



# Small Part Tooling Solutions



## FEATURED PRODUCTS

### Molded Sharp Edge Chipbreakers



Large Lineup Providing  
Excellent Chip Control

### EZ Bar Series Small Diameter Boring



Excellent Repeatability  
Easy Positioning Indexable Type Available

### GBF Series Grooving



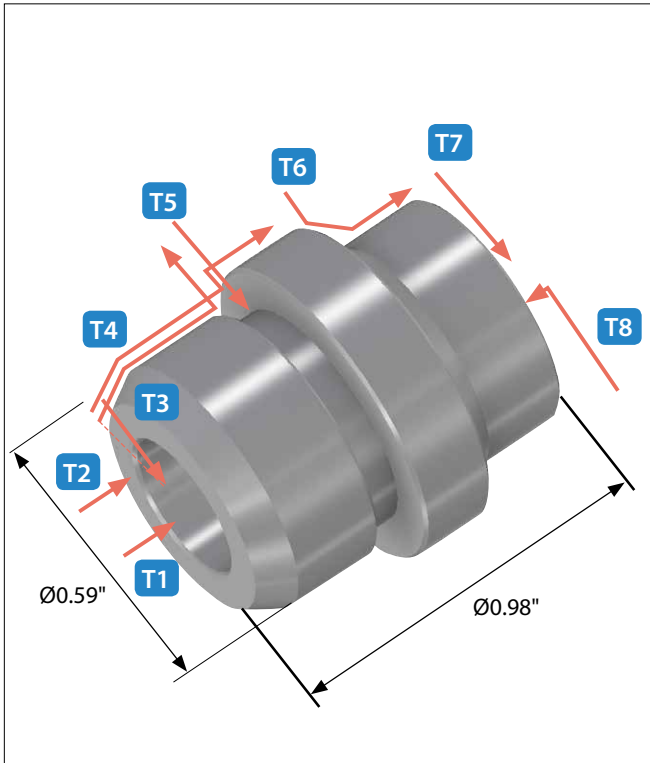
GL Molded Chipbreaker  
Provides Stable Chip Control  
(JCT Coolant Through Option Available)

### KGD Small Parts Cut-Off



Wide Lineup Enables Long Tool Life on  
Various Workpiece Material  
(JCT Coolant Through Option Available)

# Machining Demonstration for Auto Part Tooling for Injection Core (304)



## Introduction

It can be difficult to control chips when machining 304 stainless steel. Due to the number of machining operations required, it is important to optimize the selection of tooling to improve productivity.

## Our Tooling Advantages

- 1) Stable chip control with molded chipbreakers
- 2) Sharp cutting edge for high-quality surface finish
- 3) Long tool life with heat-resistant coated carbide "PR1535"

## Insert Grade Selection

Use PR1535 insert grade for stainless steel machining. Achieve long tool life and stable stainless steel machining with the combination of a tough substrate and a specialized Nano coating layer.

T1

▶▶ P4

## DRA

High precision and high efficiency machining with the DRA replaceable insert tip drill

SS10-DRA080M-3  
DA0800M-GM PR1535

**Cutting Conditions**  
Vc = 230 sfm  
f = 0.003 ipr



T3

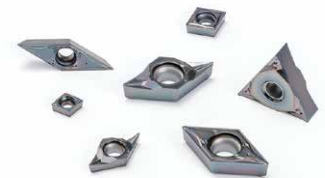
T4

▶▶ P6

## Molded Sharp Edge Chipbreakers

Molded chipbreaker combines sharpness and superior chip control

T3 SCLCR1212JX-09FF  
CCGT3251MFP-GQ PR1535  
T4 SDJCR1216JX-11-F15  
DCGT32505MFP-SK PR1535



**Cutting Conditions**  
Roughing (SK Chipbreaker)  
Vc = 230 sfm, D.O.C. = 0.008" - 0.098"  
f = 0.004 ipr  
Finishing (GF Chipbreaker)  
Vc = 262 sfm, D.O.C. = 0.020"  
f = 0.003 ipr

T2 T8

▶▶ P5/P10

## EZ Bar Series

Lineup from high precision adjustable solid bars to easy indexable type

T2 EZH07019CT-120  
C06X-SCLCR04 - 070EZ  
CCGT040102MP-CF PR1535

T8 SDJCR1216JX-11-F15  
DCGT32505MFP-SK PR1535

**Cutting Conditions**  
Boring (EZ Bar PLUS: Indexable type)  
Vc = 197 sfm, D.O.C. = 0.0098"  
f = 0.0016 ipr  
Back Facing (EZ Bar)  
Vc = 197 sfm, D.O.C. = 0.008"  
f = 0.0020 ipr



T5

▶▶ P7

## GBF GL Chipbreaker

Molded chipbreaker maintains smooth chip control

KGBFR1212JX-16F  
GBF32R100-005GL PR1535

**Cutting Conditions**  
Vc = 262 sfm  
f = 0.003 ipr  
Grooving Depth : 0.118"



T6

▶▶ P8

## TKFB GQ Chipbreaker

Tool for back turning with molded chipbreaker provides single-pass machining

SCLCR1212JX-09FF  
CCGT3251MFP-GQ PR1535

### Cutting Conditions

#### Grooving :

Vc = 262 sfm  
D.O.C. = 0.018"  
f = 0.001 ipr

#### External Turning :

Vc = 262 sfm  
D.O.C. = 0.118"  
f = 0.002 ipr



T7

▶▶ P9

## KGD for Small Parts Machining

Good chip control at low feed rates

KGDSR1616JX-2B  
GDM2020N-015PF PR1535

### Cutting Conditions

Vc = 262 sfm  
f = 0.002 ipr

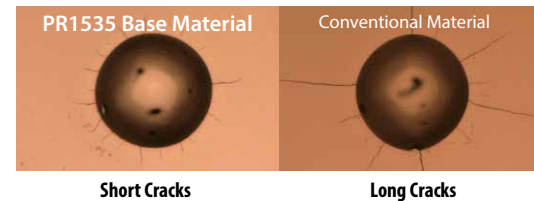


# PR1535 MEGACOAT NANO

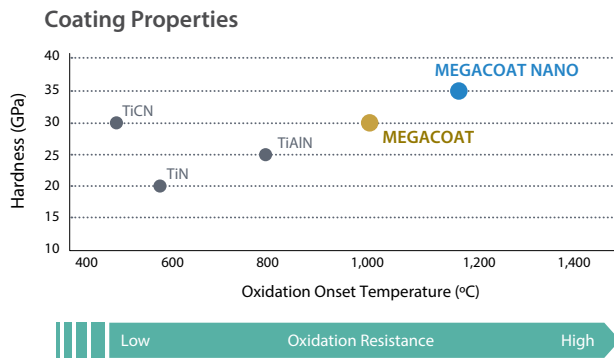
Fracture resistant with a tough substrate and high heat-resistant coating for stable machining of general steel, mold steel, and difficult-to-cut materials

- 1 An increase in cobalt content yields a substrate with greater toughness.
- 2 Fracture toughness values are improved by 23% over previous grades.

### Cracking Comparison by Diamond Indenter (Internal Evaluation)



Shock Resistance

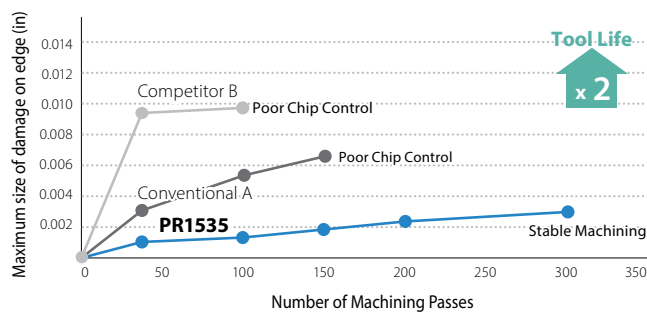


MEGACOAT Layer Structure



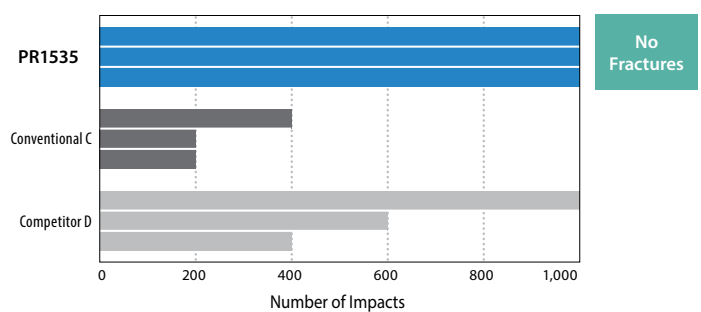
PR1535 also shows superior performance in steel machining under unstable conditions

### Wear Resistance Evaluation (Internal Evaluation)



Cutting conditions : n = 1,273 rpm (Vc = 262 sfm), f = 0.0015 ipr, Wet (Oil-based)  
Workpiece : 304 (Ø20mm)

### Fracture Resistance Evaluation (Internal Evaluation)



Cutting conditions : n = 509 rpm (Vc = 262 sfm), f = 0.0047 ipr, Wet (Water Soluble)  
Workpiece : 304

\*Evaluated with KGD



**Issues**

Modern high precision machining requires tight coaxiality and circularity tolerances, which can be difficult to achieve.

**Solution**

It is important to select a drill with low cutting force. The DRA drills provide excellent hole accuracy with a low cutting force design.

Lineup includes a minimum cutting diameter  $\varnothing 0.313''$  and 1.5D drill body which is great for small part machining applications.

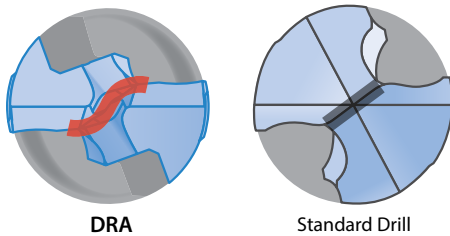


1.5D Depths Available

**1 Low Cutting Force Design Improves Hole Accuracy**

Special chisel edge with S-curve reduces thrust force and controls vibration

Cutting Edge Image



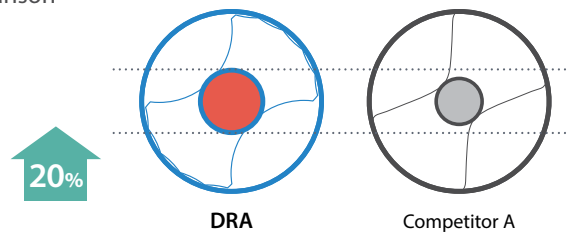
DRA

Standard Drill

**2 Optimal Web Thickness Limits Deflection**

Special chisel edge with S-curve reduces thrust force and controls vibration

Web Thickness Comparison



DRA

Competitor A

**Solid Drills for Small Diameter Drilling**

**ORION Drill from  $\varnothing 0.039''$  Cutting Diameter**

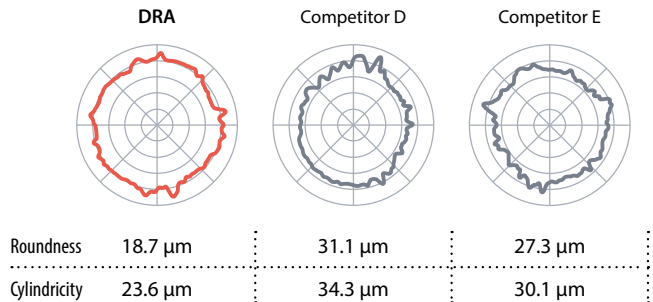


**ZZDK from  $\varnothing 1\text{mm}$  Cutting Diameter**



\*Using ZZDK on Stainless Steel is not recommended

**Roundness · Cylindricity Comparison**  
(Internal Evaluation)



Cutting Conditions :  $V_c = 390\text{ sfm}$ ,  $f = 0.012\text{ ipr}$   
Drilling Diameter  $\varnothing 0.551''$ , Measurement Position 2.165", Wet Workpiece : 1049 Steel



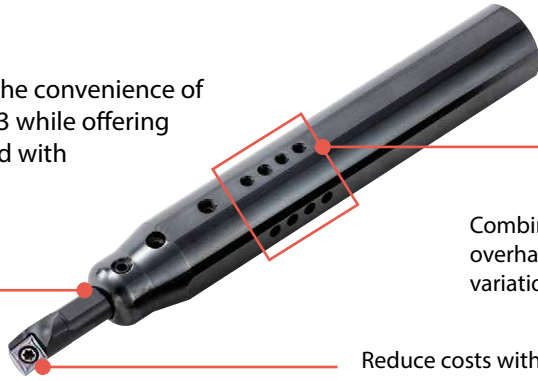
**Issues**

Changing tools while boring can be tedious, and often sacrifices repeatable accuracy.

**Solution**

EZ Bar's High Precision Solid Bar gives you the convenience of indexable inserts, cutting set-up time by 1/3 while offering higher repeatability and accuracy compared with conventional boring bars.

Carbide shank and steel shank available

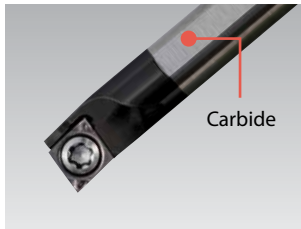


Combining the sleeve with adjustable overhang length prevents dimensional variation and reduces set up time

Reduce costs with changeable, indexable inserts

**1** Minimum Boring Diameter : Ø5mm

Carbide type and Steel type are available for various applications



Carbide Type

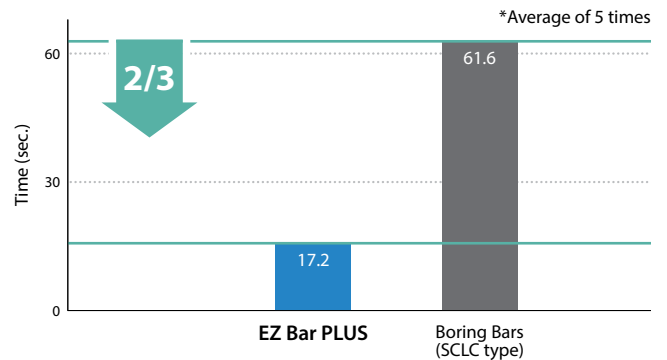


Steel Type

**2** Shorten Time of Insert Change by 1/3

EZ Adjust Structure enables drastic shortening of the setting time compared to conventional boring bars.

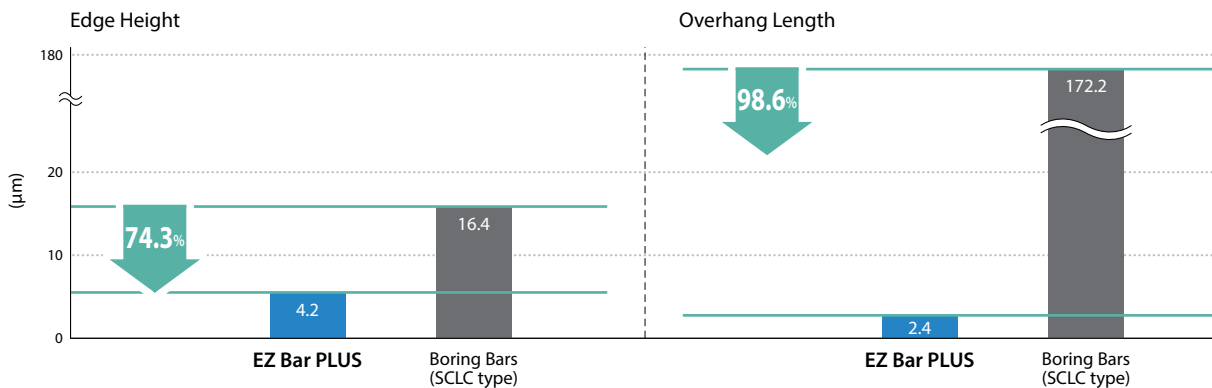
Insert Change Time (Internal Evaluation)



**3** Superior Repeat Accuracy

EZ Adjust structure achieves better repeat accuracy than standard boring bars.

Repeat Accuracy Comparison (Internal Evaluation)





### Issues

Continuous operation of small tool machines requires maintenance free operation. Poor chip control can lead to part entanglement, poor surface finish, and decreased tool life.

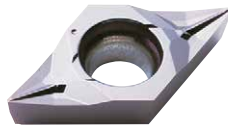
### Solution

Kyocera's molded sharp edge chipbreakers allow for precise control in small part applications. Improve chip control, surface finish, and increase tool life by selecting the right chipbreaker for your job from Kyocera's extensive chipbreaker lineup.

### Resistance Oriented (Low Cutting Force)

#### SK Chipbreaker : Low Cutting Force, Finishing

D.O.C. : 0.019" ~ 0.118"  
Molded chipbreaker combines sharpness and superior chip control

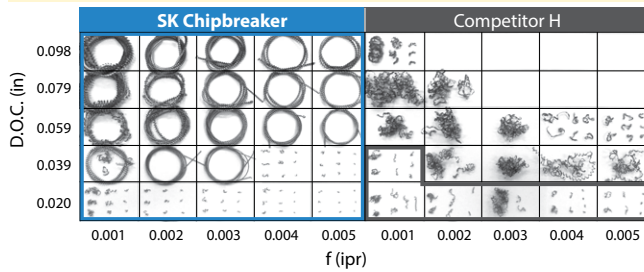


#### CK Chipbreaker : Low Cutting Force, General Purpose

D.O.C. : 0.039" ~ 0.098"  
Smooth chip evacuation with large rake angle

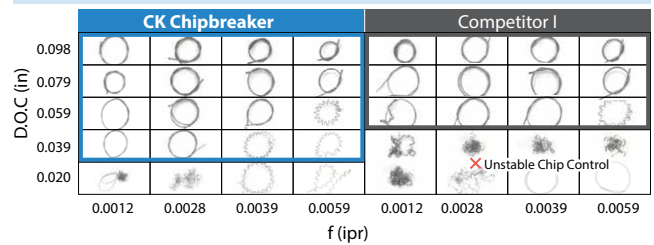


304



Cutting conditions : Vc = 328 sfm, Wet, DCGT32505 Type

1045



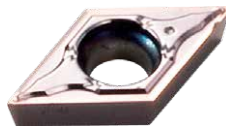
Cutting conditions : Vc = 328 sfm, Wet, CCGT32505 Type

### Chip Control Oriented



#### GQ Chipbreaker : Small~Large D.O.C.

D.O.C. : 0.031" ~ 0.198" (Steel)  
0.031" ~ 0.118" (Stainless Steel)  
Chipbreaker for wide range of machining applications



#### GF Chipbreaker : Finishing

D.O.C. : 0.010" ~ 0.049"  
Stable chip control during finishing



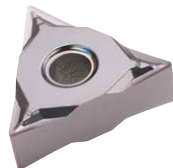
#### CF Chipbreaker : Minute Depth of Cut

D.O.C. : 0.001" ~ 0.008"  
Excellent chip control with minute depth of cut

### Small Double-Sided Tooling for workpieces larger than Ø.63" / Lineup from 0.0039" Corner-R (minus tolerance)

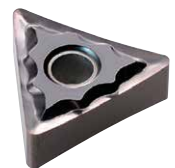
#### SK Chipbreaker : Finishing ~ Medium

Useful chipbreaker for both sharpness and superior chip control



#### TK Chipbreaker : Medium ~ Roughing

Supports a wide range of cutting conditions with low cutting force design





## Issues

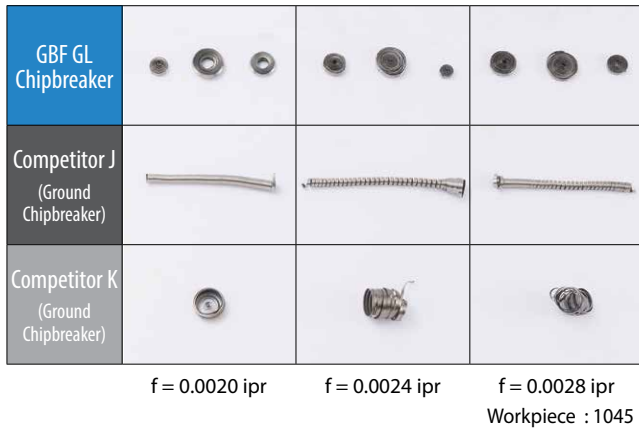
Typical ground chipbreakers failure to control chip size can lead to chip entanglement on the workpiece.

## Solution

The **GBF GL molded chipbreaker** improves chipbreaking capabilities allowing for precise and reliable grooving and traversing.

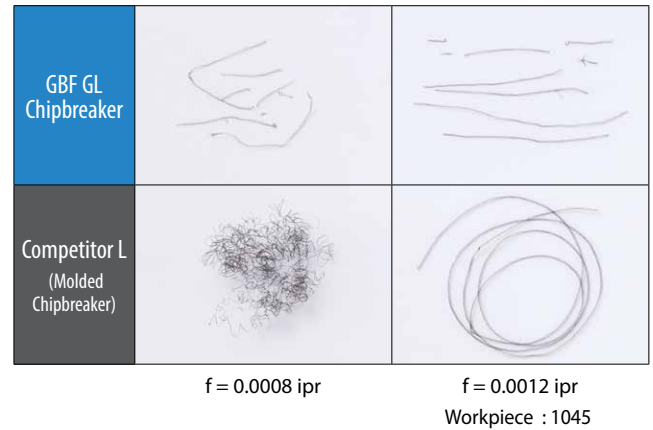
### 1 Excellent Chip Control Performance

Compared to ground chipbreakers, molded chipbreakers have more precise chip control.



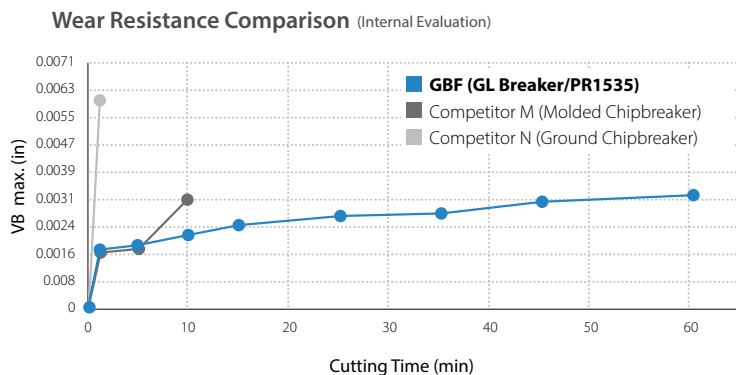
### 2 Traversing Supported

Excellent Chip Control for Various Applications



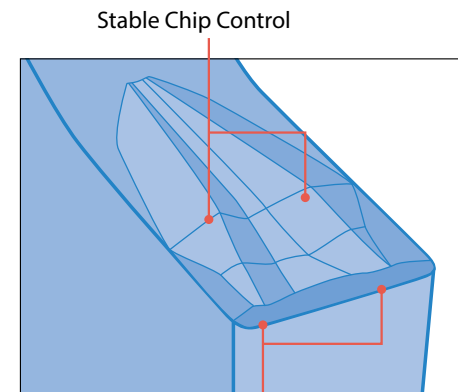
### 3 Long and Stable Tool Life

Fracture Resistant Cutting Edge Design for Stable Machining



Cutting conditions : 197 sfm, f = 0.0016 ipr  
 Workpiece : 304

### Twin-bump Chipbreaker Design



Chips are short, curled and broken evenly in low feed machining operations to prevent chip crumpling



### Issues

Poor chip control can lead to work-hardened chips jamming between the work surface and the cutting tool. This can lead to inserts chipping out and not lasting through continuous machining cycles.

### Solution

**TKFB GQ Molded Chipbreakers** allow for single-pass machining with both excellent surface finish and chip control for reliable continuous operation.

## 1 Prevents Chip Jamming and Clogged Chips

GQ Chipbreakers provide single-pass machining reducing cycle times and increasing surface finish quality

### Surface Roughness of Flange Surface Comparison

D.O.C.	0.157"	0.118"	0.079"
GQ Chipbreaker	Rz = 2.63µm	Rz = 2.92µm	Rz = 2.41µm
Competitor O (Ground Chipbreaker)	Rz = 27.88µm	Rz = 31.23µm	Rz = 25.56µm

Cutting conditions : Vc = 328 sfm, f = 0.0008 ipr, Wet Workpiece : 1045

## 2 Excellent Chip Control

### Features of the GQ Chipbreaker:

**Grooving** Superior Surface Finish

**Prevents chip jamming**

<b>GQ Chipbreaker</b>	<b>Competitor P (Ground Chipbreaker)</b>
(Internal Evaluation)	

**External** Stable Chip Control

**Prevents Chip Entanglement**

<b>GQ Chipbreaker</b>	<b>Competitor Q (Ground Chipbreaker)</b>
(Internal Evaluation)	



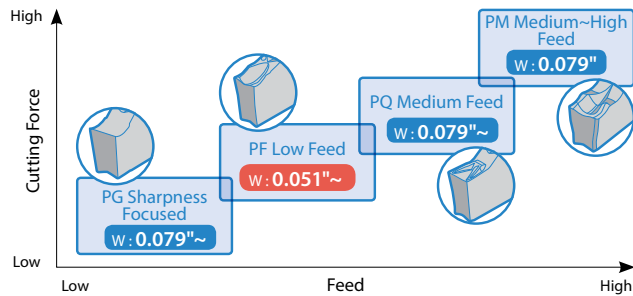
## Issues

Parting off across the center where cutting speeds drop to zero can lead to short tool life.

## Solution

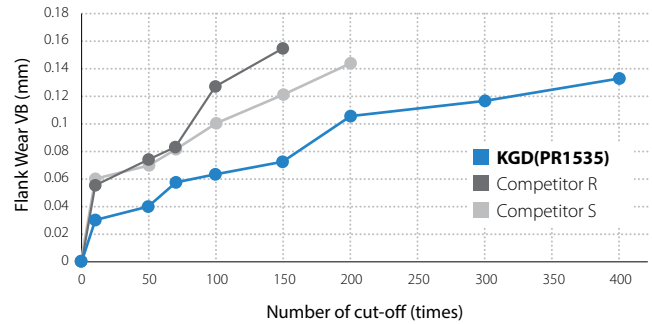
Use the **KGD Grooving and Cut-off system** combined with the PR1535 insert grade, special chipbreakers, and an improved ridged clamping system for long tool life and reliable operation.  
Now available in JCT Jet Coolant-Through styles.

### 1 Wide Chipbreaker Lineup for Various Machining Application



### 2 Long and Stable Tool Life

Wear Resistance Comparison (Internal Evaluation)

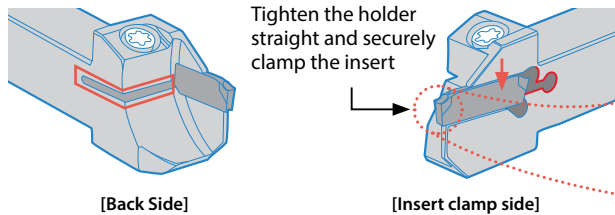


Vc = 197 sfm, f = 0.0016 ipr, (0.0008ipr from 0.197" to the center)  
Wet Workpiece = 304

### 3 Increased Clamping Strength

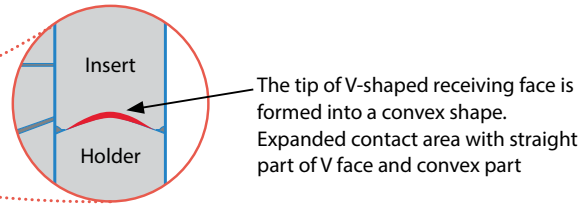
#### New Slit Shape

Increased clamping force by tightening the insert clamp side



#### V-shaped Receiving Face with Convex tip

Increasing the contact area between insert and holder allows for a tighter fitting insert which increases clamping strength



Clamping strength ( Traversing )  
(Internal Evaluation)

Cutting conditions : Vc = 262 sfm, D.O.C. = 0.039"~0.118", f = ~ 0.012 ipr,  
Wet (Oil-based) Workpiece : W1-9 (Ø0.39")

D.O.C.	0.039"		0.059"		0.079"		0.118"		
f	0.010 ipr	0.012 ipr	0.010 ipr	0.012 ipr	0.010 ipr	0.012 ipr	0.010 ipr	0.012 ipr	
KGD	Stable Machining							✗	Stable Machining
Competitor T			✗						
Competitor U			✗						



### Issues

Multiple Tools and sleeves are often required for Turning, Boring, Grooving, and Threading.

### Solution

**EZ Bar system uses an easily adjustable coolant through sleeve** which now fits a variety of inserts to handle turning, boring, grooving and threading jobs.

## 1 Wide Lineup

### Internal Turning

H Chipbreaker  
(Parallel ground chipbreaker)

F Chipbreaker  
(With lead angle)

NB  
(without chipbreaker)

Internal copying  
(EZVB)



Machining allowance:  
0.2mm or more

Machining allowance:  
0.2mm or less

1st Recommendation/General Purpose  
Applicable to long overhang  
(Description:..HP...LT)  
Uncoated (GW05) available

For finishing/Sharp cutting

For Non-ferrous metals  
PCD and CBN available

### Grooving, Threading

Internal Grooving  
(EZG)

Face Grooving  
(EZFG)

Threading  
(EZT)



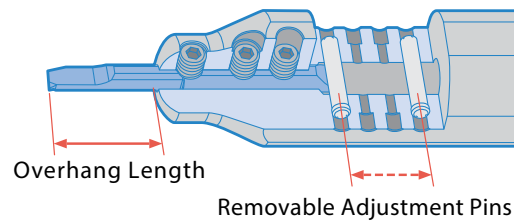
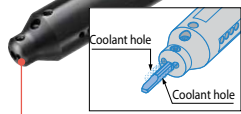
Minimum Diameter  
Ø3mm  
Applicable to M4  
Metric Thread

### How to select sleeves

EZH-CT  
Adjustable overhang  
length with  
coolant hole

EZH-HP  
Adjustable overhang  
length

EZH-ST  
Fixed overhang  
length



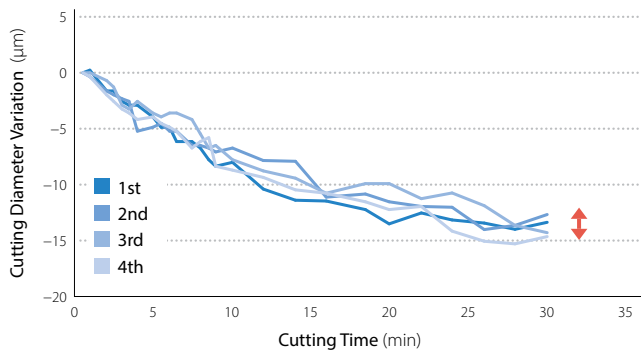
Special end-face shape of all 3 types enable smooth coolant supply

## 2 Reduce Dimensional Variation

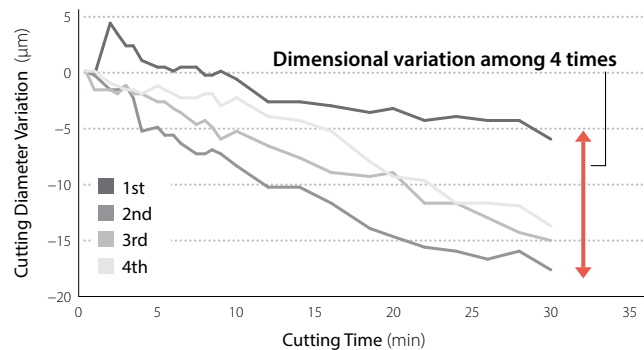
Excellent clamping force is attained by the bars ability to be tightened with a moveable adjustment pin, which also prevents the bar from rotating during cutting.

Cutting Diameter Variation Comparison (Internal Evaluation)

EZ Bars



Competitor V

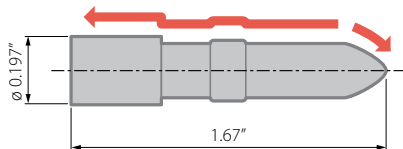


Cutting conditions : Vc = 217 sfm, D.O.C. 0.004", f = 0.0008 ipr, Wet (Oil-based) Workpiece : W1-9

## Turning Molded Sharp Edge Chipbreaker for Small Parts

**Pin: 17-4 PH**

Vc = ~180 sfm (n = 3,600 RPM)  
D.O.C. = 0.004" ~0.028"  
f = 0.001 ipr  
Wet (Oil-based)  
DCGT32505MFP-GQ PR1535



Number of products

**GQ Chipbreaker (PR1535)** **1,600 pcs/ corner**

**Tool life**  
↑ 1.3 times

Competitor W **1,200 pcs/ corner**

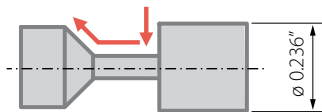
Competitor W's tool life was unstable because of sudden cracking  
GQ chipbreaker (PR1535) increased tool life by 1.3 times with stable machining, no cracking.

(User Evaluation)

## TKFB GQ Chipbreaker with Molded Chipbreaker for Back Turning

**Adapter: 304L**

n = 8,200 RPM  
f = 0.0008 ~ 0.002 ipr  
D.O.C. = 0.079" Max  
Wet (Oil-based)  
KTKFR1010JX-12  
TKFB12R28005P-GQ PR1535



Tool life

**GQ Chipbreaker (PR1535)** **2,700 pcs/ corner**

**Tool life**  
↑ 1.5 times

Competitor Y **1,800 pcs/ corner**

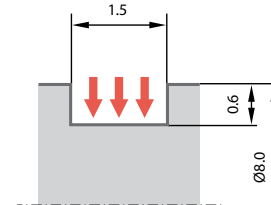
Chip control of Competitor Y was unstable. GQ Chipbreaker (PR1535) showed stable chip control and improved tool life to 1.5 times longer.

(User Evaluation)

## Grooving GBF Molded GL Chipbreaker

**Part for Nozzle: 304**

Vc = 148 sfm  
f = 0.0020 ipr  
Grooving Depth 0.024", Wet  
KGBFR1212JX-16F  
GBF32R100-005GL PR1535



**GL Chipbreaker PR1535**



**Competitor X**



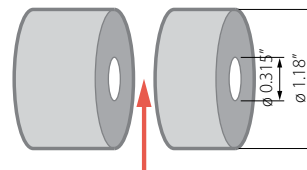
Competitor X's chips entangled with workpiece due to unstable chip control.  
GL Chipbreaker maintained stable chip control without entanglement.

(User Evaluation)

## Cut-Off Tools KGD for Small Parts

**Machine Parts: 304**

Vc = 427 sfm  
f = 0.0016 ipr  
Wet  
GDM3020R-025PM-6D PR1535



Number of products

**PR1535** **400 pcs/ corner**

**Tool life**  
↑ 2 times

Competitor Z **200 pcs/ corner**

While the feed rate of PR1535 was increased higher than Competitor Z (f = 0.0012 ipr -> 0.0016 ipr), tool life was doubled with good cutting edge condition.

(User Evaluation)

# Precision Tooling for Small Parts Machining

## Drills

**DRA Replaceable Insert Tip Drill (inch) (Ø0.313"~)**



**DRV Indexable Insert Drill (inch) (Ø0.5"~)**



## Boring Bars

**EZ Bar PLUS Indexable Boring Bar**



**EZ Bar Solid Boring Series**

(Boring, Internal Profiling, Internal Grooving, Face Grooving, Threading)



\*Internal coolant holder available

**Dynamic Bar Boring Bars**



## Back Facing Holder with Center Height Adjustment Function

**Flange Holder for Back Facing**



**Sleeve Type**



\*Standard products are specially designed for Star Precision Co., Ltd.  
Special orders are available for machines of other makers.

## External Sleeve Holder Series (External, Grooving, Threading)

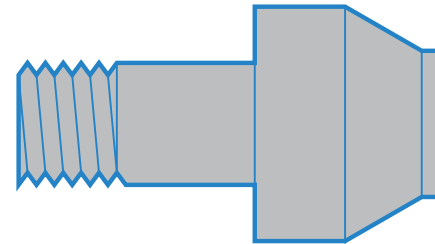


## Tools for External Turning

**Molded TQ Chipbreaker for Threading**



**Goose-neck Holder**



**ORION Drill**  
Inch Ø0.047"~  
Metric Ø1mm ~



**HYDROS Mini Coolant Drill**  
Inch Ø0.047"~  
Metric Ø1mm ~



**2ZDK Flat Drill**  
Inch Ø0.047"~  
Metric Ø1mm ~



**HYDROS Coolant Drill**  
Inch Ø0.125"~  
Metric Ø3mm ~

## Solid Round Tools

**Tools for External Turning**

Double Sided Tools for Small Parts

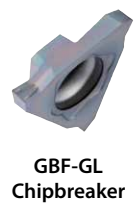
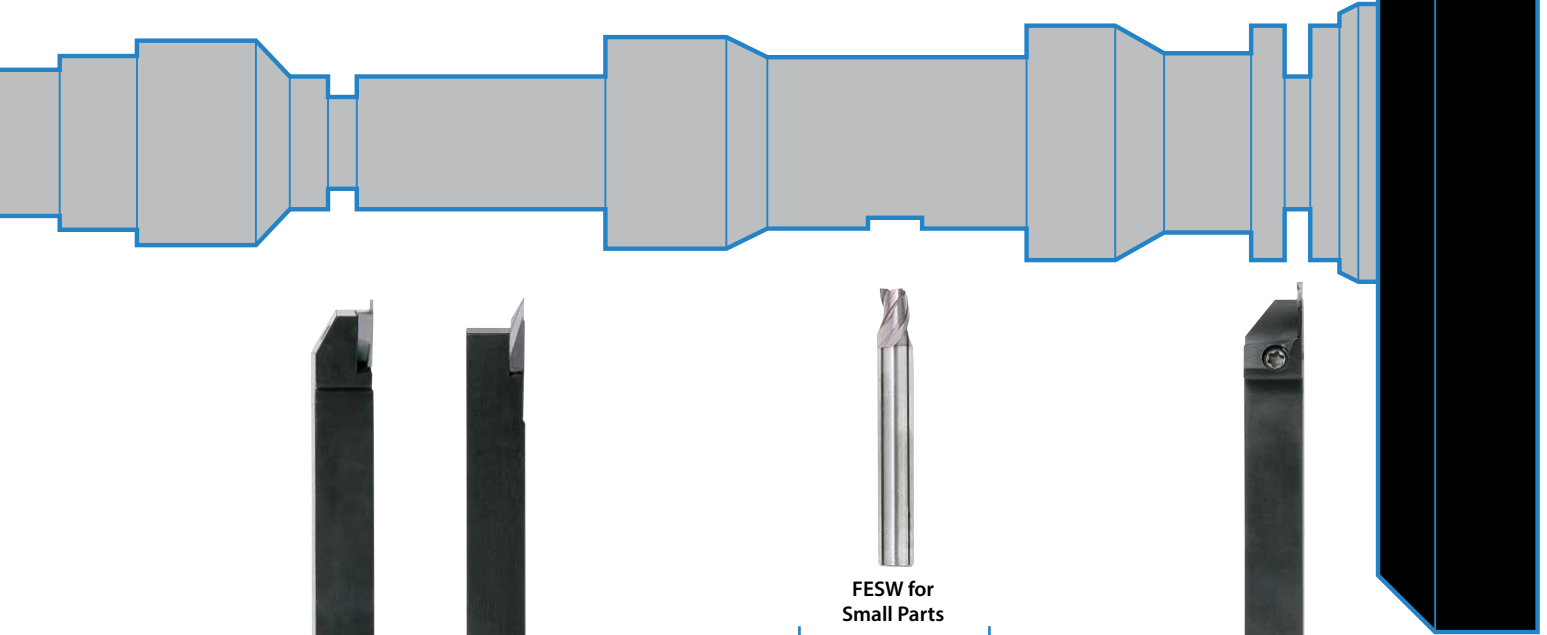
- Large D.O.C. LD Chipbreaker
- General Purpose SK Chipbreaker
- Small Double Sided Tools for Small Parts
- Sharp Edge Chipbreaker



**Holders for High Pressure Coolant**

External

KTKF-JCT for Cut-Off



GBF-GL Chipbreaker

KGBF

KTKF

TKFB-GQ Chipbreaker

FESW for Small Parts

Solid Endmill

KGD / KGD-JCT for Small Parts

Grooving Tools with Molded Chipbreaker

Grooving

Back-Turning

Back-Turning Tools with Molded Chipbreaker

Cut-off with Jet Coolant-Thru Option for Small Parts Now Available

# Featured Products

## KTKF-JCT Cut-Off with High Pressure Coolant

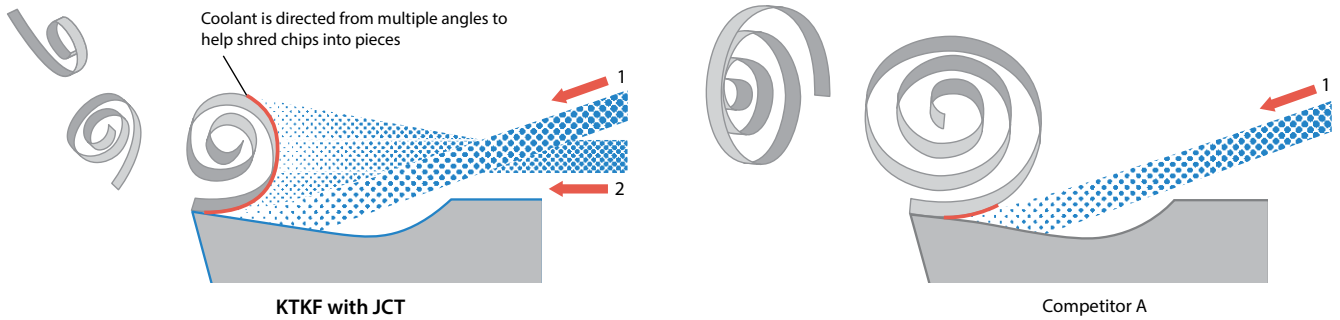
Supports Pump Pressure up to 2900 psi.  
 Excellent Performance even with a Medium Pressure of around 217 psi.  
 Superior Cooling Action Improves Tool Life.



### 1 Excellent Chip Control Performance

The new Jet Coolant Thru tools discharge coolant in two directions towards rake surface of insert and breaks chips into small pieces.

#### Coolant Discharge Structure Comparison

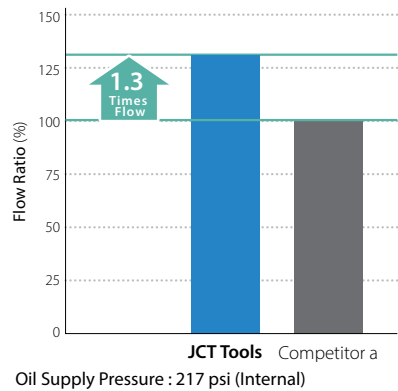


#### Chip Control Comparison (Internal Evaluation)

304				Ti-6Al-4V			
f (ipr)	0.0004	0.0008	0.0012	f (mm/rev)	0.0004	0.0008	0.0012
KTKF-JCT				KTKF-JCT			
Competitor a				Competitor a			

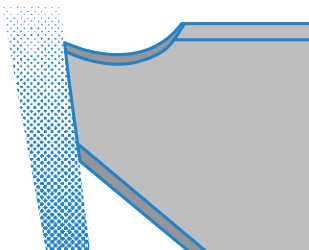
Cutting Conditions : Vc = 262 sfm, Wet (Oil-based) Oil Supply Pressure : 217 psi (Internal)  
 Workpiece : Ø0.472"

#### Coolant Flow Comparison (Internal Evaluation)

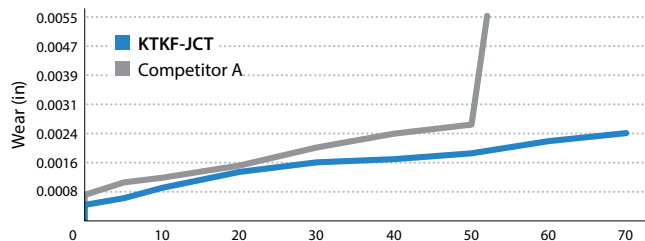


### 2 Superior Cooling Effect Improves Tool Life

The ample supply of coolant at the tool edge area significantly reduces insert wear.



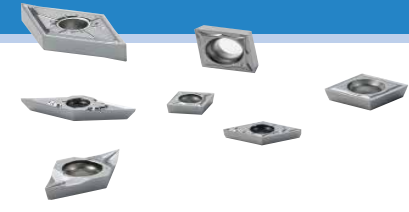
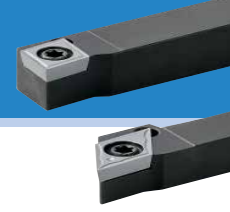
#### Comparison of Wear Resistance (Internal Evaluation)



Cutting conditions : Vc = 328 sfm, f = 0.0008 ipr, Wet (Oil-based)  
 Oil Supply Pressure : 217 psi (Internal) Workpiece : (Ti-6Al-4v) Ø0.472"

# Featured Products

## PR1725 PVD Coating for Small Parts Machining



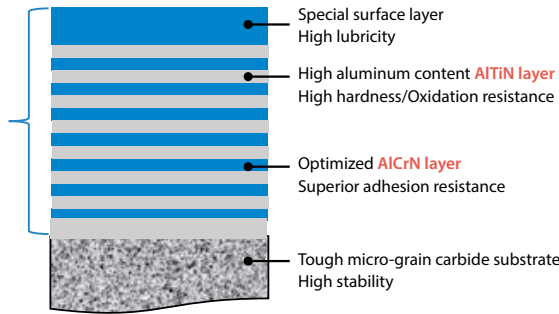
1st Recommendation for Steel Machining  
 Excellent Surface Finish and Long Tool Life  
 Great Performance in Small Parts Machining Applications

### MEGACOAT NANO PLUS

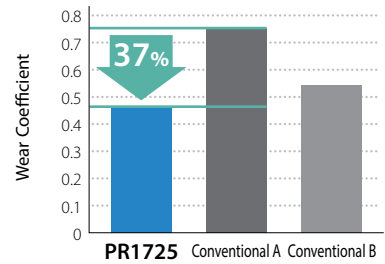
AlTiN/AlCrN Nano laminated film with superior wear resistance and adhesion resistance. Excellent surface finish and long tool life.

#### REDUCES CRACKING

Reduces abnormal damage such as chipping because of increased lamination layer with a thinner gap than conventional coatings



Wear Coefficient Comparison (Internal evaluation)



#### Superior Wear and Chipping Resistance

High hardness with nano laminated film layer properties  
 Internal stress optimization reduces chipping

#### Applicable to Various Workpiece Materials

Excellent oxidation resistance and superior high temperature properties maintain good performance in steel, stainless steel and free-cutting steel

#### Excellent Surface Finish

Special surface layer with great lubricity reduces adhesion

#### High Machining Stability

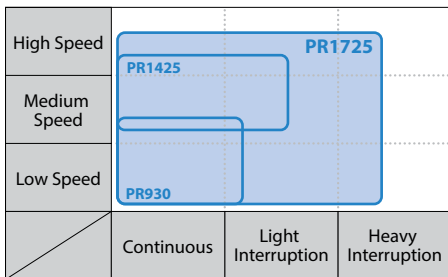
Tough micro-grain carbide substrate provides stable machining

Cutting Conditions : Vc = 490 sfm, D.O.C. = 0.020", f = 0.004 ipr, Wet Workpiece : 304

## Applicable to a Wide Range of Machining Applications

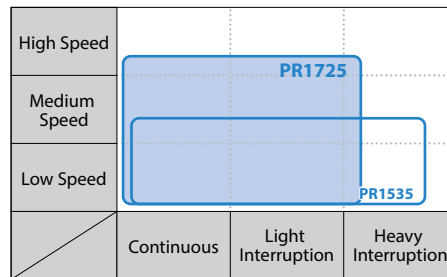
Great performance in both steel and stainless steel from low to high speed machining

### Steel



PR1725 : 1st Recommendation for Steel

### Stainless Steel

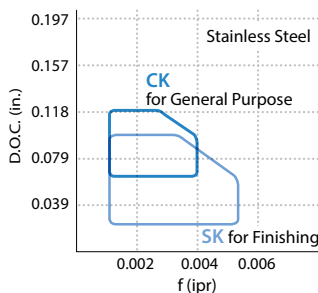
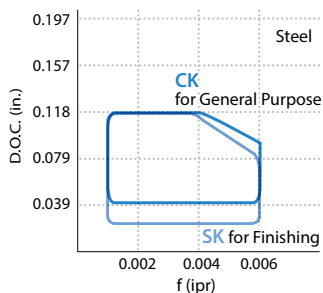


PR1725 : For general purpose high-speed machining  
 PR1535 : 1st Recommendation for stainless steel machining with long tool life and high-quality surface finish

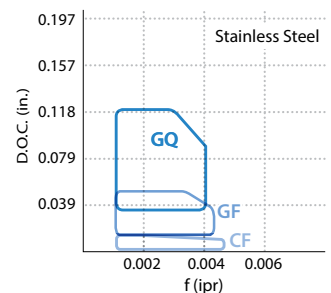
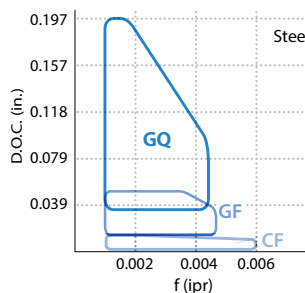
## Molded Sharp Edge Chipbreaker Series

A wide variety of chipbreakers provides better chip control

Cutting Force and Surface Finish Oriented (Low Cutting Force)



Chip Control Oriented



# Featured Products

## TQ Chipbreaker Threading Insert with Molded Chipbreaker



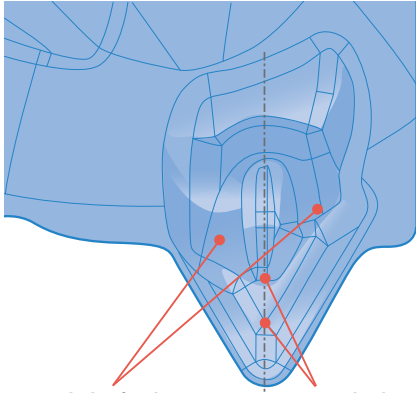
Molded Chipbreakers Achieve Stable Chip Control and Continuous Machining  
Applicable to Small Part Machining with Low Cutting Force Design

### Stable Chip Control

Stable chip control in a given direction with asymmetric chipbreaker design

#### Chipbreaker Geometry

Stable chip control regardless of cutting direction



#### For Radial Infeed

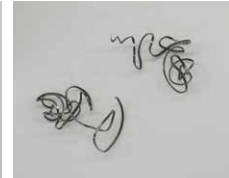
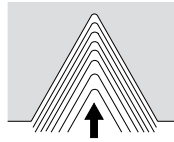
Asymmetric dot design controls chip-flow direction

#### For Flank Infeed / Flank Compound Infeed

Breaks chips easily with shallow chipbreaker depth

#### Chip Control Comparison (Internal Evaluation)

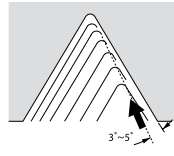
##### Radial Infeed



TQ Chipbreaker

Competitor B

##### Flank Compound Infeed



TQ Chipbreaker

Competitor B

Cutting Condition :  $V_c = 492$  sfm, D.O.C. = 0.0047" (4th Pass), L = 0.97", Wet, 16ER150ISO Type M45 x P1.5 Workpiece : 4118

# Featured Products

## LD Chipbreaker Large Depths of Cut

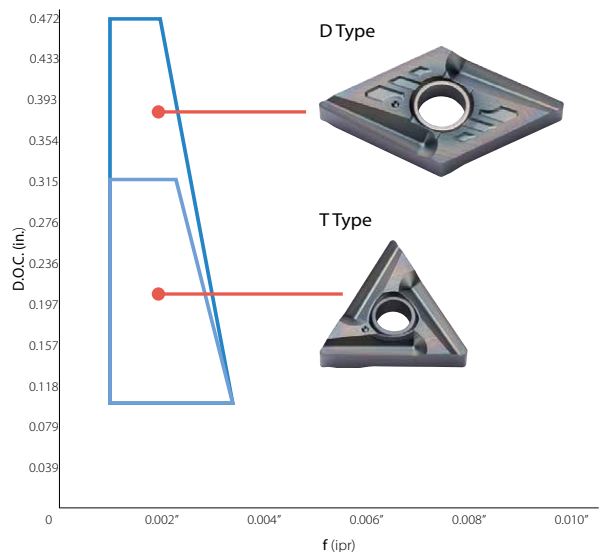
### Suitable for Large Depths of Cut Machining in a Single Pass

Max Depth of Cut is 0.47". LD Chipbreakers achieve high-precision machining in a single pass. Low-resistance cutting edge suppresses chattering offering stable chip control in a wide range of machining applications.



Large rake angle and slanted cutting edge for low-resistance, smooth machining

#### LD Chipbreaker Application Map



#### KYOCERA Precision Tools

102 Industrial Park Road  
Hendersonville, NC 28792  
Customer Service | 800.823.7284 - Option 1  
Technical Support | 800.823.7284 - Option 2



Official Website | [www.kyoceraprecisiontools.com](http://www.kyoceraprecisiontools.com)  
Distributor Website | [mykpti.kyocera.com](http://mykpti.kyocera.com)  
Email | [cuttingtools@kyocera.com](mailto:cuttingtools@kyocera.com)

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