

THE NEW VALUE FRONTIER

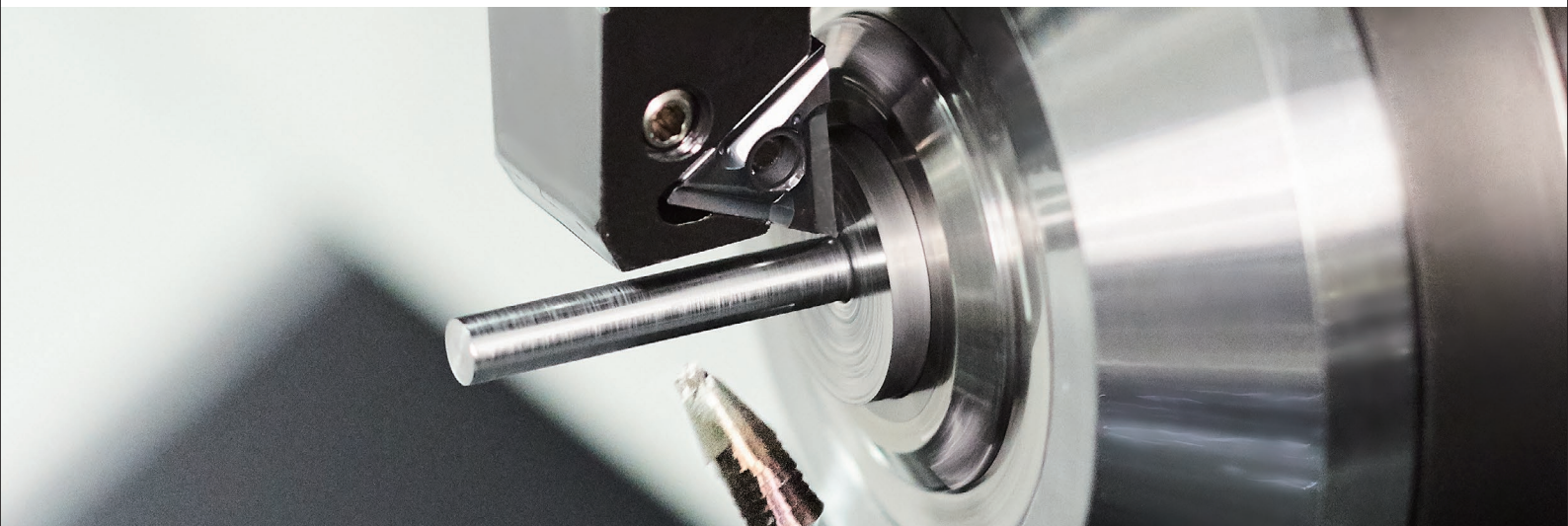


For Small Parts Machining
and Large Depths of Cut

LD Chipbreaker

For Small Parts Machining and Large Depths of Cut

LD Chipbreaker



Max Depth of Cut: 12 mm / Achieves High-Precision Machining in a Single Pass

Low-resistance chipbreaker for smooth machining
Stable chip control in a wide range of machining
applications



For small parts machining and large depths of cut

LD Chipbreaker

Max Depth of Cut: 12 mm / Achieves High-Precision Machining in a Single Pass

Low-resistance cutting edge suppresses chattering / Stable chip control in a wide range of machining applications

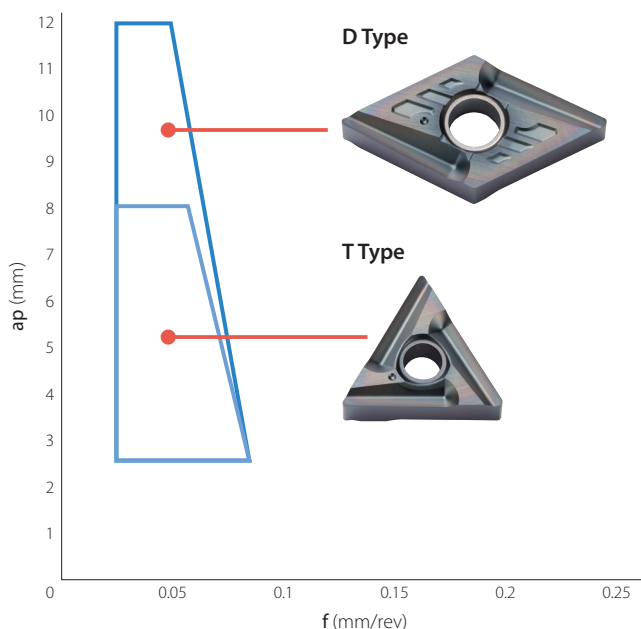
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Great for large depths of cut with single pass machining

Available for greater depths of cut than many conventional chipbreakers

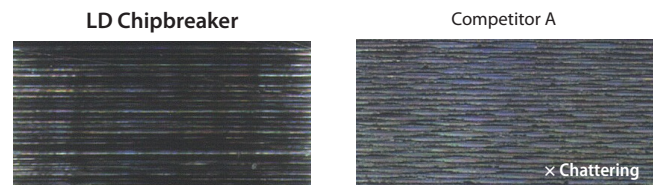
Achieves high-precision machining in a single pass

LD Chipbreaker Application Map



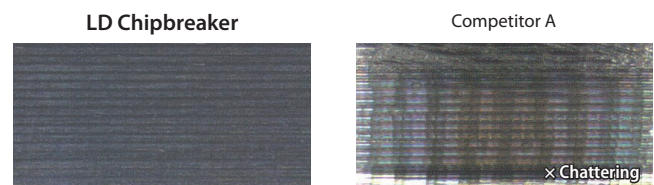
Chattering Resistance Comparison (In-house Evaluation)

D Type: Max Depth of Cut 12 mm



Cutting Conditions: $V_c = 80$ m/min, $a_p = 12$ mm, $f = 0.03$ mm/rev, Wet (Oil-based)
DNMG150404 Type/Workpiece: SKD61 ($\phi 25$)

T Type: Max Depth of Cut 8 mm



Cutting Conditions: $V_c = 80$ m/min, $a_p = 8$ mm, $f = 0.05$ mm/rev, Wet (Oil-based)
TNMG160404 Type/Workpiece: SKD61 ($\phi 25$)

Single-Pass Machining Advantages

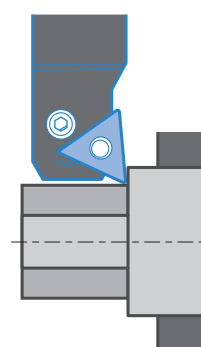
Example 1: Conventional tooling requires larger metal removal volume to be machined in multiple passes

→ Single-pass machining prevents chip problems and maintains stability

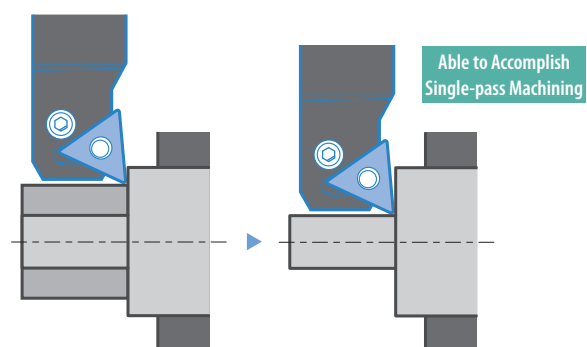
Example 2: Long workpieces that can not be machined in multiple passes

→ Single-pass machining suppresses chattering with high precision & high efficiency

Conventional Chipbreaker



LD Chipbreaker

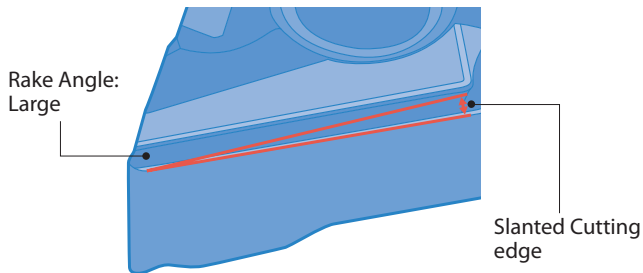


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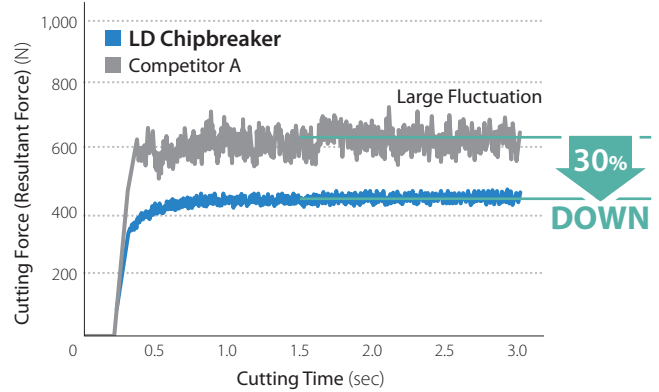
Low-resistance Cutting Edge

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

LD Chipbreaker



Cutting Force Comparison (In-house Evaluation)



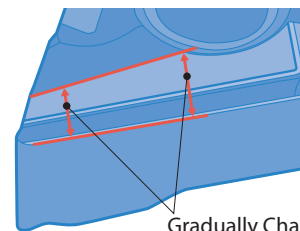
Cutting Conditions: $V_c = 80$ m/min, $a_p = 3$ mm, $f = 0.07$ mm/rev, TNMG160404 Type
Workpiece: SCM415

3

Superior Chip Control in a Wide Range of Machining Applications

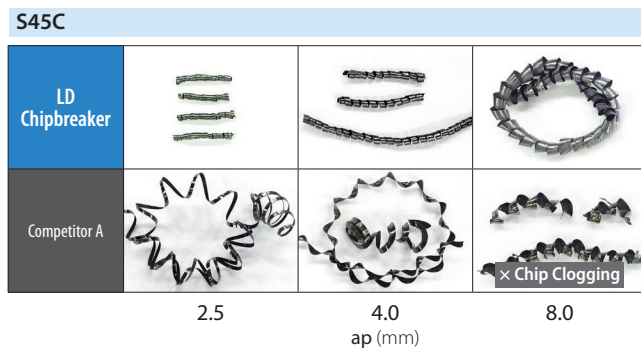
Chipbreaker shape optimized for various depths of cut

Stable chip control in a wide range of machining applications

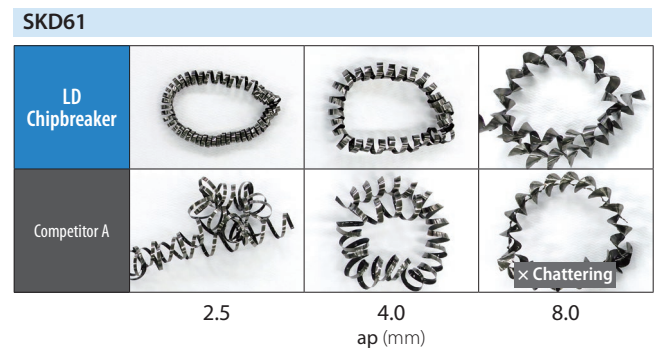


Chip Control Comparison (In-house Evaluation)

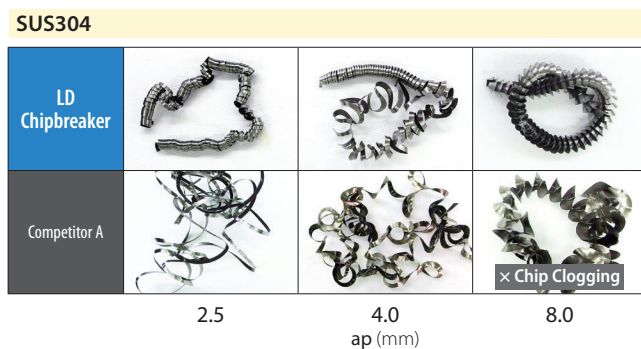
T Type (Workpiece Diameter: $\phi 25$)



Cutting Conditions: $V_c = 80$ m/min, $f = 0.05$ mm/rev, Wet (Oil-based), TNMG160404 Type



Cutting Conditions: $V_c = 80$ m/min, $f = 0.05$ mm/rev, Wet (Oil-based), TNMG160404 Type



Cutting Conditions: $V_c = 60$ m/min, $f = 0.03$ mm/rev, Wet (Oil-based), TNMG160404 Type

MEGACOAT NANO PR1535

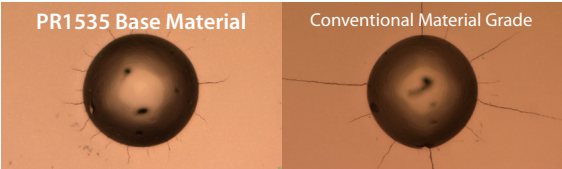
The combination of a high-toughness base material and a special nano layer coating maintains long tool life and stable machining of stainless steel

- 1 An increase in cobalt content yields a substrate with greater toughness
*In comparison to our conventional material grade
- 2 Improved stability by optimization and homogenization of grains in the base material
- 3 MEGACOAT NANO coating technology for long tool life and stable machining

UP
23%
Fracture
Toughness*

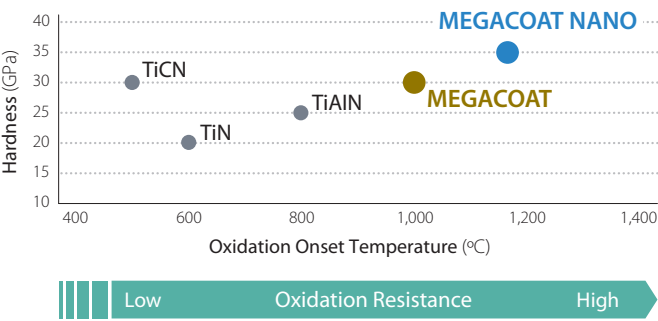
Cracking Comparison by Diamond Indentor (In-house Evaluation)

UP
Impact
Resistance



Short Cracks Long Cracks

Coating Properties



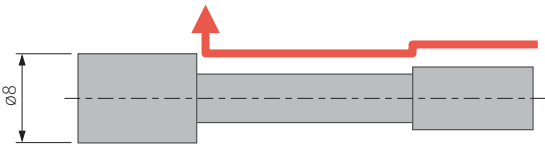
MEGACOAT Base Layer Structure

Note

PR1535 also shows superior performance in steel machining under unstable conditions

Machining Example

Pin: SKD61-equivalent



Vc = 45 m/min (n = 1,800 min⁻¹)
ap = 1.5 - 1.6 mm, f = 0.03 mm/rev
Wet (Oil-based)
TNMG160404R-LD PR1535

Chip Control

LD Chipbreaker




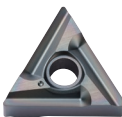
Competitor B



LD Chipbreaker shows more stable chip control than Competitor B

(User Evaluation)

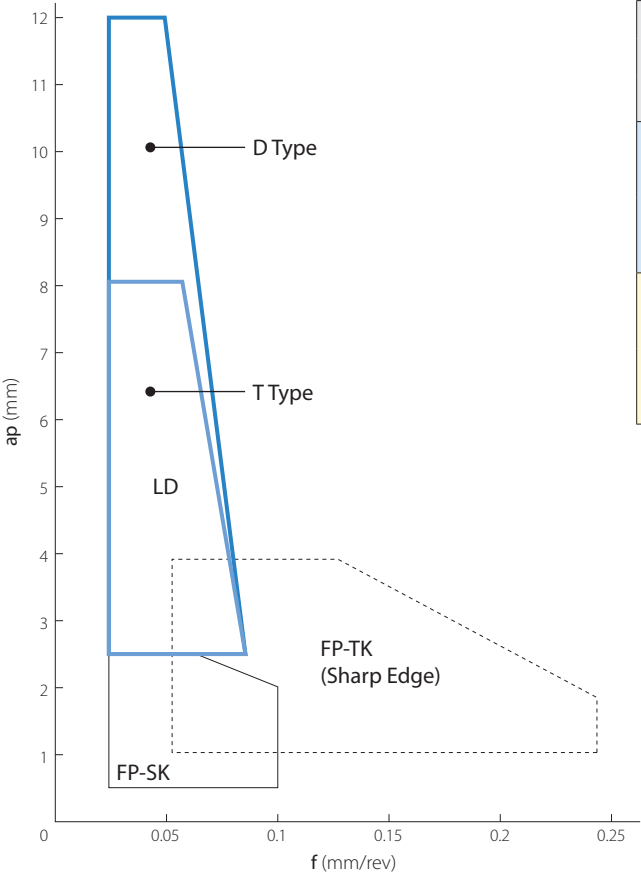
Standard Stock Item Part Numbers (Negative Inserts)

Shape	Description	Dimensions (mm)				MEGACOAT NANO	
		I.C.	Thickness	Hole Diameter	Corner R (rε)	PR1425	PR1535
	DNMG150402R-LD	12.70	4.76	5.16	0.2	R	R
	DNMG150404R-LD				0.4	R	R
	TNMG160402R-LD	9.525		3.81	0.2	R	R
	TNMG160404R-LD				0.4	R	R

R: R-hand only in stock

Recommended Cutting Conditions

LD Chipbreaker Application Map



Recommended Cutting Conditions ★: 1st Recommendation; ☆: 2nd Recommendation

Workpiece		Recommended Insert Grade		Notes
		MEGACOAT NANO		
		PR1425	PR1535	
Carbon Steel, Alloy Steel (SxxC, SCM, etc.)	Vc (m/min)	★ 60 – 200	☆ 60 – 160	Wet
	f (mm/rev)	0.02 – 0.08	0.02 – 0.08	
Stainless Steel (SUS304, etc.)	Vc (m/min)	☆ 60 – 160	★ 60 – 140	
	f (mm/rev)	0.02 – 0.07	0.02 – 0.07	

Adjust cutting conditions according to machine/workpiece rigidity

