| -25       | -13.0     | 23        | 73.4      | 71        | 159.8     | 119       | 246.2     | 167       | 332.6     |
| -24       | -11.2     | 24        | 75.2      | 72        | 161.6     | 120       | 248.0     | 168       | 334.4     |
| -23       | - 9.4     | 25        | 77.0      | 73        | 163.4     | 121       | 249.8     | 169       | 336.2     |
| -22       | - 7.6     | 26        | 78.8      | 74        | 165.2     | 122       | 251.6     | 170       | 338.0     |
| -21       | - 5.8     | 27        | 80.6      | 75        | 167.0     | 123       | 253.4     | 171       | 339.8     |
| -20       | - 4.0     | 28        | 82.4      | 76        | 168.8     | 124       | 255.2     | 172       | 341.6     |
| -19       | - 2.2     | 29        | 84.2      | 77        | 170.6     | 125       | 257.0     | 173       | 343.4     |
| -18       | - 0.4     | 30        | 86.0      | 78        | 172.4     | 126       | 258.8     | 174       | 345.2     |
| -17       | + 1.4     | 31        | 87.8      | 79        | 174.2     | 127       | 260.6     | 175       | 347.0     |
| -16       | 3.2       | 32        | 89.6      | 80        | 176.0     | 128       | 262.4     | 176       | 348.8     |
| -15       | 5.0       | 33        | 91.4      | 81        | 177.8     | 129       | 264.2     | 177       | 350.6     |
| -14       | 6.8       | 34        | 93.2      | 82        | 179.6     | 130       | 266.0     | 178       | 352.4     |
| -13       | 8.6       | 35        | 95.0      | 83        | 181.4     | 131       | 267.8     | 179       | 354.2     |
| -12       | 10.4      | 36        | 96.8      | 84        | 183.2     | 132       | 269.6     | 180       | 356.0     |
| -11       | 12.2      | 37        | 98.6      | 85        | 185.0     | 133       | 271.4     | 181       | 357.8     |
| -10       | 14.0      | 38        | 100.4     | 86        | 186.8     | 134       | 273.2     | 182       | 359.6     |
| - 9       | 15.8      | 39        | 102.2     | 87        | 188.6     | 135       | 275.0     | 183       | 361.4     |
| - 8       | 17.6      | 40        | 104.0     | 88        | 190.4     | 136       | 276.8     | 184       | 363.2     |
| - 7       | 19.4      | 41        | 105.8     | 89        | 192.2     | 137       | 278.6     | 185       | 365.0     |
| - 6       | 21.2      | 42        | 107.6     | 90        | 194.0     | 138       | 280.4     | 186       | 366.8     |
| - 5       | 23.0      | 43        | 109.4     | 91        | 195.8     | 139       | 282.2     | 187       | 368.6     |
| - 4       | 24.8      | 44        | 111.2     | 92        | 197.6     | 140       | 284.0     | 188       | 370.4     |
| - 3       | 26.6      | 45        | 113.0     | 93        | 199.4     | 141       | 285.8     | 189       | 372.2     |
| - 2       | 28.4      | 46        | 114.8     | 94        | 201.2     | 142       | 287.6     | 190       | 374.0     |
| - 1       | 30.2      | 47        | 116.6     | 95        | 203.0     | 143       | 289.4     | 191       | 375.8     |
| 0         | 32.0      | 48        | 118.4     | 96        | 204.8     | 144       | 291.2     | 192       | 377.6     |
| + 1       | 33.8      | 49        | 120.2     | 97        | 206.6     | 145       | 293.0     | 193       | 379.4     |
| 2         | 35.6      | 50        | 122.0     | 98        | 208.4     | 146       | 294.8     | 194       | 381.2     |
| 3         | 37.4      | 51        | 123.8     | 99        | 210.2     | 147       | 296.6     | 195       | 383.0     |
| 4         | 39.2      | 52        | 125.6     | 100       | 212.0     | 148       | 298.4     | 196       | 384.8     |
| 5         | 41.0      | 53        | 127.4     | 101       | 213.8     | 149       | 300.2     | 197       | 386.6     |
| 6         | 42.8      | 54        | 129.2     | 102       | 215.6     | 150       | 302.0     | 198       | 388.4     |
| 7         | 44.5      | 55        | 131.0     | 103       | 217.4     | 151       | 303.8     | 199       | 390.2     |

**FRACTION — DECIMAL — MILLIMETER**

| Fraction Inches | Inch Decimal Equivalent | Millimeter Equivalent | Fraction Inches | Inch Decimal Equivalent | Millimeter Equivalent |
|-----------------|-------------------------|-----------------------|-----------------|-------------------------|-----------------------|
| 1/64            | .0156                   | .397                  | 33/64           | .5156                   | 13.097                |
| 1/32            | .0312                   | .794                  | 17/32           | .5312                   | 13.494                |
| 3/64            | .0469                   | 1.191                 | 35/64           | .5469                   | 13.891                |
| 1/16            | .0625                   | 1.588                 | 9/16            | .5625                   | 14.288                |
| 5/64            | .0781                   | 1.984                 | 37/64           | .5781                   | 14.684                |
| 3/32            | .0937                   | 2.381                 | 19/32           | .5937                   | 15.081                |
| 7/64            | .1094                   | 2.778                 | 39/64           | .6094                   | 15.478                |
| 1/8             | .1250                   | 3.175                 | 5/8             | .6250                   | 15.875                |
| 9/64            | .1406                   | 3.572                 | 41/64           | .6406                   | 16.272                |
| 5/32            | .1562                   | 3.969                 | 21/32           | .6562                   | 16.669                |
| 11/64           | .1719                   | 4.366                 | 43/64           | .6719                   | 17.066                |
| 3/16            | .1875                   | 4.763                 | 11/16           | .6875                   | 17.463                |
| 13/64           | .2031                   | 5.159                 | 45/64           | .7031                   | 17.859                |
| 7/32            | .2187                   | 5.556                 | 23/32           | .7187                   | 18.256                |
| 15/64           | .2344                   | 5.953                 | 47/64           | .7344                   | 18.653                |
| 1/4             | .2500                   | 6.350                 | 3/4             | .7500                   | 19.050                |
| 17/64           | .2656                   | 6.747                 | 49/64           | .7656                   | 19.447                |
| 9/32            | .2812                   | 7.144                 | 25/32           | .7812                   | 19.844                |
| 19/64           | .2969                   | 7.541                 | 51/64           | .7969                   | 20.241                |
| 5/16            | .3125                   | 7.938                 | 13/16           | .8125                   | 20.638                |
| 21/64           | .3281                   | 8.334                 | 53/64           | .8281                   | 21.034                |
| 11/32           | .3437                   | 8.731                 | 27/32           | .8437                   | 21.431                |
| 23/64           | .3594                   | 9.128                 | 55/64           | .8594                   | 21.828                |
| 3/8             | .3750                   | 9.525                 | 7/8             | .8750                   | 22.225                |
| 25/64           | .3906                   | 9.922                 | 57/64           | .8906                   | 22.622                |
| 13/32           | .4062                   | 10.319                | 29/32           | .9062                   | 23.019                |
| 27/64           | .4219                   | 10.716                | 59/64           | .9219                   | 23.416                |
| 7/16            | .4375                   | 11.113                | 15/16           | .9375                   | 23.813                |
| 29/64           | .4531                   | 11.509                | 61/64           | .9531                   | 24.209                |
| 15/32           | .4687                   | 11.906                | 31/32           | .9687                   | 24.606                |
| 31/64           | .4844                   | 12.303                | 63/64           | .9844                   | 25.003                |
| 1/2             | .5000                   | 12.700                | 1               | 1.0000                  | 25.400                |

**MILLIMETER — INCHES**

| Millimeters | Inches |
|-------------|--------|
| 1           | .0394  |
| 2           | .0787  |
| 3           | .1181  |
| 4           | .1575  |
| 5           | .1968  |
| 6           | .2362  |
| 7           | .2756  |
| 8           | .3150  |
| 9           | .3543  |
| 10          | .3937  |
| 11          | .4331  |
| 12          | .4724  |
| 13          | .5118  |
| 14          | .5512  |
| 15          | .5905  |
| 16          | .6299  |
| 17          | .6693  |
| 18          | .7087  |
| 19          | .7480  |
| 20          | .7874  |
| 21          | .8268  |
| 22          | .8661  |
| 23          | .9055  |
| 24          | .9449  |
| 25          | .9842  |
| 26          | 1.0236 |
| 27          | 1.0630 |
| 28          | 1.1024 |
| 29          | 1.1417 |
| 30          | 1.1811 |

# Engineering Information

## Metric Conversion Chart

### Area

| Multiply                 | By     | To Obtain                |
|--------------------------|--------|--------------------------|
| Millimeters <sup>2</sup> | .00155 | inches <sup>2</sup>      |
| Centimeters <sup>2</sup> | .155   | inches <sup>2</sup>      |
| Meters <sup>2</sup>      | 10.76  | feet <sup>2</sup>        |
| Inches <sup>2</sup>      | 645.16 | millimeters <sup>2</sup> |
| Inches <sup>2</sup>      | 6.452  | centimeters <sup>2</sup> |
| Feet <sup>2</sup>        | 929.03 | centimeters <sup>2</sup> |
| Feet <sup>2</sup>        | .0929  | meters <sup>2</sup>      |

### Density

| Multiply           | By     | To Obtain          |
|--------------------|--------|--------------------|
| lg/cm <sup>3</sup> | .03613 | lb/in <sup>3</sup> |
| lg/cm <sup>3</sup> | 62.43  | lb/in <sup>3</sup> |
| lb/in <sup>3</sup> | 27.68  | gr/cm <sup>3</sup> |
| lb/ft <sup>3</sup> | .016   | g/cm <sup>3</sup>  |
| lb/ft <sup>3</sup> | 16.02  | Kg/m <sup>3</sup>  |

### Power

| Multiply         | By      | To Obtain        |
|------------------|---------|------------------|
| Joule/sec        | .001341 | Horsepower       |
| Kilocalorie/hour | 3.967   | BTW/hour         |
| Horsepower       | .33000  | ft-lb/min        |
| Horsepower       | 746     | watts            |
| BTU/hour         | .2521   | kilocalorie/hour |

### Length

| Multiply   | By     | To Obtain  |
|------------|--------|------------|
| Millimeter | .03937 | inch       |
| Centimeter | .3937  | inch       |
| Meter      | 39.37  | inch       |
| Inch       | 2.54   | centimeter |
| Feet       | 30.48  | centimeter |
| Feet       | .3048  | meter      |

### Volume

| Multiply                | By    | To Obtain               |
|-------------------------|-------|-------------------------|
| Centimeter <sup>3</sup> | .0610 | inches <sup>3</sup>     |
| Centimeter <sup>3</sup> | .034  | fluid ounce             |
| Liter                   | 61.02 | inches <sup>3</sup>     |
| Liter                   | .0353 | feet <sup>3</sup>       |
| Liter                   | .264  | U.S. gallon             |
| Inch <sup>3</sup>       | 16.39 | centimeter <sup>3</sup> |
| Feet <sup>3</sup>       | 28.32 | liter                   |
| Gallon                  | 3.785 | liter                   |

### Weight

| Multiply | By     | To Obtain |
|----------|--------|-----------|
| Gram     | .03527 | ounce     |
| Kilogram | 35.27  | ounce     |
| Kilogram | 2.205  | pounds    |
| Ounce    | 28.35  | gram      |
| Pound    | 453.6  | grams     |

### Torque

| Multiply     | By   | To Obtain    |
|--------------|------|--------------|
| Newton-meter | 8.84 | in-lb        |
| in-lb        | .113 | Newton-meter |

### Velocity

| Multiply          | By     | To Obtain          |
|-------------------|--------|--------------------|
| Centimeter/second | .3937  | inches/second      |
| Centimeter/second | 1.969  | feet/minute        |
| Meter/second      | 3.281  | feet/second        |
| Meter/second      | 196.9  | feet/minute        |
| Meter/second      | 2.237  | miles per hour     |
| Inch/second       | 25.4   | millimeters/second |
| Inch/second       | 2.54   | centimeters/second |
| Foot/second       | .3048  | meters/second      |
| Foot/minute       | .00508 | meters/second      |

## BOSTON GEAR REGISTERED TRADEMARKS

**BOSTON GEAR®**

**BOSTON®**

**BOSTonE®**

**BOST-BRONZ®**

**BEAR-N-BRONZ®**

## Application Classification for Various Loads

| Type of Machine<br>To Be Driven                   | Chart I For All Drives                    |                                        |                                    |
|---------------------------------------------------|-------------------------------------------|----------------------------------------|------------------------------------|
|                                                   | Service Factor Loading                    |                                        |                                    |
|                                                   | Not More<br>Than 15<br>Mins. in<br>2 Hrs. | Not More<br>Than 10<br>Hrs. per<br>Day | More<br>Than<br>10 Hrs.<br>Per Day |
| <b>AGITATORS</b>                                  |                                           |                                        |                                    |
| Pure Liquid                                       | 0.80                                      | 1.00                                   | 1.25                               |
| Semi-Liquids, Variable Density                    | 1.00                                      | 1.25                                   | 1.50                               |
| <b>BLOWERS</b>                                    |                                           |                                        |                                    |
| Centrifugal and Vane                              | 0.80                                      | 1.00                                   | 1.25                               |
| Lobe                                              | 1.00                                      | 1.25                                   | 1.50                               |
| <b>BREWING AND DISTILLING</b>                     |                                           |                                        |                                    |
| Bottling Machinery                                | 0.80                                      | 1.00                                   | 1.25                               |
| Brew Kettles—Continuous Duty                      | —                                         | —                                      | 1.25                               |
| Cookers – Continuous Duty                         | —                                         | —                                      | 1.25                               |
| Mash Tubs – Continuous Duty                       | —                                         | —                                      | 1.25                               |
| Scale Hopper – Frequent Starts                    | —                                         | 1.25                                   | 1.50                               |
| <b>CAN FILLING MACHINES</b>                       | —                                         | 1.00                                   | —                                  |
| <b>CANE KNIVES</b>                                | —                                         | 1.50                                   | —                                  |
| <b>CAR DUMPERS</b>                                | —                                         | 1.75                                   | —                                  |
| <b>CAR PULLERS</b>                                | —                                         | 1.25                                   | —                                  |
| <b>CLARIFIERS</b>                                 | —                                         | 1.00                                   | 1.25                               |
| <b>CLASSIFIERS</b>                                | —                                         | 1.25                                   | 1.50                               |
| <b>CLAY WORKING MACHINERY</b>                     |                                           |                                        |                                    |
| Brick Press & Briquette Machine                   | —                                         | 1.75                                   | 2.00                               |
| Extruders and Mixers                              | 1.00                                      | 1.25                                   | 1.50                               |
| <b>COMPRESSORS</b>                                |                                           |                                        |                                    |
| Centrifugal                                       | —                                         | 1.00                                   | 1.25                               |
| Lobe – Reciprocating, Multi-Cycle                 | —                                         | 1.25                                   | 1.50                               |
| Reciprocating – Single Cycle                      | —                                         | 1.75                                   | 2.00                               |
| <b>CONVEYORS—<br/>UNIFORMLY LOADED &amp; FED</b>  |                                           |                                        |                                    |
| Apron                                             | —                                         | 1.00                                   | 1.25                               |
| Assembly-Belt – Bucket or Pan                     | —                                         | 1.00                                   | 1.25                               |
| Chain – Flight                                    | —                                         | 1.00                                   | 1.25                               |
| Oven – Live Roll – Screw                          | —                                         | 1.25                                   | 1.50                               |
| <b>CONVEYORS—HEAVY DUTY<br/>NOT UNIFORMLY FED</b> |                                           |                                        |                                    |
| Apron                                             | —                                         | 1.25                                   | 1.50                               |
| Assembly-Belt – Bucket or Pan                     | —                                         | 1.25                                   | 1.50                               |
| Chain – Flight                                    | —                                         | 1.25                                   | 1.50                               |
| Live Roll                                         | —                                         | —                                      | —                                  |
| Oven – Screw                                      | —                                         | 1.25                                   | 1.50                               |
| Reciprocating – Shaker                            | —                                         | 1.75                                   | 2.00                               |
| <b>CRANES AND HOISTS</b>                          |                                           |                                        |                                    |
| Main Hoists                                       |                                           |                                        |                                    |
| Bridge and Trolley Drive                          | *                                         | 1.00                                   | 1.25                               |
| <b>CRUSHER</b>                                    |                                           |                                        |                                    |
| Ore, Stone                                        | —                                         | 1.75                                   | 2.00                               |
| Sugar                                             | —                                         | 1.50                                   | 1.50                               |

| Type of Machine<br>To Be Driven            | Chart I For All Drives                    |                                        |                                    |
|--------------------------------------------|-------------------------------------------|----------------------------------------|------------------------------------|
|                                            | Service Factor Loading                    |                                        |                                    |
|                                            | Not More<br>Than 15<br>Mins. in<br>2 Hrs. | Not More<br>Than 10<br>Hrs. per<br>Day | More<br>Than<br>10 Hrs.<br>Per Day |
| <b>ELEVATORS</b>                           |                                           |                                        |                                    |
| Bucket – Uniform Load                      | —                                         | 1.00                                   | 1.25                               |
| Bucket – Heavy Load                        | —                                         | 1.25                                   | 1.50                               |
| Centrifugal Discharge                      | —                                         | 1.25                                   | 1.50                               |
| Freight                                    | —                                         | 1.25                                   | 1.50                               |
| Gravity Discharge                          | —                                         | 1.00                                   | 1.25                               |
| <b>FANS</b>                                |                                           |                                        |                                    |
| Centrifugal – Light (Small Diam.)          | —                                         | 1.00                                   | 1.25                               |
| Large Industrial                           | —                                         | 1.25                                   | 1.50                               |
| <b>FEEDERS</b>                             |                                           |                                        |                                    |
| Apron – Belt – Screw                       | —                                         | 1.25                                   | 1.50                               |
| Disc                                       | —                                         | 1.00                                   | 1.25                               |
| Reciprocating                              | —                                         | 1.75                                   | 2.00                               |
| <b>FOOD INDUSTRY</b>                       |                                           |                                        |                                    |
| Beet Slicer                                | —                                         | 1.25                                   | 1.50                               |
| Cereal Cooker                              | —                                         | 1.00                                   | 1.25                               |
| Dough Mixer – Meat Grinder                 | —                                         | 1.25                                   | 1.50                               |
| <b>GENERATORS (NOT WELDING)</b>            | —                                         | 1.00                                   | 1.25                               |
| <b>HAMMER MILLS</b>                        | —                                         | 1.75                                   | 2.00                               |
| <b>HOISTS</b>                              |                                           |                                        |                                    |
| Heavy Duty                                 | —                                         | 1.75                                   | 2.00                               |
| Medium Duty and Skip Type                  | —                                         | 1.25                                   | 1.50                               |
| <b>LAUNDRY TUMBLERS</b>                    | —                                         | 1.25                                   | 1.50                               |
| <b>LINE SHAFTS</b>                         |                                           |                                        |                                    |
| Uniform Load                               | —                                         | 1.00                                   | 1.25                               |
| Heavy Load                                 | —                                         | 1.25                                   | 1.50                               |
| <b>MACHINE TOOLS</b>                       |                                           |                                        |                                    |
| Auxiliary Drive                            | —                                         | 1.00                                   | 1.25                               |
| Main Drive – Uniform Load                  | —                                         | 1.25                                   | 1.50                               |
| Main Drive – Heavy Duty                    | —                                         | 1.75                                   | 2.00                               |
| <b>METAL MILLS</b>                         |                                           |                                        |                                    |
| Draw Bench Carriers & Main Drive           | —                                         | 1.25                                   | 1.50                               |
| <b>SLITTERS</b>                            | —                                         | 1.25                                   | 1.50                               |
| <b>TABLE CONVEYORS –<br/>NON REVERSING</b> |                                           |                                        |                                    |
| Group Drives                               | —                                         | 1.25                                   | 1.50                               |
| Individual Drives                          | —                                         | 1.75                                   | 2.00                               |
| Wiring Drawing,<br>Flattening or Winding   | —                                         | 1.25                                   | 1.50                               |
| <b>MILLS ROTARY TYPE<br/>BALL AND ROD</b>  |                                           |                                        |                                    |
| Spur Ring Gear and<br>Direct Connected     | —                                         | —                                      | 2.00                               |
| Cement Kilns, Pebble                       | —                                         | —                                      | 1.50                               |
| Dryers and Coolers                         | —                                         | —                                      | 1.50                               |
| Plain and Wedge Bar                        | —                                         | —                                      | 1.50                               |
| Tumbling Barrels                           | —                                         | —                                      | 2.00                               |

## Application Classification for Various Loads (Continued)

| Type of Machine<br>To Be Driven                | Chart I For All Drives                    |                                        |                                    |
|------------------------------------------------|-------------------------------------------|----------------------------------------|------------------------------------|
|                                                | Service Factor Loading                    |                                        |                                    |
|                                                | Not More<br>Than 15<br>Mins. in<br>2 Hrs. | Not More<br>Than 10<br>Hrs. per<br>Day | More<br>Than<br>10 Hrs.<br>Per Day |
| <b>MIXERS</b>                                  |                                           |                                        |                                    |
| Concrete – Continuous                          | —                                         | 1.25                                   | 1.50                               |
| Concrete – Intermittent                        | —                                         | 1.25                                   | 1.50                               |
| Constant Density                               | —                                         | 1.00                                   | 1.25                               |
| Semi-Liquid                                    | —                                         | 1.25                                   | 1.50                               |
| <b>OIL INDUSTRY</b>                            |                                           |                                        |                                    |
| Oil Well Pumping                               | —                                         | —                                      | *                                  |
| Chillers, Paraffin Filter Press                | —                                         | 1.25                                   | 1.50                               |
| Rotary Kilns                                   | —                                         | 1.25                                   | 1.50                               |
| <b>PAPER MILLS</b>                             |                                           |                                        |                                    |
| Agitator (Mixer)                               | —                                         | 1.25                                   | 1.50                               |
| Agitator – Pure Liquids                        | —                                         | 1.00                                   | 1.25                               |
| Barking Drums – Mechanical                     |                                           |                                        |                                    |
| Barkers                                        | —                                         | 1.75                                   | 2.00                               |
| Bleacher                                       | —                                         | 1.00                                   | 1.25                               |
| Beater                                         | —                                         | 1.25                                   | 1.50                               |
| Calender Heavy Duty                            | —                                         | —                                      | 2.00                               |
| Calender Anti-Friction Brgs.                   | —                                         | 1.00                                   | 1.25                               |
| Cylinders                                      | —                                         | 1.25                                   | 1.50                               |
| Chipper                                        | —                                         | —                                      | 2.00                               |
| Chip Feeder                                    | —                                         | 1.25                                   | 1.50                               |
| Coating Rolls – Couch Rolls                    | —                                         | 1.00                                   | 1.25                               |
| Conveyors – Chips – Bark –<br>Chemical         | —                                         | 1.00                                   | 1.25                               |
| Conveyors – Log and Slab                       | —                                         | —                                      | 2.00                               |
| Cutter                                         | —                                         | —                                      | 2.00                               |
| Cylinder Molds, Dryers<br>(Anti-Friction Brg.) | —                                         | —                                      | 1.25                               |
| Felt Stretcher                                 | —                                         | 1.25                                   | 1.50                               |
| Screens – Chip and Rotary                      | —                                         | 1.25                                   | 1.50                               |
| Thickener (AC)                                 | —                                         | 1.25                                   | 1.50                               |
| Washer (AC)                                    | —                                         | 1.25                                   | 1.50                               |
| Winder – Surface Type                          | —                                         | —                                      | 1.25                               |
| <b>PLASTICS INDUSTRY</b>                       |                                           |                                        |                                    |
| Intensive Internal Mixers                      |                                           |                                        |                                    |
| Batch Type                                     | —                                         | —                                      | 1.75                               |
| Continuous Type                                | —                                         | —                                      | 2.00                               |
| Batch Drop Mill – 2 Rolls                      | —                                         | —                                      | 1.25                               |
| Compounding Mills                              | —                                         | —                                      | 1.25                               |
| Calenders                                      | —                                         | —                                      | 1.50                               |
| Extruder – Variable Speed                      | —                                         | —                                      | 1.50                               |
| Extruder – Fixed Speed                         | —                                         | —                                      | 1.75                               |
| <b>PULLERS</b>                                 |                                           |                                        |                                    |
| Barge Haul                                     | —                                         | —                                      | 2.00                               |

| Type of Machine<br>To Be Driven      | Chart I For All Drives                    |                                        |                                    |
|--------------------------------------|-------------------------------------------|----------------------------------------|------------------------------------|
|                                      | Service Factor Loading                    |                                        |                                    |
|                                      | Not More<br>Than 15<br>Mins. in<br>2 Hrs. | Not More<br>Than 10<br>Hrs. per<br>Day | More<br>Than<br>10 Hrs.<br>Per Day |
| <b>PUMPS</b>                         |                                           |                                        |                                    |
| Centrifugal                          | —                                         | —                                      | 1.25                               |
| Proportioning                        | —                                         | —                                      | 1.50                               |
| Reciprocating                        |                                           |                                        |                                    |
| Single Acting,<br>3 or more Cycles   | —                                         | 1.25                                   | 1.50                               |
| Double Acting,<br>2 or more Cycles   | —                                         | 1.25                                   | 1.50                               |
| Rotary – Gear or Lube                | —                                         | 1.00                                   | 1.25                               |
| <b>RUBBER INDUSTRY</b>               |                                           |                                        |                                    |
| Batch Mixers                         | —                                         | —                                      | 1.75                               |
| Continuous Mixers                    | —                                         | —                                      | 1.50                               |
| Calenders                            | —                                         | —                                      | 1.50                               |
| Extruders – Continuous               | —                                         | —                                      | 1.50                               |
| Extruders – Intermittent             | —                                         | —                                      | 1.75                               |
| Tire Building Machines               | —                                         | —                                      | —                                  |
| Tire & Tube Press Openers            | —                                         | —                                      | —                                  |
| <b>SEWAGE DISPOSAL<br/>EQUIPMENT</b> |                                           |                                        |                                    |
| Bar Screens                          | —                                         | 1.00                                   | 1.25                               |
| Chemical Feeders                     | —                                         | 1.00                                   | 1.25                               |
| Collectors                           | —                                         | 1.00                                   | 1.25                               |
| Dewatering Screws                    | —                                         | 1.25                                   | 1.50                               |
| Scum Breakers                        | —                                         | 1.25                                   | 1.50                               |
| Slow or Rapid Mixers                 | —                                         | 1.25                                   | 1.50                               |
| Thickeners                           | —                                         | 1.25                                   | 1.50                               |
| Vacuum Filters                       | —                                         | 1.25                                   | 1.50                               |
| <b>SCREENS</b>                       |                                           |                                        |                                    |
| Air Washing                          | —                                         | 1.00                                   | 1.25                               |
| Rotary – Stone or Gravel             | —                                         | 1.25                                   | 1.50                               |
| Traveling Water Intake               | —                                         | 1.00                                   | 1.25                               |
| <b>SKIP HOISTS</b>                   | —                                         | —                                      | —                                  |
| <b>SLAB PUSHERS</b>                  | —                                         | 1.25                                   | 1.50                               |
| <b>STOKERS</b>                       | —                                         | —                                      | 1.25                               |
| <b>TEXTILE INDUSTRY</b>              |                                           |                                        |                                    |
| Batchers or Calenders                | —                                         | 1.25                                   | 1.50                               |
| Cards                                | —                                         | 1.25                                   | 1.50                               |
| Card Machines                        | —                                         | 1.75                                   | 2.00                               |
| Dry Cans and Dryers                  | —                                         | 1.25                                   | 1.50                               |
| Dyeing Machines                      | —                                         | 1.25                                   | 1.50                               |
| Looms                                | —                                         | 1.25                                   | 1.50                               |
| Mangles, Nappers and Pads            | —                                         | 1.25                                   | 1.50                               |
| Soapers, Tenner Frames               | —                                         | 1.25                                   | 1.50                               |
| Spinners, Washers, Winders           | —                                         | 1.25                                   | 1.50                               |
| <b>TUMBLING BARRELS</b>              | 1.50                                      | 1.75                                   | 2.00                               |
| <b>WINDLASS</b>                      | —                                         | 1.25                                   | 1.50                               |

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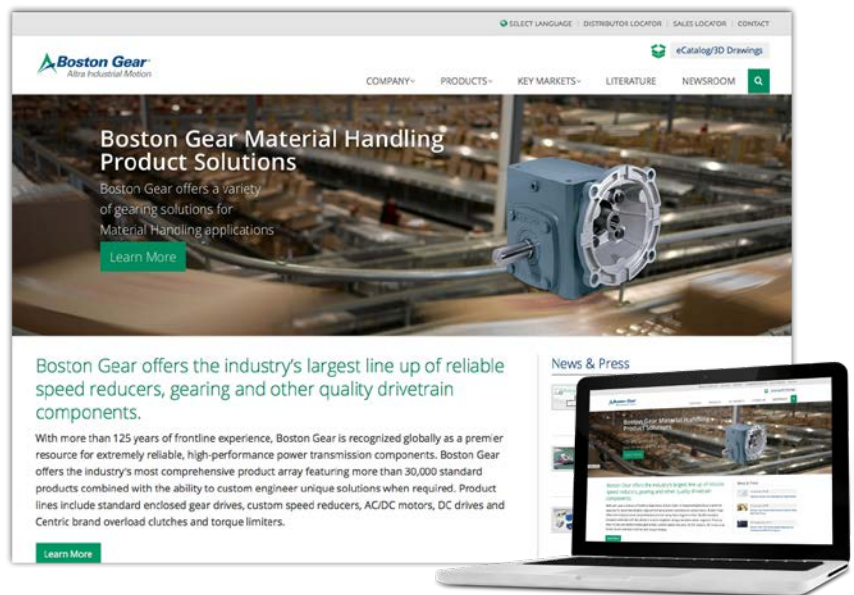
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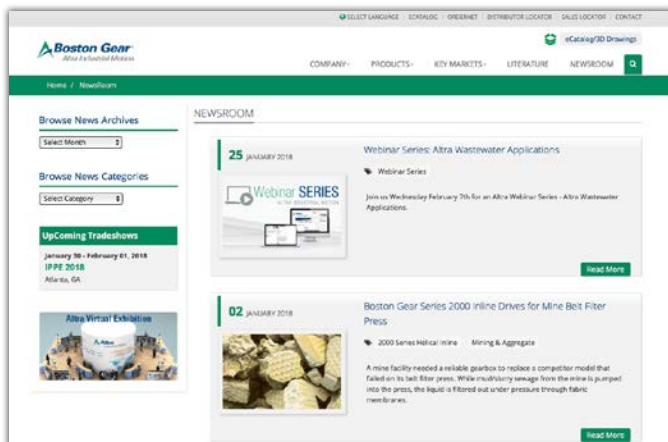
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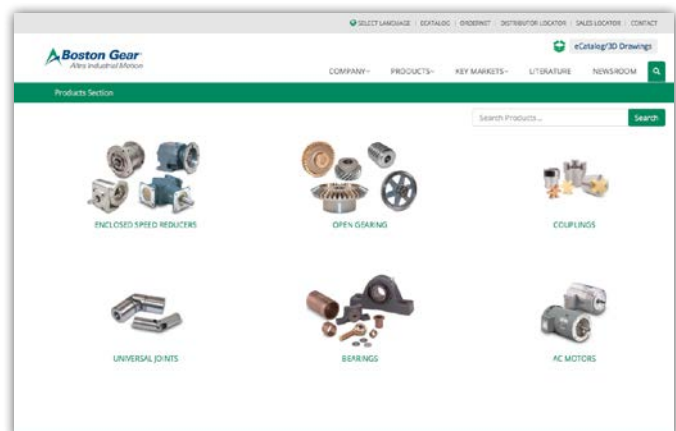


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