



# LD Chipbreaker

for Small Parts Machining and Large Depths of Cut



High Precision Machining in a Single Pass with Max Depth of Cut: 0.472" (12mm)

Low-resistance Chipbreaker for Smooth Machining  
Stable Chip Control in a Wide Range of Machining Applications



# LD Chipbreaker

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High-Precision Machining in a Single Pass with Max Depth of Cut: 0.472" (12mm)

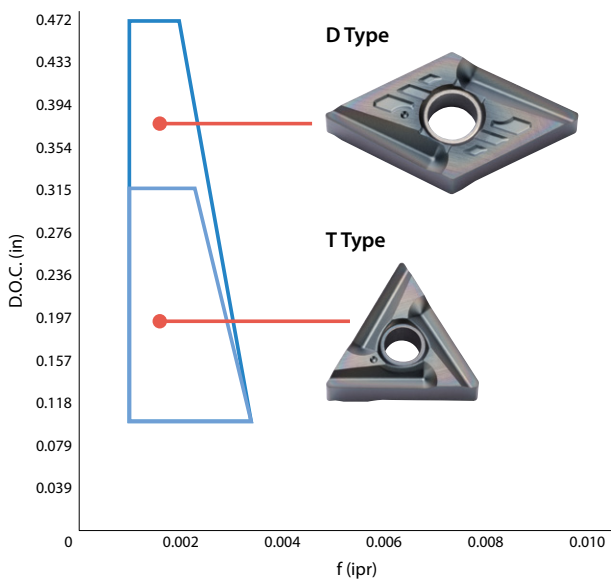
Low-resistance Cutting Edge Suppresses Chattering and Stable Chip Control in a Wide Range of Machining Applications

## 1 Great for Large Depths of Cut with Single Pass Machining

Available for greater depths of cut than many conventional chipbreakers

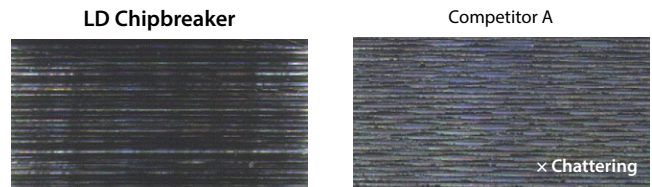
Achieves high-precision machining in a single pass

LD Chipbreaker Application Map



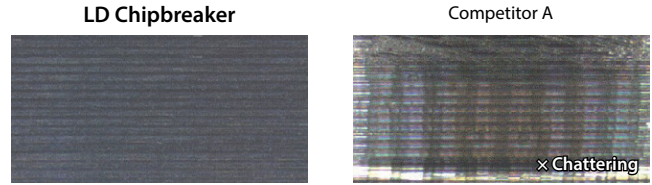
Chattering Resistance Comparison (In-house Evaluation)

D Type Insert : Max Depth of Cut 0.472" (12mm)



Cutting Conditions:  $V_c = 260$  sfm, D.O.C. = 0.472",  $f = 0.001$  ipr, Wet (Oil-based)  
DNMG431 Type/Workpiece: H13 (Ø0.984")

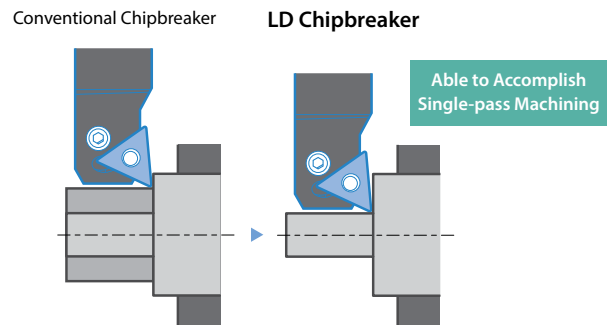
T Type Insert : Max Depth of Cut 0.315"



Cutting Conditions:  $V_c = 260$  sfm, D.O.C. = 0.315",  $f = 0.002$  ipr, Wet (Oil-based)  
TNMG331 Type/Workpiece: H13 (Ø0.984")

### Single-Pass Machining Advantages

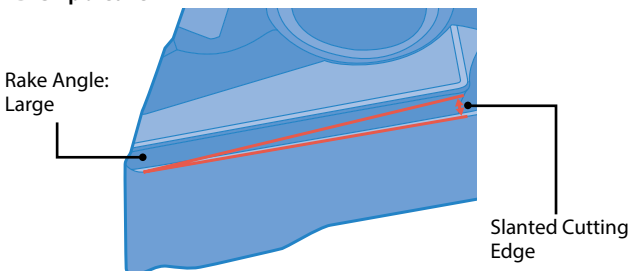
- Example 1: Conventional tooling requires larger metal removal volume to be machined in multiple passes while single-pass machining prevents chip problems and maintains stability.
- Example 2: Long workpieces that cannot be machined in multiple passes can be machined in a single pass by suppressed chattering with high precision and efficiency.



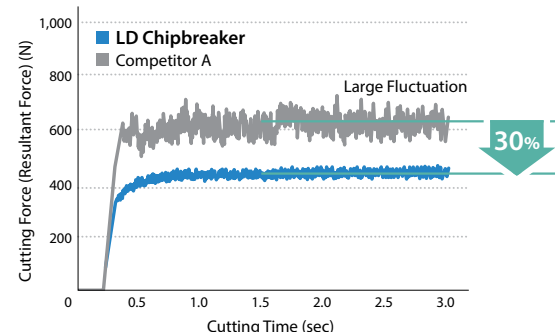
## 2 Low-resistance Cutting Edge

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

LD Chipbreaker



Cutting Force Comparison (In-house Evaluation)

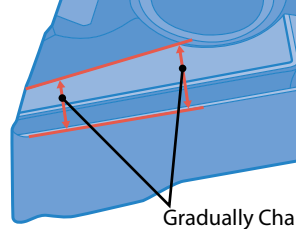


Cutting Conditions:  $V_c = 260$  sfm, D.O.C. = 0.118",  $f = 0.003$  ipr, TNMG331 Type  
Workpiece: Chromium Molybdenum Steel

# 3

## Superior Chip Control in a Wide Range of Machining Applications

Chipbreaker shape optimized for various depths of cut  
Stable chip control in a wide range of machining applications



Chip Control Comparison (In-house Evaluation)

T Type Insert (Workpiece Diameter: Ø0.984")

1045			
LD Chipbreaker			
Competitor A			
	0.098	0.157	0.315
	D.O.C. (in)		

Cutting Conditions: Vc = 260 sfm, f = 0.002 ipr, Wet (Oil-based), TNMG331 Type

H13			
LD Chipbreaker			
Competitor A			
	0.098	0.157	0.315
	D.O.C. (in)		

Cutting Conditions: Vc = 260 sfm, f = 0.002 ipr, Wet (Oil-based), TNMG331 Type

304			
LD Chipbreaker			
Competitor A			
	0.098	0.157	0.315
	D.O.C. (in)		

Cutting Conditions: Vc = 200 sfm, f = 0.001 ipr, Wet (Oil-based), TNMG331 Type

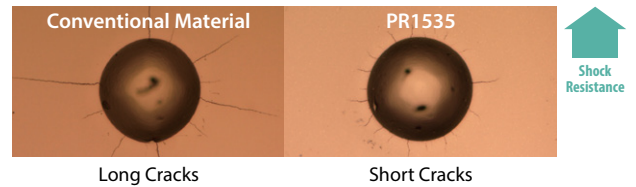
## MEGACOAT NANO PR1535

The combination of a tough substrate and special nano layer coating enables long tool life and stable machining of stainless steel.

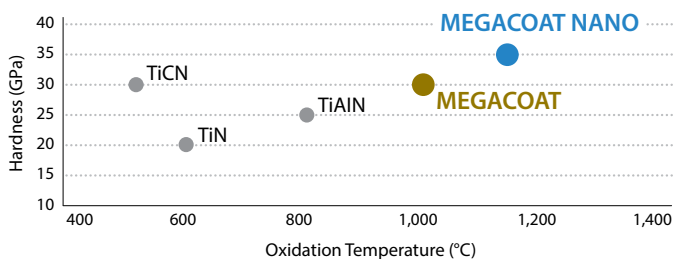
- 1 Toughening with a New Cobalt Mixing Ratio  
\* Comparison with Kyocera's Conventional Grade
- 2 Improved Stability by Optimization and Homogenization of the Particle Matrix
- 3 Long Tool Life and Stable Machining with MEGACOAT NANO

23%  
Fracture Toughness\*

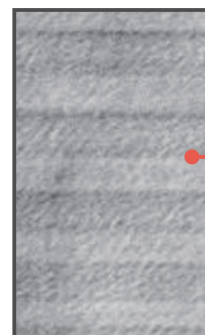
Cracking Comparison by Diamond Indenter (In-house Evaluation)



Coating Property



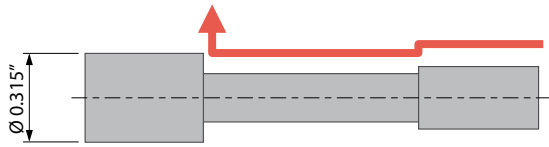
Low Oxidation Resistance High



MEGACOAT Base Layer Structure  
PR1535 is a good solution for unstable conditions such as early fracturing and variable tool life during steel machining.

## Machining Example

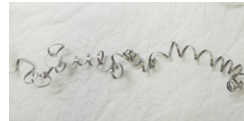
Pin: H13-equivalent



Vc = 150 sfm (n = 1,800 rpm)  
 D.O.C. = 0.059" - 0.063", f = 0.001 ipr  
 Wet (Oil-based)  
 TNMG331R-LD PR1535

## Chip Control

LD Chipbreaker




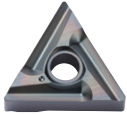
Competitor B



LD Chipbreaker shows more stable chip control than Competitor B

(User Evaluation)

## Negative Inserts

Insert	Part Number	Dimensions (in)				MEGACOAT NANO	
		I.C.	Thickness	Hole Diameter	Corner R (rε)	PR1535	PR1425
	DNMG 4305R-LD	1/2	3/16	0.203	0.008	○	○
	431R-LD				1/64	○	○
	TNMG 3305R-LD	3/8	3/16	0.150	0.008	○	○
	331R-LD				1/64	○	○

○ : World Express (Shipping: 7-10 Business Days)

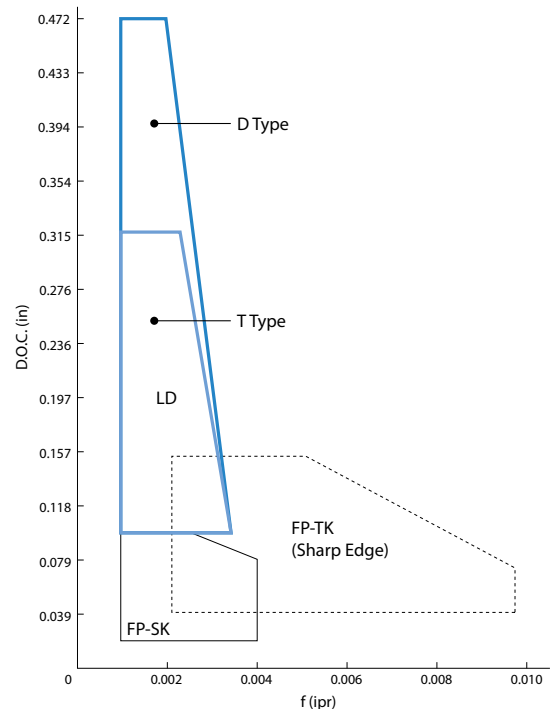
## Recommended Cutting Conditions

### Cutting Conditions

Workpiece		Recommended Insert Grade		Notes
		MEGACOAT NANO		
		PR1425	PR1535	
Carbon Steel, Alloy Steel	Vc (sfm)	★ 200 - 660	☆ 200 - 520	Wet
	f (ipr)	0.0008 - 0.0031	0.0008 - 0.0031	
Stainless Steel	Vc (sfm)	☆ 200 - 520	★ 200 - 460	
	f (ipr)	0.0008 - 0.0028	0.0008 - 0.0028	

★ : 1st Recommendation; ☆ : 2nd Recommendation

### LD Chipbreaker Application Map



Adjust cutting conditions according to machine/workpiece rigidity



### KYOCERA Precision Tools

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 Hendersonville, NC 28792  
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 Technical Support | 800.823.7284 - Option 2



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