B275E

MS6015 / MS7025 / MS9025

MS TURNING SERIES – PVD COATED GRADES FOR HIGH PRECISION AND SMALL PARTS MACHINING

DIA EDGE

MITSUBISHI MATERIALS

MS6015/MS7025/MS9025

TRANSFORMATION OF MACHINING ON SWISS TYPE AUTOMATIC LATHES

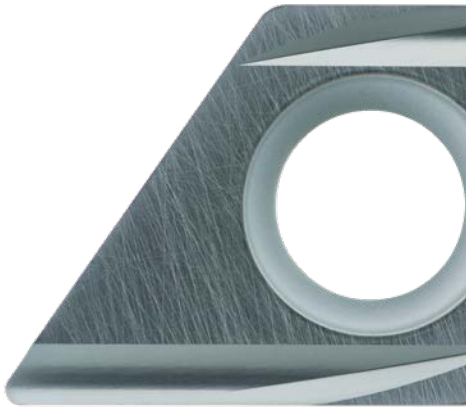
The first parts to be machined on Swiss type automatic lathes were watch components. The use soon expanded to machining electrical parts for home appliances, printers as well as automobile component applications such as sensors and electrification technology parts. The high precision capability of Swiss type lathes has also lent itself to the machining of parts essential to daily life. These parts include robotic and medical implants as well as simple but essential parts for water taps. Expanding the type of workpieces is not the only modern advancement, even higher precision, productivity and quality has become necessary.

DUE TO CHANGES IN MATERIALS AND COMPONENT GEOMETRIES, VARIOUS PROBLEMS HAVE ARISEN THAT NEED SOLUTIONS:

- Complex workpiece shapes
- Ever more difficult-to-cut materials
- Tighter dimensional tolerances

MITSUBISHI MATERIALS IS COMMITTED TO PRODUCT DEVELOPMENT AND THE COMMERCIALISATION OF NEW TOOLS THAT HAVE THE CUTTING CAPABILITY AND MACHINE TOOL ADAPTABILITY THAT CUSTOMERS DESIRE AS FOLLOWS:

- Development of new coating adapted to workpiece materials and machining methods
- Optimisation of welding, wear and fracture resistance
- High precision machining enabled by the development of high quality cutting edge geometries

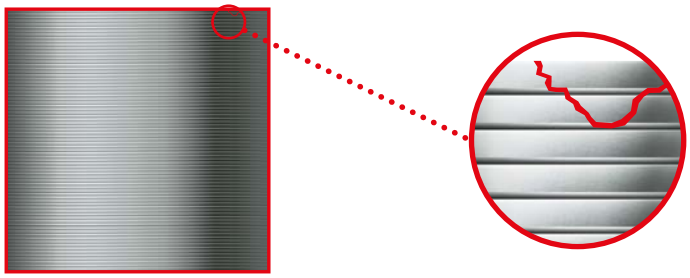


MS7025

DRAMATICALLY IMPROVED WELDING AND WEAR RESISTANCE IN LOW FEED MACHINING ENABLED BY A MORE PRECISE NANO-MULTILAYER COATING

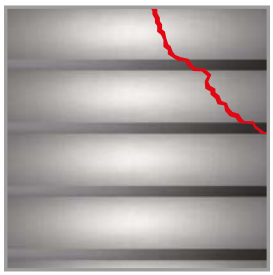
NANO-MULTILAYER COATING

By combining the high lubrication layer with excellent welding resistance, and the high hardness layer with a greater wear resistance that suppresses the progress of wear at the nano-level, the film damage is significantly reduced and the welding and wear resistance are dramatically improved.



Nano-multilayer coating

Enlarged image

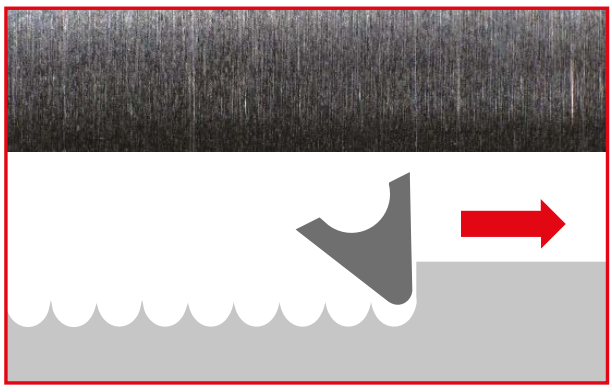


Conventional multilayer coating

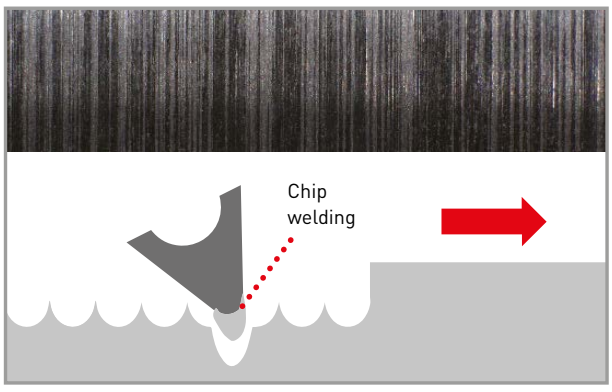
EFFECTS OF THE HIGH LUBRICATION LAYER

The nano-level, high lubrication layer suppresses built-up edge caused by chip welding which tends to occur in low feed machining and in addition reduces blemishes on the machined surface.

Surface finish



MS7025



Conventional

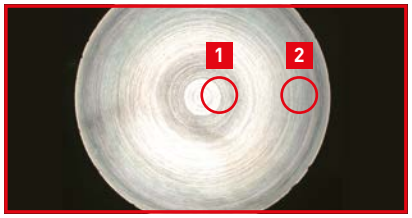
MS7025

CUTTING PERFORMANCE

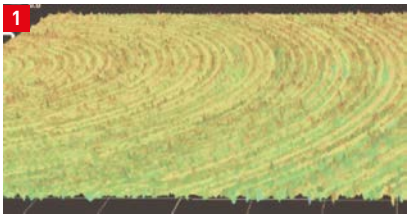
COMPARISON OF END FACE MACHINED SURFACES USING 3D ANALYSIS

Achieves stable machining even during end face machining where the cutting speed is liable to change.

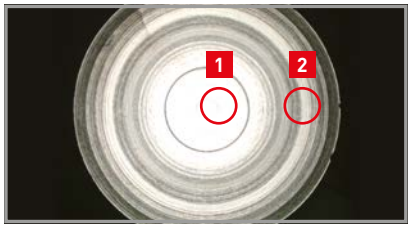
Workpiece material: C45



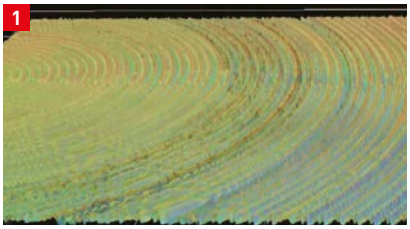
MS7025

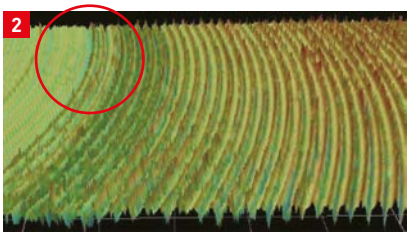


Good surface finish



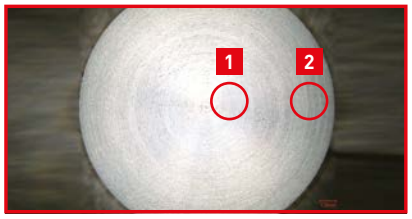
Conventional



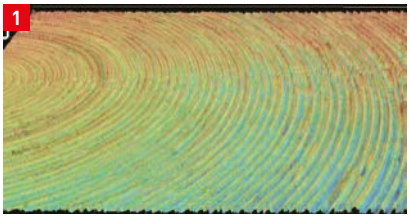


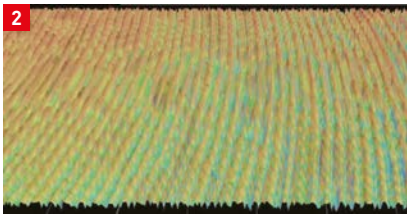
Changes in surface quality that cause machining marks

Workpiece material: X5CrNi18-10 (1.4301)

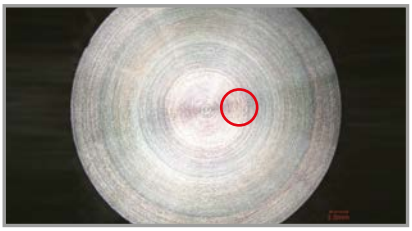


MS7025

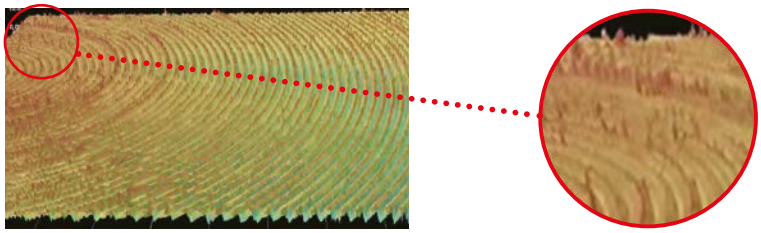




Good surface finish



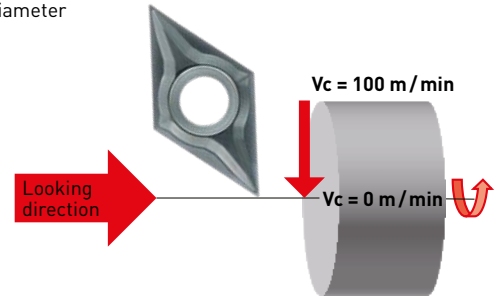
Conventional



Roughness can occur in the low speed area (near the centre)

Workpiece material	Notation above
Insert	DCGT11T302
Vc max. (m/min)	100
f (mm/rev)	0.02
ap (mm)	0.2
Cutting mode	Wet cutting (Oil)

Image of facing
Workpiece diameter
16 mm



MS7025

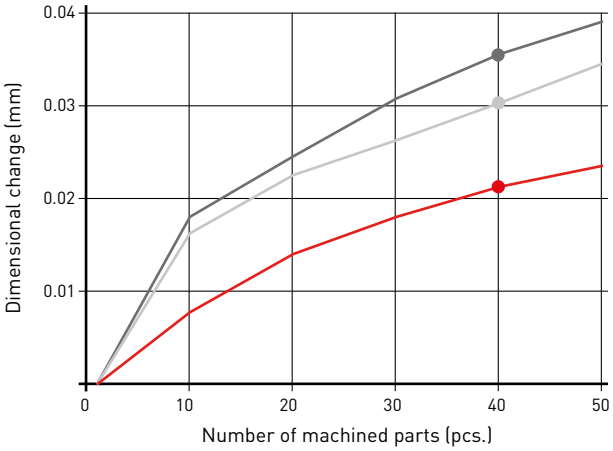
CUTTING PERFORMANCE

COMPARISON OF DIMENSIONAL CHANGE DURING LOW FEED MACHINING

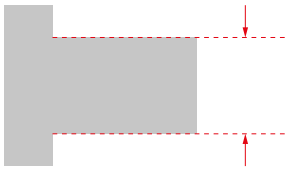
When machining with MS7025 at low feed rate conditions, dimensional changes are reduced and the quality of the machined surface is improved.

Workpiece Material: X105CrMo17 (DIN 1.4125)

Workpiece material	X105CrMo17 (DIN 1.4125)
Insert	DCGT11T301
Vc (m/min)	70
f (mm/rev)	0.02
ap (mm)	1.5
Cutting mode	Wet cutting (Oil)



Dimensional Change
The measured dimensional change is based on the first machined component



After machining 40 pieces

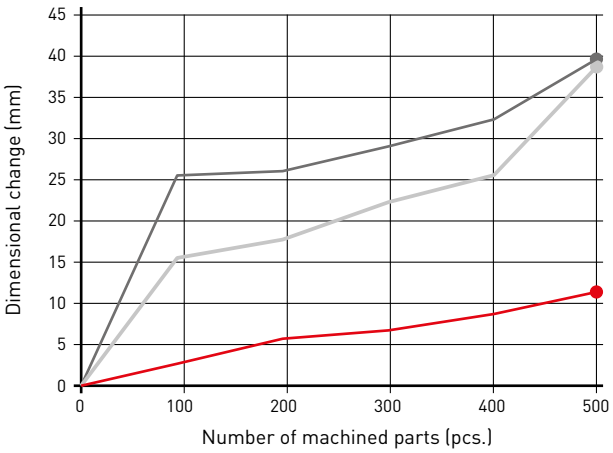
MS7025

Conventional A

Conventional B

Workpiece Material: ELCH2S

Workpiece material	ELCH2S
Insert	DCGT11T302
Vc (m/min)	240
f (mm/rev)	0.03
ap (mm)	0.3
Cutting mode	Wet cutting (Oil)



After machining 500 pieces

MS7025

Conventional A

Conventional B

■ : **Mitsubishi Materials Tool** ■ A ■ B : Conventional

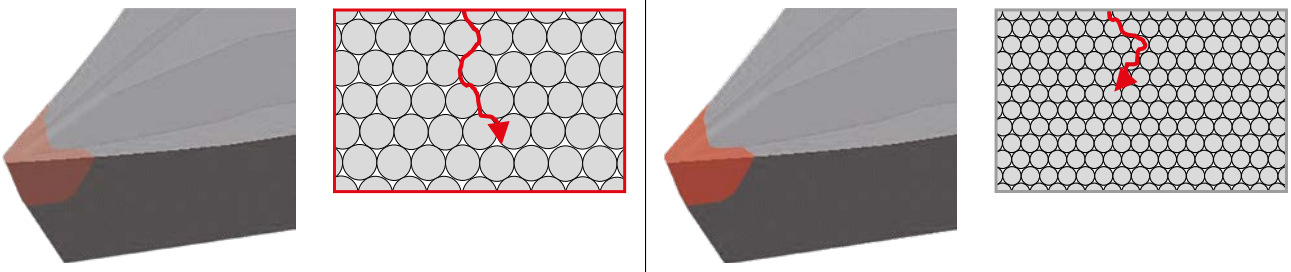
MS9025

EFFECTIVE REDUCTION OF NOTCH WEAR WITH A BALANCE OF WEAR AND FRACTURE RESISTANCE

IMPROVED CEMENTED CARBIDE

Thermal conductivity has been improved by optimising the grain size and therefore reducing the boundary contact between the WC particles. This optimisation reduces the temperature of the cutting edge during machining.

MS9025	Conventional
Reducing the cutting edge temperature by improved thermal conductivity.	Higher cutting edge temperatures due to more particle boundary contact.

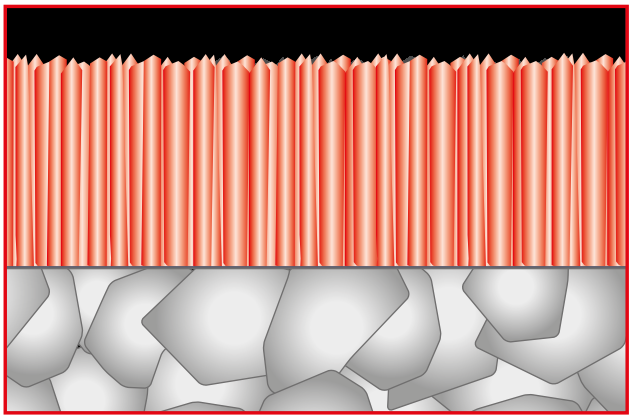


SMOOTH SURFACE OF THE COATING

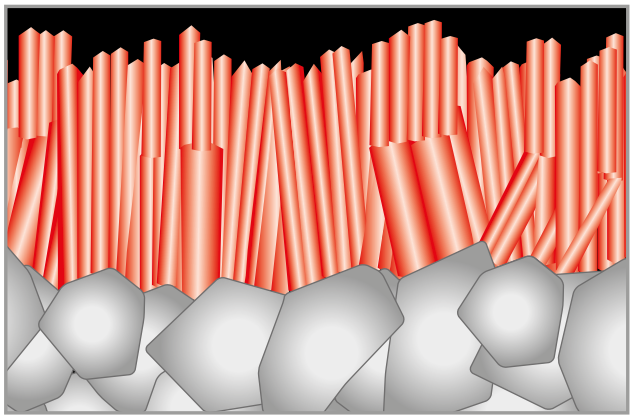
The even surface of the coating has been achieved by first making the carbide substrate smooth then by promoting straight growth of the coating crystals. This leads to excellent welding resistance.

Smooth Cemented Carbide
- Straight crystal growth
- Smooth carbide surface
- Excellent welding resistance

Rough Cemented Carbide
- Random crystal growth direction
- Performance is variable due to defects and voids in the surface



MS9025



Conventional

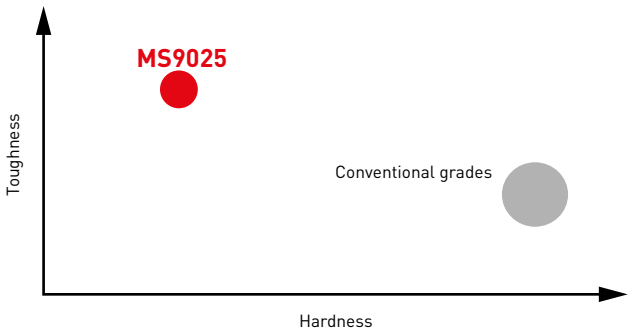
MS9025

HIGH AL-RICH (Al,Ti)N SINGLE LAYER COATING TECHNOLOGY

Al-rich (Al,Ti)N
- Superior flank wear resistance
- Superior crater wear resistance
- Excellent welding resistance

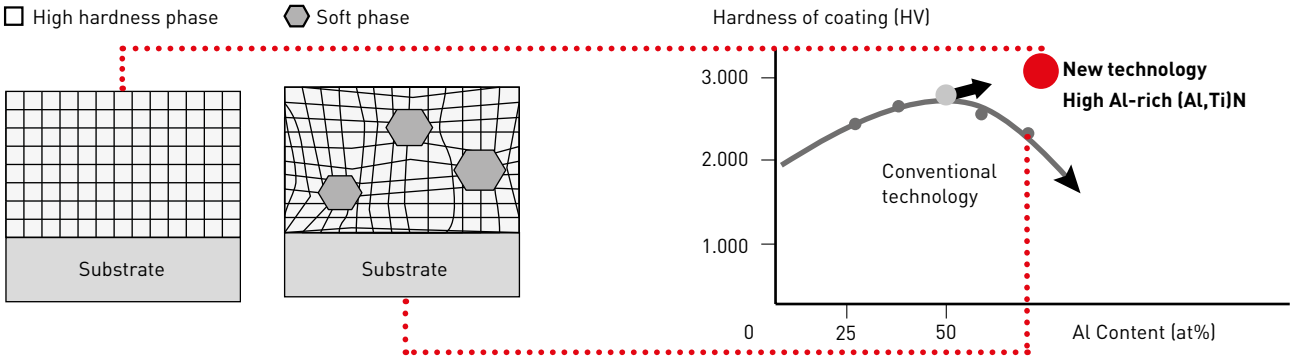
Special cemented carbide for MS9025
- Superior fracture resistance
- Excellent chipping resistance

Cemented carbide base material properties



HIGH AL AND CONVENTIONAL COATING COMPARISON

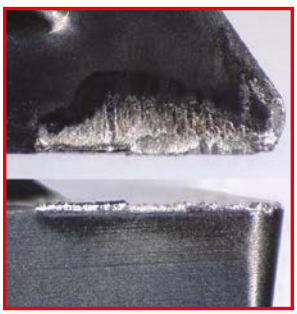
The high Al-rich (Al,Ti)N single layer coating provides stabilization of the high hardness phase and succeeds in dramatically improving wear, crater and welding resistance.



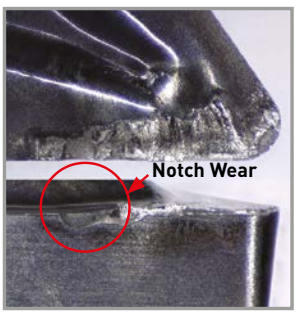
STAINLESS STEEL DIN X5CRNI18-10 (1.4301), CUTTING EDGE COMPARISON

After machining 500 parts

Workpiece material	X5CrNi18-10 (DIN 1.4301)
Insert	DCGT11T302
Vc (m/min)	57
f (mm/rev)	0.03
ap (mm)	Rough: 0.05 Finish: 0.02
Cutting mode	External Continuous cutting Wet cutting (Oil)



MS9025 VB = 0.03 mm



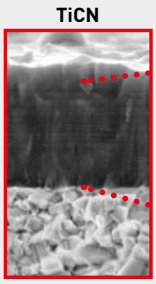
Conventional VB = 0.07 mm

MS6015

IDEAL FOR TURNING PURE IRON, CARBON AND FREE CUTTING STEELS WHILST ALSO PROVIDING EXCELLENT DIMENSIONAL ACCURACY AND GOOD SURFACE FINISHES

The unique combination of a special carbide substrate and a new PVD coating greatly improves wear resistance.

	MS6015	Conventional
Coating	TiCN Multi-layer	TiAlN
Hardness (HV)	3000	2800
Friction coefficient	Low	High
Base material hardness (HRA)	92.0	92.0
T.R.S (GPa)	2.0	2.0



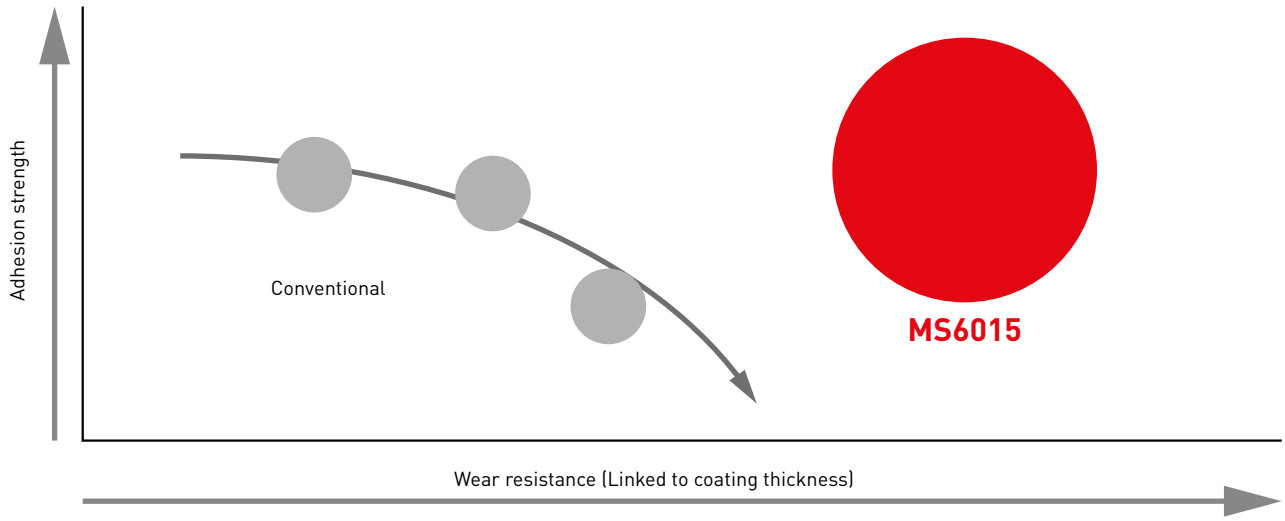
Superior wear and welding resistance for efficient machining of carbon steel.

Minute multi-layers remarkably improves adhesion between layers.

Excellent chip discharge with a reduced coefficient of friction creates a stable surface finish.

OPTIMISING THE LAMINATED STRUCTURE

Optimising the laminated structure enables the thickening of coating which leads to significant wear resistance.



MS6015 / MS7025 / MS9025

APPLICATION RANGE

Material		Cutting mode		Grade
P	Steel	Continuous cutting	*Low*	MS6015
			Medium	
			High	MS7025
		Interrupted cutting		

P	PVD
P10	MS6015
P20	
P30	MS7025
P40	
P50	

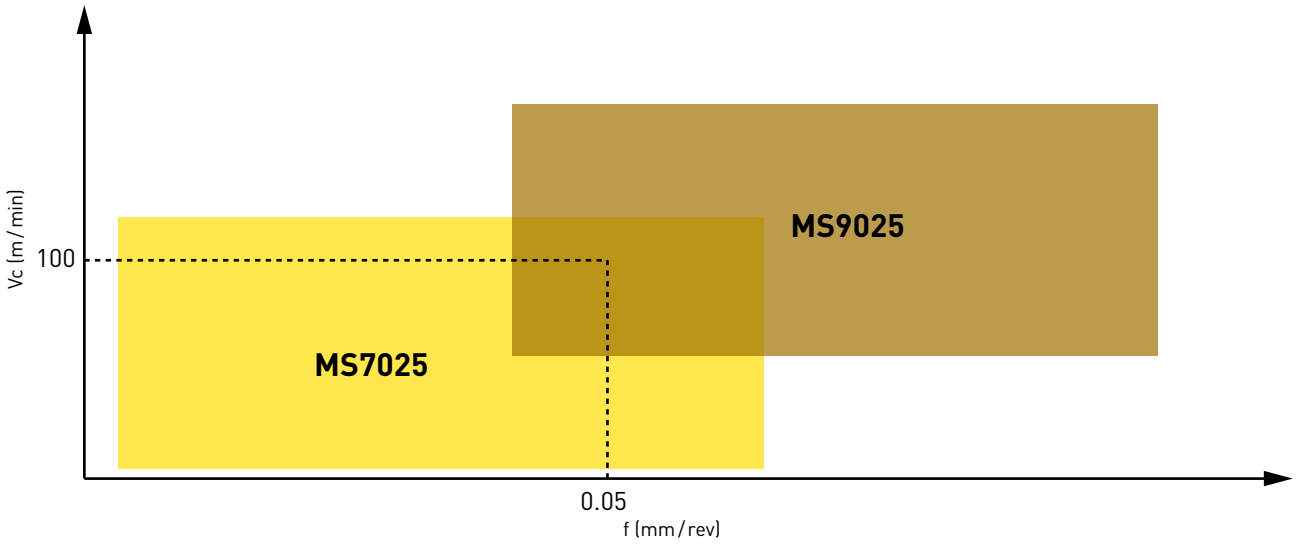
Material		Cutting mode		Grade
M	Stainless steel	Continuous cutting	*Low*	MS7025 MS9025
			Medium	
			High	
		Interrupted cutting		

M	PVD
M10	
M20	MS7025
M30	MS9025
M40	
M50	

Material		Cutting mode		Grade
S	Titanium alloy (HRSA)	Continuous cutting	*Low*	MS9025
			Medium	
			High	
		Interrupted cutting		

S	PVD
S10	
S20	
S30	MS9025
S40	
S50	

CORRECT AREA OF USE WHEN MACHINING STAINLESS STEEL



MS6015 / MS7025 / MS9025

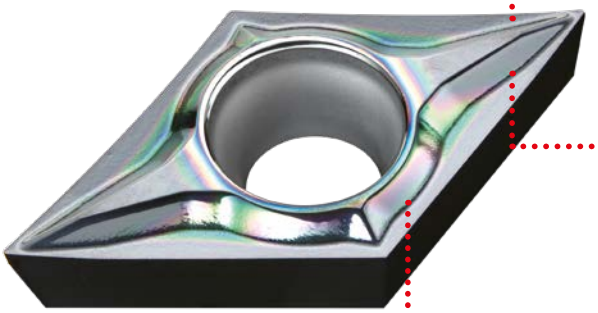
IDEAL INSERTS FOR TURNING SMALL PARTS

Set the corner radius to a minus tolerance.

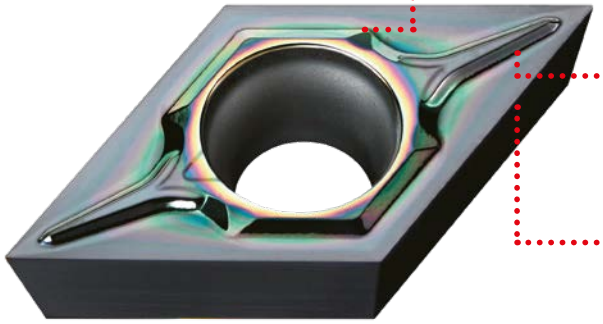
Order number	DCGT11T3**02 M** R-SN	→	02M R 0.2 mm (R 0.15 – R 0.20 mm)
	DCGT11T3**04 M** -SMG		04M R 0.4 mm (R 0.35 – R 0.40 mm)

NEW BREAKER SYSTEM FOR FRONT TURNING

FS-P Breaker
For micro-low depth of cut



LS-P Breaker
For medium to high depth of cut



Curved cutting edge

The curved cutting edge reduces cutting resistance and enables smooth chip evacuation. It also enables good initial entry to the workpiece and resists vibration and oscillation during machining.

High breaker wall

The high chipbreaker wall ensures that the chips separate properly and prevents the workpiece from being damaged when chips are discharged.

Polishing (Mirror-surface)

Welding resistance and chip evacuation are greatly improved.

Large pocket

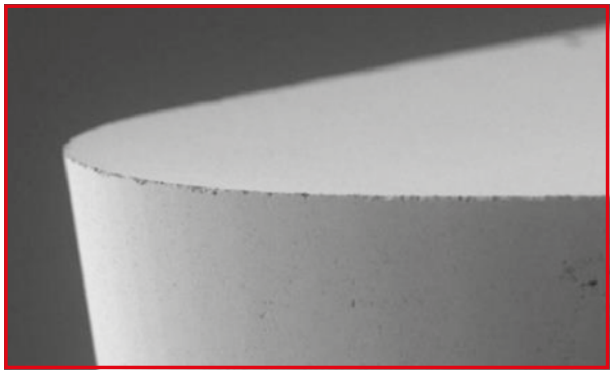
The large pocket enhances chip evacuation during high depths of cut and suppresses chip clogging.

Parallel cutting edge

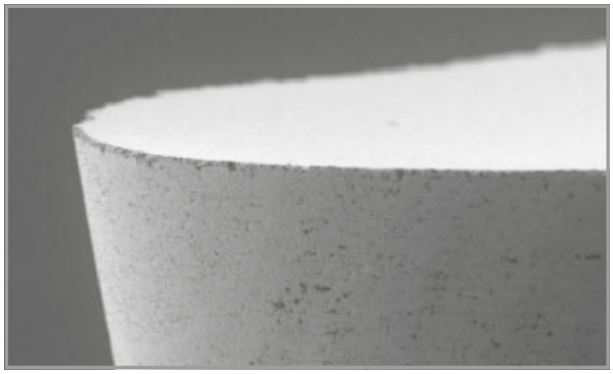
The parallel cutting edge greatly improves fracture resistance during high depths of cut.

EXTREMELY HIGH QUALITY CUTTING EDGE

Technology that provides superior dimensional stability and reduces burrs.



MS7025 / MS9025 Rz = 0.14 µm



Conventional Rz = 0.61 µm

MS9025

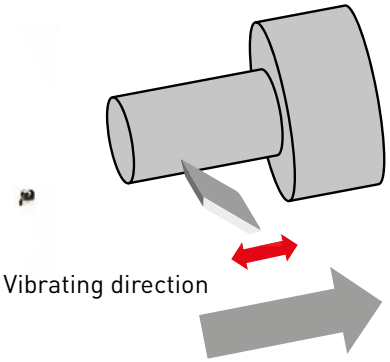
NEW TECHNOLOGY – CONTROLLED VIBRATION OF THE CUTTING TOOL

Using new machine technology to deliberately vibrate the tool in relation to the cutting direction is an effective way of breaking chips. This reduces production costs by reducing chip entanglement.

Without controlled vibration

With controlled vibration frequency = 0.75/rev

With controlled vibration frequency = 1.25/rev



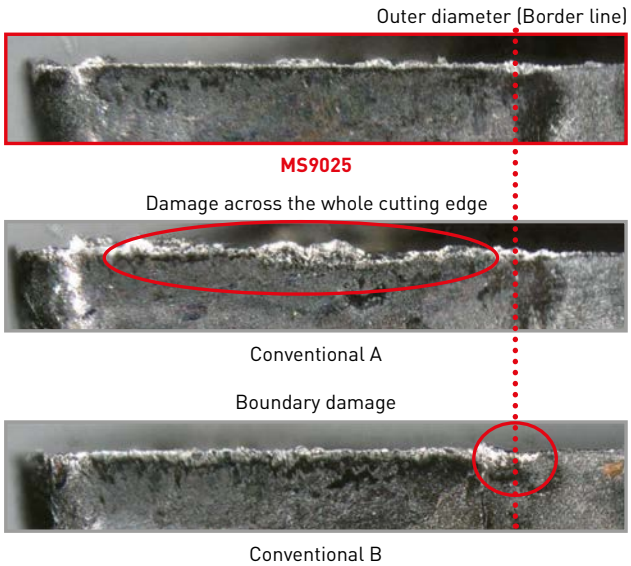
Challenges of controlled vibration machining:
Compared to standard machining there is a greater chance of chipping due to the extra stress on the cutting edge and also because of the consequences of work hardening.

BENEFITS OF USING MS9025 FOR CONTROLLED VIBRATION MACHINING

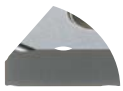
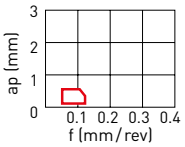
1. Excellent fracture resistance due to the inherent toughness of the base material.
2. Effectively suppresses boundary wear damage during machining of difficult-to-cut materials. This is achieved by the optimised cemented carbide grain size that increases thermal conductivity and heating of the cutting edge.

After 500 passes at 15 m per pass

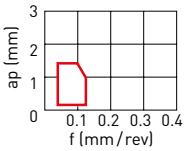
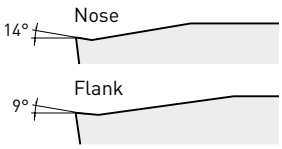
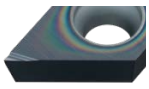
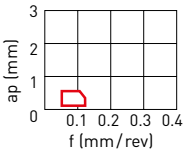
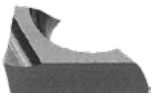
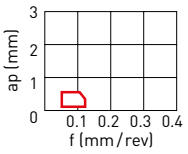
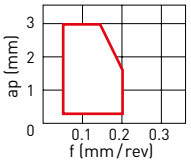
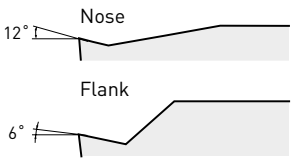
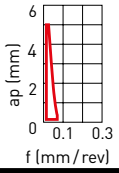
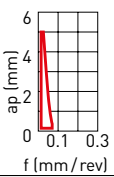
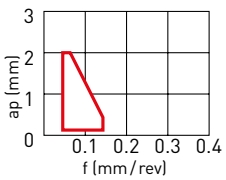
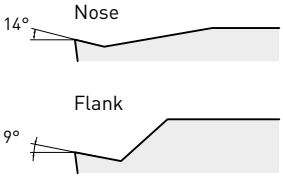
Workpiece material	DIN X5CrNi18-10 (1.4301)
Insert	DCGT11T302M
Vc (m/min)	100
f (mm/rev)	0.08
ap (mm)	1.0
The number of vibration	D = 1.25/rev
Cutting mode	External Continuous cutting Wet cutting (Oil)



BREAKER SYSTEM – NEGATIVE INSERTS

Tolerance		Features	Carbon steel/Alloy steel	Cross section geometry
FINISH CUTTING				
G	 R/L-FS	**PRECISION FINISHING** Double-sided chipbreaker. A narrow lead chipbreaker for good chip control. Sharp cutting edge gives a good surface finish.		

BREAKER SYSTEM – POSITIVE INSERTS

Tolerance		Features	Carbon steel/Alloy steel	Cross section geometry
FINISH CUTTING				
G	 FS-P	**FIRST RECOMMENDATION FOR FINISHING TITANIUM ALLOYS** Ideal for cobalt chromium alloy and copper alloy. The sharp edge produces a good surface finish. The curved edge allows smooth chip discharge. Lapping of the top surface gives a mirror finish for improved welding resistance.		
E	 R/L - SRF	**FINISHING** Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.		
G	 R/L-F	**FINISH MACHINING ON AUTOMATIC LATHES** Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.		
LIGHT CUTTING				
G	 LS-P	**LIGHT MACHINING ON AUTOMATIC LATHES** Designed with parallel cutting edges. Achieves stable chip control over a wide range, from low to medium depths of cut. Polished (mirror-surface) finish of insert surface drastically improves welding resistance and extends tool life.		
	 R/L-SS	**LIGHT MACHINING ON AUTOMATIC LATHES** Parallel chipbreaker geometry. Excellent chip control at low feed rates.		
MEDIUM CUTTING				
G	 R/L-SN	**MEDIUM CUTTING OF AUTOMATIC LATHE MACHINING** A parallel chipbreaker. Excellent chip control at low to medium feed rates.		
	 SMG	**MEDIUM CUTTING** 3D moulded chipbreaker provides good chip control. G class insert provides a sharp cutting action, allowing high precision machining. Breaker geometry is suitable for copying and back turning.		

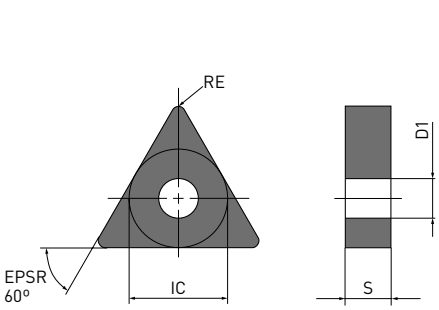
TNGG

NEGATIVE INSERTS (WITH HOLE)

P M S

G Class

R/L-FS



Order number		MS6015	MS7025	MS9025	IC	S	RE	D1
TNGG160402R-FS	F	●			9.525	4.76	0.2	3.81
TNGG160402L-FS	F	●			9.525	4.76	0.2	3.81
TNGG160404R-FS	F	●			9.525	4.76	0.4	3.81
TNGG160404L-FS	F	●			9.525	4.76	0.4	3.81
TNGG160408R-FS	F	●			9.525	4.76	0.8	3.81
TNGG160408L-FS	F	●			9.525	4.76	0.8	3.81

1/1

22 Vc

● : Inventory maintained. ★ : Inventory maintained in Japan.

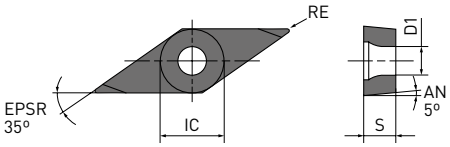
VBGT

5° POSITIVE INSERTS (WITH HOLE)

P M S

G Class

FS-P



Order number		MS6015	MS7025	MS9025	IC	S	RE	D1
VBGT110301M-FS-P	F			●	6.35	3.18	0.1	2.9
VBGT110302M-FS-P	F			●	6.35	3.18	0.2	2.9
VBGT110304M-FS-P	F			●	6.35	3.18	0.4	2.9
VBGT160401M-FS-P	F			●	9.525	4.76	0.1	4.4
VBGT160402M-FS-P	F			●	9.525	4.76	0.2	4.4
VBGT160404M-FS-P	F			●	9.525	4.76	0.4	4.4
VBGT160408M-FS-P	F			●	9.525	4.76	0.8	4.4

1/1

22 Vc

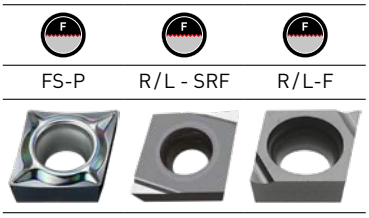
● : Inventory maintained. ★ : Inventory maintained in Japan.

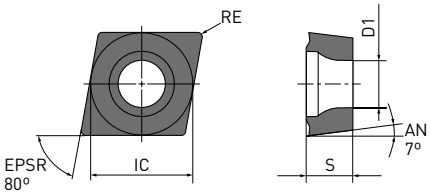
CCGH/CCET/CCGT

7° POSITIVE INSERTS (WITH HOLE)

P M S

E, G Class





	Order number		MS6015	MS7025	MS9025	IC	S	RE*2	D1
	CCGT060201M-FS-P	F		●	●	6.35	2.38	0.1	2.8
	CCGT060202M-FS-P	F		●	●	6.35	2.38	0.2	2.8
	CCGT060204M-FS-P	F		●	●	6.35	2.38	0.4	2.8
	CCGT09T301M-FS-P	F		●	●	9.525	3.97	0.1	4.4
	CCGT09T302M-FS-P	F		●	●	9.525	3.97	0.2	4.4
	CCGT09T304M-FS-P	F		●	●	9.525	3.97	0.4	4.4
NEW	CCET060201MR-SRF	F			●	6.35	2.38	0.1	2.8
NEW	CCET060201ML-SRF	F			●	6.35	2.38	0.1	2.8
NEW	CCET060202MR-SRF	F			●	6.35	2.38	0.2	2.8
NEW	CCET060202ML-SRF	F			●	6.35	2.38	0.2	2.8
NEW	CCET060204MR-SRF	F			●	6.35	2.38	0.4	2.8
NEW	CCET060204ML-SRF	F			●	6.35	2.38	0.4	2.8
NEW	CCET09T301MR-SRF	F			●	9.525	3.97	0.1	4.4
NEW	CCET09T301ML-SRF	F			●	9.525	3.97	0.1	4.4
NEW	CCET09T302MR-SRF	F			●	9.525	3.97	0.2	4.4
NEW	CCET09T302ML-SRF	F			●	9.525	3.97	0.2	4.4
NEW	CCET09T304MR-SRF	F			●	9.525	3.97	0.4	4.4
NEW	CCET09T304ML-SRF	F			●	9.525	3.97	0.4	4.4
	CCGT03S101MR-F	F	●			3.57*1	1.39	0.1	2.0
	CCGT03S101ML-F	F	●			3.57*1	1.39	0.1	2.0
	CCGT03S102MR-F	F	●			3.57*1	1.39	0.2	2.0
	CCGT03S102ML-F	F	●			3.57*1	1.39	0.2	2.0
	CCGT03S104MR-F	F	●			3.57*1	1.39	0.4	2.0
	CCGT03S104ML-F	F	●			3.57*1	1.39	0.4	2.0
	CCGT04T001MR-F	F	●			4.37*1	1.79	0.1	2.4
	CCGT04T001ML-F	F	●			4.37*1	1.79	0.1	2.4
	CCGT04T002MR-F	F	●			4.37*1	1.79	0.2	2.4
	CCGT04T002ML-F	F	●			4.37*1	1.79	0.2	2.4
	CCGT04T004MR-F	F	●			4.37*1	1.79	0.4	2.4
	CCGT04T004ML-F	F	●			4.37*1	1.79	0.4	2.4
	CCGH060202MR-F	F	●			6.35	2.38	0.2	2.8
	CCGH060202ML-F	F	●			6.35	2.38	0.2	2.8
	CCGH060204MR-F	F	●			6.35	2.38	0.4	2.8
	CCGH060204ML-F	F	●			6.35	2.38	0.4	2.8

*1 Diameter of inscribed circle is non-ISO standard. (For SCLC type)
*2 Nominal value (Max.)

● : Inventory maintained. ★ : Inventory maintained in Japan.

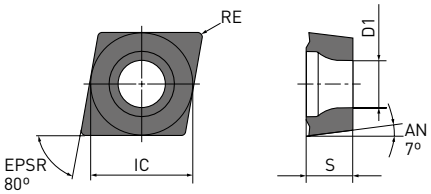
● = Expansion

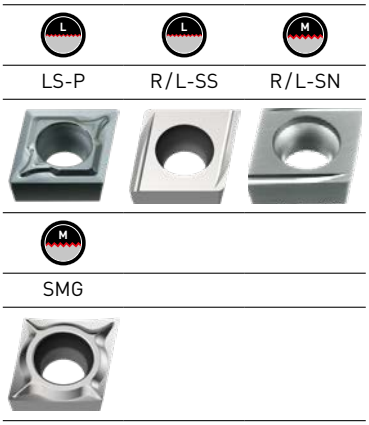
CCGT

7° POSITIVE INSERTS (WITH HOLE)

P M S

G Class





Order number		MS6015	MS7025	MS9025	IC	S	RE*	D1
CCGT0602V5M-LS-P	L			●	6.35	2.38	0.05	2.8
CCGT060201M-LS-P	L	●	●	●	6.35	2.38	0.1	2.8
CCGT060202M-LS-P	L	●	●	●	6.35	2.38	0.2	2.8
CCGT060204M-LS-P	L		●	●	6.35	2.38	0.4	2.8
CCGT09T301M-LS-P	L	●	●	●	9.525	3.97	0.1	4.4
CCGT09T302M-LS-P	L	●	●	●	9.525	3.97	0.2	4.4
CCGT09T304M-LS-P	L	●	●	●	9.525	3.97	0.4	4.4
CCGT060201MR-SS	L	●			6.35	2.38	0.1	2.8
CCGT060201ML-SS	L	●			6.35	2.38	0.1	2.8
CCGT060202MR-SS	L	●			6.35	2.38	0.2	2.8
CCGT060202ML-SS	L	●			6.35	2.38	0.2	2.8
CCGT09T301MR-SS	L	●			9.525	3.97	0.1	4.4
CCGT09T301ML-SS	L	●			9.525	3.97	0.1	4.4
CCGT09T302MR-SS	L	●			9.525	3.97	0.2	4.4
CCGT09T302ML-SS	L	●			9.525	3.97	0.2	4.4
CCGT09T304MR-SS	L	●			9.525	3.97	0.4	4.4
CCGT09T304ML-SS	L	●			9.525	3.97	0.4	4.4
CCGT060201MR-SN	M	●	●	●	6.35	2.38	0.1	2.8
CCGT060201ML-SN	M	●			6.35	2.38	0.1	2.8
CCGT060202MR-SN	M	●	●	●	6.35	2.38	0.2	2.8
CCGT060202ML-SN	M	●			6.35	2.38	0.2	2.8
CCGT09T301MR-SN	M	●	●	●	9.525	3.97	0.1	4.4
CCGT09T301ML-SN	M	●			9.525	3.97	0.1	4.4
CCGT09T302MR-SN	M	●	●	●	9.525	3.97	0.2	4.4
CCGT09T302ML-SN	M	●			9.525	3.97	0.2	4.4
CCGT09T304MR-SN	M	●	●	●	9.525	3.97	0.4	4.4
CCGT09T304ML-SN	M	●			9.525	3.97	0.4	4.4
CCGT060201M-SMG	M	●			6.35	2.38	0.1	2.8
CCGT060202M-SMG	M	●			6.35	2.38	0.2	2.8
CCGT060204M-SMG	M	●			6.35	2.38	0.4	2.8
CCGT09T301M-SMG	M	●			9.525	3.97	0.1	4.4
CCGT09T302M-SMG	M	●			9.525	3.97	0.2	4.4
CCGT09T304M-SMG	M	●			9.525	3.97	0.4	4.4

1/1

* Nominal value (Max.)

● : Inventory maintained. ★ : Inventory maintained in Japan.

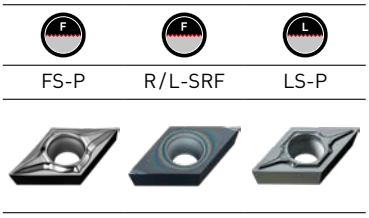
● = Expansion

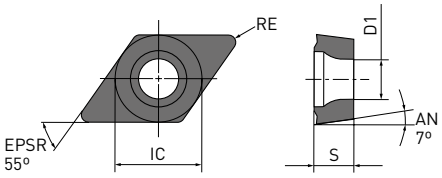
DCET / DCGT

7° POSITIVE INSERTS (WITH HOLE)

P M S

E, G Class





	Order number		MS6015	MS7025	MS9025	IC	S	RE*	D1
	DCGT070201M-FS-P	F		●	●	6.35	2.38	0.1	2.8
	DCGT070202M-FS-P	F		●	●	6.35	2.38	0.2	2.8
	DCGT070204M-FS-P	F		●	●	6.35	2.38	0.4	2.8
	DCGT11T301M-FS-P	F		●	●	9.525	3.97	0.1	4.4
	DCGT11T302M-FS-P	F		●	●	9.525	3.97	0.2	4.4
	DCGT11T304M-FS-P	F		●	●	9.525	3.97	0.4	4.4
NEW	DCET070201MR-SRF	F			●	6.35	2.38	0.1	2.8
NEW	DCET070201ML-SRF	F			●	6.35	2.38	0.1	2.8
NEW	DCET070202MR-SRF	F			●	6.35	2.38	0.2	2.8
NEW	DCET070202ML-SRF	F			●	6.35	2.38	0.2	2.8
NEW	DCET070204MR-SRF	F			●	6.35	2.38	0.4	2.8
NEW	DCET070204ML-SRF	F			●	6.35	2.38	0.4	2.8
NEW	DCET11T301ML-SRF	F			●	9.525	3.97	0.1	4.4
NEW	DCET11T302ML-SRF	F			●	9.525	3.97	0.2	4.4
NEW	DCET11T304ML-SRF	F			●	9.525	3.97	0.4	4.4
	DCGT11T301MR-SRF	F		●	●	9.525	3.97	0.1	4.4
	DCGT11T302MR-SRF	F		●	●	9.525	3.97	0.2	4.4
	DCGT11T304MR-SRF	F		●	●	9.525	3.97	0.4	4.4
	DCGT0702V5M-LS-P	L			●	6.35	2.38	0.05	2.8
	DCGT070201M-LS-P	L	●	●	●	6.35	2.38	0.1	2.8
	DCGT070202M-LS-P	L	●	●	●	6.35	2.38	0.2	2.8
	DCGT070204M-LS-P	L	●	●	●	6.35	2.38	0.4	2.8
	DCGT11T301M-LS-P	L	●	●	●	9.525	3.97	0.1	4.4
	DCGT11T302M-LS-P	L	●	●	●	9.525	3.97	0.2	4.4
	DCGT11T304M-LS-P	L	●	●	●	9.525	3.97	0.4	4.4

1/2

* Nominal value (Max.)

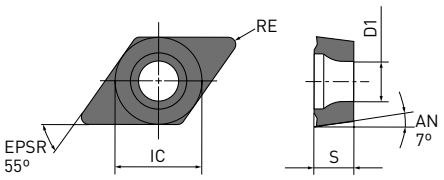
22 Vc

DCGT – 7° POSITIVE INSERTS (WITH HOLE)

P M S

G Class

R/L-SS



Order number		MS6015	MS7025	MS9025	IC	S	RE*	D1
DCGT070201MR-SS	L	●			6.35	2.38	0.1	2.8
DCGT070201ML-SS	L	●			6.35	2.38	0.1	2.8
DCGT070202MR-SS	L	●			6.35	2.38	0.2	2.8
DCGT070202ML-SS	L	●			6.35	2.38	0.2	2.8
DCGT11T301MR-SS	L	●			9.525	3.97	0.1	4.4
DCGT11T301ML-SS	L	●			9.525	3.97	0.1	4.4
DCGT11T302MR-SS	L	●			9.525	3.97	0.2	4.4
DCGT11T302ML-SS	L	●			9.525	3.97	0.2	4.4
DCGT11T304MR-SS	L	●			9.525	3.97	0.4	4.4
DCGT11T304ML-SS	L	●			9.525	3.97	0.4	4.4

* Nominal value (Max.)

22 Vc

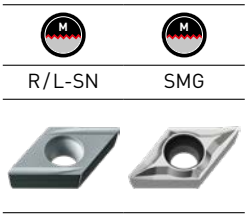
● : Inventory maintained. ★ : Inventory maintained in Japan.

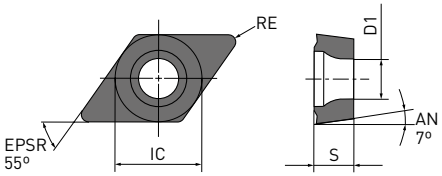
DCGT

7° POSITIVE INSERTS (WITH HOLE)

P M S

G Class





Order number		MS6015	MS7025	MS9025	IC	S	RE*	D1
DCGT070201MR-SN	M	●	●	●	6.35	2.38	0.1	2.8
DCGT070201ML-SN	M	●	★	★	6.35	2.38	0.1	2.8
DCGT070202MR-SN	M	●	●	●	6.35	2.38	0.2	2.8
DCGT070202ML-SN	M	●	★	★	6.35	2.38	0.2	2.8
DCGT070204MR-SN	M		●	●	6.35	2.38	0.4	2.8
DCGT11T301MR-SN	M	●	●	●	9.525	3.97	0.1	4.4
DCGT11T301ML-SN	M	●	★	★	9.525	3.97	0.1	4.4
DCGT11T302MR-SN	M	●	●	●	9.525	3.97	0.2	4.4
DCGT11T302ML-SN	M	●	★	★	9.525	3.97	0.2	4.4
DCGT11T304MR-SN	M	●	●	●	9.525	3.97	0.4	4.4
DCGT11T304ML-SN	M	●	★	★	9.525	3.97	0.4	4.4
DCGT070201M-SMG	M	●			6.35	2.38	0.1	2.8
DCGT070202M-SMG	M	●			6.35	2.38	0.2	2.8
DCGT070204M-SMG	M	●			6.35	2.38	0.4	2.8
DCGT11T301M-SMG	M	●			9.525	3.97	0.1	4.4
DCGT11T302M-SMG	M	●			9.525	3.97	0.2	4.4
DCGT11T304M-SMG	M	●			9.525	3.97	0.4	4.4

1/1

* Nominal value (Max.)

22 Vc

● : Inventory maintained. ★ : Inventory maintained in Japan.

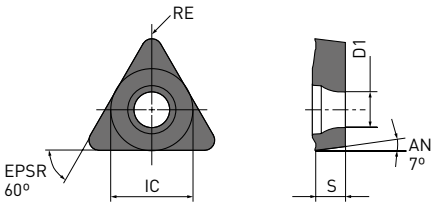
TCGT/VCET/VCGT

7° POSITIVE INSERTS (WITH HOLE)

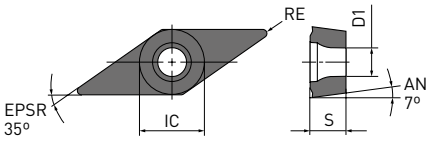
P M S

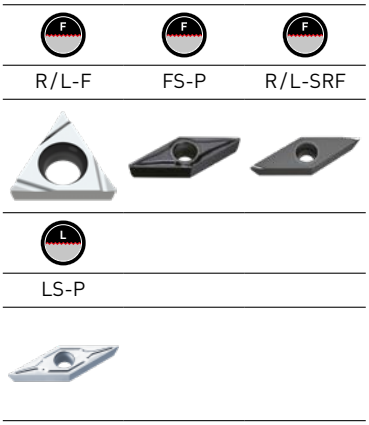
E, G Class

TCGT



VCET/VCGT





Order number		MS6015	MS7025	MS9025	IC	S	RE*	D1
TCGT060101MR-F	F	●			3.97	1.59	0.1	2.3
TCGT060101ML-F	F	●			3.97	1.59	0.1	2.3
TCGT060102MR-F	F	●			3.97	1.59	0.2	2.3
TCGT060102ML-F	F	●			3.97	1.59	0.2	2.3
TCGT060104MR-F	F	●			3.97	1.59	0.4	2.3
TCGT060104ML-F	F	●			3.97	1.59	0.4	2.3
VCGT110301M-FS-P	F		●	●	6.35	3.18	0.1	2.8
VCGT110302M-FS-P	F		●	●	6.35	3.18	0.2	2.8
VCGT110304M-FS-P	F			●	6.35	3.18	0.4	2.8
NEW VCET080202MR-SRF	F			●	4.76	2.38	0.2	2.4
NEW VCET080202ML-SRF	F			●	4.76	2.38	0.2	2.4
NEW VCET080204MR-SRF	F			●	4.76	2.38	0.4	2.4
NEW VCET080204ML-SRF	F			●	4.76	2.38	0.4	2.4
NEW VCET110301MR-SRF	F			●	6.35	3.18	0.1	2.8
NEW VCET110301ML-SRF	F			●	6.35	3.18	0.1	2.8
NEW VCET110302MR-SRF	F			●	6.35	3.18	0.2	2.8
NEW VCET110302ML-SRF	F			●	6.35	3.18	0.2	2.8
NEW VCET110304MR-SRF	F			●	6.35	3.18	0.4	2.8
NEW VCET110304ML-SRF	F			●	6.35	3.18	0.4	2.8
VCGT110301M-LS-P	L		●	●	6.35	3.18	0.1	2.8
VCGT110302M-LS-P	L		●	●	6.35	3.18	0.2	2.8
VCGT110304M-LS-P	L		●	●	6.35	3.18	0.4	2.8
VCGT130301M-LS-P	L			●	7.94	3.18	0.1	3.4
VCGT130302M-LS-P	L			●	7.94	3.18	0.2	3.4
VCGT130304M-LS-P	L			●	7.94	3.18	0.4	3.4

* Nominal value (Max.)

● = Expansion

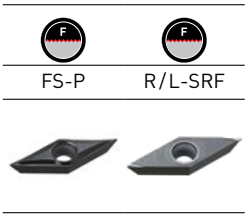
● : Inventory maintained. ★ : Inventory maintained in Japan.

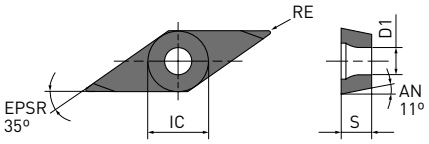
VPET/VPGT

11° POSITIVE INSERTS (WITH HOLE)

P M S

E, G Class





Order number		MS6015	MS7025	MS9025	IC	S	RE	D1
VPGT080201M-FS-P	F			●	4.76	2.38	0.1*1	2.42
VPGT080202M-FS-P	F			●	4.76	2.38	0.2*1	2.42
VPGT110301M-FS-P	F			●	6.35	3.18	0.1*1	2.85
VPGT110302M-FS-P	F			●	6.35	3.18	0.2*1	2.85
NEW VPET1103V3R-SRF	F			●	6.35	3.18	0.03*2	2.85
NEW VPET1103V3L-SRF	F			●	6.35	3.18	0.03*2	2.85
NEW VPET080201MR-SRF	F			●	4.76	2.38	0.1*1	2.42
NEW VPET080201ML-SRF	F			●	4.76	2.38	0.1*1	2.42
NEW VPET080202MR-SRF	F			●	4.76	2.38	0.2*1	2.42
NEW VPET080202ML-SRF	F			●	4.76	2.38	0.2*1	2.42
NEW VPET110301MR-SRF	F			●	6.35	3.18	0.1*1	2.85
NEW VPET110301ML-SRF	F			●	6.35	3.18	0.1*1	2.85
NEW VPET110302MR-SRF	F			●	6.35	3.18	0.2*1	2.85
NEW VPET110302ML-SRF	F			●	6.35	3.18	0.2*1	2.85

*1 Nominal value (Max.)
*2 Nominal value (Med.)

22 Vc

● : Inventory maintained. ★ : Inventory maintained in Japan.

MS6015 / MS7025 / MS9025

RECOMMENDED CUTTING CONDITIONS

	Material	Properties	Conditions	F L M	Grade		Vc	f	ap
P	Pure iron Free cutting steel	—	●	F	MS6015	R/L-FS	150 (50 – 200)	0.01 – 0.15	0.1 – 0.5
			●	F	MS6015	R/L-F	150 (50 – 200)	0.01 – 0.15	0.1 – 0.5
			◐	L	MS6015	LS-P	150 (50 – 200)	0.01 – 0.15	0.3 – 3.0
			◐	L	MS6015	R/L-SS	150 (50 – 200)	0.01 – 0.15	0.2 – 1.0
			◐	M	MS6015	R/L-SN	150 (50 – 200)	0.01 – 0.15	0.1 – 0.5
			◐	M	MS6015	SMG	150 (50 – 200)	0.01 – 0.15	0.1 – 2.0
	Soft magnetic iron	—	●	F	MS6015	R/L-FS	200 (150 – 250)	0.01 – 0.15	0.1 – 0.5
			●	F	MS7025	FS-P	200 (100 – 300)	0.01 – 0.06	0.2 – 0.7
			●	F	MS6015	R/L-F	200 (150 – 250)	0.01 – 0.15	0.1 – 0.5
			◐	F	MS7025	R-SRF	200 (100 – 300)	0.01 – 0.06	0.1 – 0.5
			◐	L	MS6015	LS-P	200 (150 – 250)	0.01 – 0.15	0.1 – 0.5
			◐	L	MS7025	LS-P	200 (100 – 300)	0.01 – 0.06	0.1 – 0.5
			◐	L	MS6015	R/L-SS	200 (150 – 250)	0.01 – 0.15	0.2 – 1.0
			◐	M	MS6015	R/L-SN	200 (150 – 250)	0.01 – 0.15	0.1 – 0.5
			◐	M	MS7025	R/L-SN	200 (100 – 300)	0.01 – 0.06	0.1 – 0.5
			◐	M	MS6015	SMG	200 (150 – 250)	0.01 – 0.15	0.1 – 2.0
	Carbon and alloy steel	180 – 280 HB	●	F	MS6015	R/L-FS	100 (50 – 150)	0.01 – 0.15	0.1 – 0.5
			●	F	MS7025	FS-P	90 (40 – 130)	0.01 – 0.06	0.2 – 0.7
			●	F	MS6015	R/L-F	100 (50 – 150)	0.01 – 0.15	0.1 – 0.5
			◐	L	MS6015	LS-P	100 (50 – 150)	0.01 – 0.15	0.3 – 3.0
			◐	L	MS7025	LS-P	90 (40 – 130)	0.01 – 0.06	0.3 – 3.0
			◐	L	MS6015	R/L-SS	100 (50 – 150)	0.01 – 0.15	0.2 – 1.0
			◐	M	MS6015	R/L-SN	100 (50 – 150)	0.01 – 0.15	0.1 – 0.5
			◐	M	MS7025	R/L-SN	90 (40 – 130)	0.01 – 0.06	0.1 – 0.5
			◐	M	MS6015	SMG	100 (50 – 150)	0.01 – 0.15	0.1 – 2.0
M	Austenitic stainless steel	—	●	F	MS7025	FS-P	60 (40 – 100)	0.01 – 0.08	0.2 – 0.7
			●	F	MS9025	FS-P	100 (60 – 150)	0.04 – 0.15	0.2 – 0.7
			●	F	MS7025	R-SRF	60 (40 – 100)	0.01 – 0.08	0.1 – 0.5
			◐	F	MS9025	R/L-SRF	100 (60 – 150)	0.04 – 0.15	0.1 – 0.5
			◐	L	MS7025	LS-P	60 (40 – 100)	0.01 – 0.08	0.3 – 3.0
			◐	L	MS9025	LS-P	100 (60 – 150)	0.05 – 0.15	0.3 – 3.0
			◐	M	MS7025	R-SN	60 (40 – 100)	0.01 – 0.08	0.1 – 5.0
			◐	M	MS9025	R-SN	100 (60 – 150)	0.05 – 0.15	0.1 – 5.0
	Ferritic and martensitic stainless steel	—	●	F	MS7025	FS-P	60 (40 – 100)	0.01 – 0.08	0.2 – 0.7
			◐	F	MS7025	R-SRF	60 (40 – 100)	0.01 – 0.08	0.1 – 0.5
			◐	L	MS7025	LS-P	60 (40 – 100)	0.01 – 0.08	0.3 – 3.0
			◐	M	MS7025	R/L-SN	60 (40 – 100)	0.01 – 0.08	0.1 – 5.0
	Electromagnetic stainless steel (DIN X105CrMo17, DIN X30Cr13 etc.)	Hardness 230 HBW	●	F	MS9025	FS-P	100 (50 – 180)	0.04 – 0.12	0.2 – 1.8
			●	F	MS7025	FS-P	80 (40 – 160)	0.02 – 0.08	0.2 – 1.8
			◐	F	MS9025	R/L-SRF	100 (50 – 180)	0.04 – 0.12	0.1 – 0.5
			◐	F	MS7025	R-SRF	80 (40 – 160)	0.03 – 0.08	0.1 – 0.5
			◐	L	MS9025	LS-P	100 (50 – 180)	0.04 – 0.15	0.3 – 3.0
			◐	L	MS7025	LS-P	80 (40 – 160)	0.02 – 0.10	0.3 – 3.0
			◐	M	MS9025	R-SN	100 (50 – 180)	0.01 – 0.10	0.1 – 5.0
			◐	M	MS7025	R-SN	80 (40 – 160)	0.01 – 0.10	0.1 – 5.0

1/2

Cutting conditions: ● : Stable cutting ◐ : General cutting ✱ : Unstable cutting

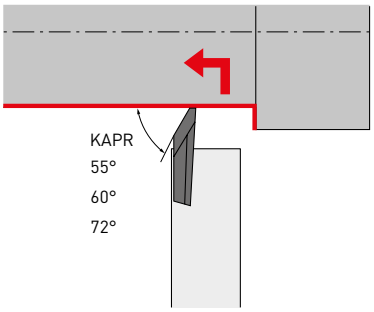
MS6015/MS7025/MS9025

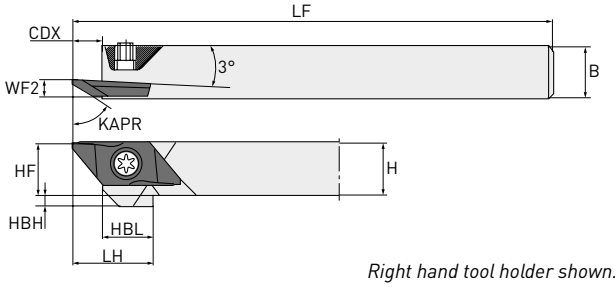
	Material	Properties	Conditions	F L M	Grade		Vc	f	ap
M	Precipitation hardening stainless steel (DIN X5CrNiCuNb16-4, DIN X7CrNiAl17-7 etc.)	<450 HB	●	F	MS7025	FS-P	60 (40 – 80)	0.01 – 0.10	0.1 – 1.4
			●	F	MS9025	FS-P	70 (50 – 100)	0.03 – 0.15	0.1 – 1.4
			◐	F	MS7025	R-SRF	60 (40 – 80)	0.01 – 0.10	0.1 – 0.5
			◐	F	MS9025	R/L-SRF	70 (50 – 100)	0.03 – 0.15	0.1 – 0.5
			◐	L	MS7025	LS-P	60 (40 – 80)	0.04 – 0.10	0.2 – 3.0
			◐	L	MS9025	LS-P	70 (50 – 100)	0.04 – 0.15	0.2 – 3.0
			◐	M	MS7025	R-SN	60 (40 – 80)	0.03 – 0.10	0.3 – 3.0
			◐	M	MS9025	R-SN	70 (50 – 100)	0.04 – 0.15	0.3 – 3.0
S	Heat resistant alloy (SUH etc.)	—	●	F	MS9025	FS-P	80 (40 – 140)	0.04 – 0.12	0.2 – 1.4
			◐	F	MS9025	R/L-SRF	80 (40 – 140)	0.05 – 0.12	0.1 – 0.5
			◐	L	MS9025	LS-P	80 (40 – 140)	0.04 – 0.15	0.3 – 3.0
			◐	M	MS9025	R-SN	80 (40 – 140)	0.01 – 0.10	0.1 – 5.0

Cutting conditions: ● : Stable cutting ◐ : General cutting ✱ : Unstable cutting

BTAH

EXTERNAL BACK TURNING





Right hand tool holder shown.

Order number	Stock R	Stock L	Insert type	H	B	LF	LH	HF	WF2	HBH	HBL	CDX	Clamp screw *	Wrench
BTAHR/L0810-50	●	★	BTAT ○○○○	8	10	120	15	8	3.5	4	9.5	5.5	NS402W	NKY15S
BTAHR/L1010-50	●	★		10	10	120	15	10	3.5	2	9.5	5.5	NS402W	NKY15S
BTAHR/L1212-50	●	★		12	12	120	15	12	3.5	—	9.5	5.5	NS403W	NKY15S
BTAHR1616-50	●			16	16	120	15	16	3.5	—	9.5	5.5	NS403W	NKY15S

1/1

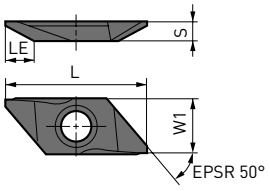
* Clamp torque (N • m) : NS402W=1.0, NS403W=1.0
1. Please use right hand insert for right hand holder and left hand insert for left hand holder.
2. Set the maximum depth of cut under 60 % of the effective cutting edge length (LE).

INSERTS

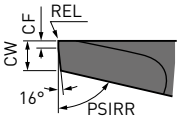
Order number	Hand	VP15TF	MS6015	PSIRR/L	REL	CF	L	W1	CW	S	LE*
WITH BREAKER											
BTAT7235V5R-SMB	R	●		72°	0.05	0.3	20	8	1.4	2.5	3.5
BTAT723501MR-SMB	R	●		72°	0.08	0.3	20	8	1.4	2.5	3.5
BTAT723502MR-SMB	R	●		72°	0.18	0.3	20	8	1.4	2.5	3.5
BTAT552800R-B	R	●	●	55°	0	0	20	8	0.5	2.5	2.8
BTAT552800L-B	L	★		55°	0	0	20	8	0.5	2.5	2.8
BTAT552801R-B	R	●	●	55°	0.1	0	20	8	0.5	2.5	2.8
BTAT552801L-B	L	★		55°	0.1	0	20	8	0.5	2.5	2.8
BTAT603500R-B	R	●	●	60°	0	0	20	8	0.5	2.5	3.5
BTAT603500L-B	L	★		60°	0	0	20	8	0.5	2.5	3.5
BTAT603501MR-B	R		●	60°	0.08	0	20	8	0.5	2.5	3.5
BTAT603501R-B	R	●	●	60°	0.1	0	20	8	0.5	2.5	3.5
BTAT603501L-B	L	★		60°	0.1	0	20	8	0.5	2.5	3.5
WITHOUT BREAKER											
BTAT605000RX	R	●		60°	0	0	20	8	1.25	2.5	5.0

Geometry

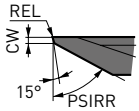
Right hand insert shown.

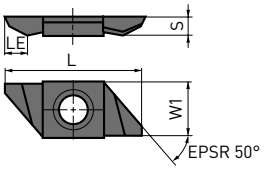


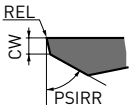
SMB Type (Moulded type)



B Type (Ground type)







1/1

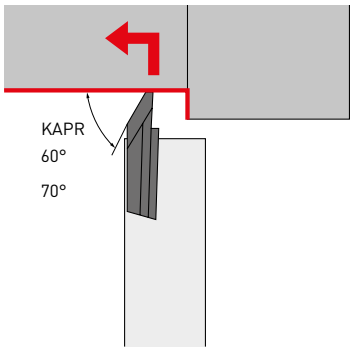
(5 inserts in one case)

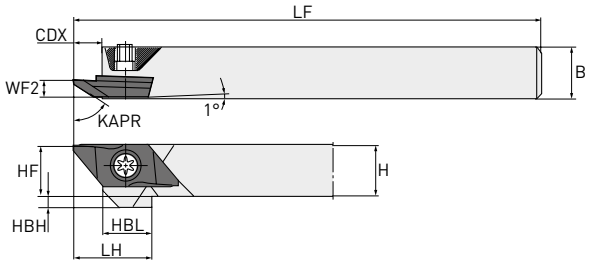
* Value with insert on the holder.

● : Inventory maintained. ★ : Inventory maintained in Japan.

CTBH

EXTERNAL BACK TURNING





Right hand tool holder shown.

Order number	Stock		Insert type		H	B	LF	LH	HF	WF2	HBH	HBL	CDX	*	
	R	L												Clamp screw	Wrench
CTBHR/L1010-160	●	●			10	10	120	19.5	10	3.4	2	12	7.5	NS402W	NKY15S
CTBHR/L1212-160	●	●	BTBT	○○○○	12	12	120	19.5	12	3.4	—	12	7.5	NS403W	NKY15S
CTBHR/L1616-160	●	●			16	16	120	19.5	16	3.4	—	12	7.5	NS403W	NKY15S

1/1

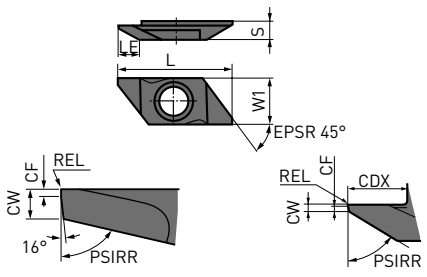
* Clamp torque (N • m): NS402W = 1.0, NS403W = 1.0
1. Please use right hand insert for right hand holder and left hand insert for left hand holder.
2. Set the maximum depth of cut under 60 % of the effective cutting edge length (LE).

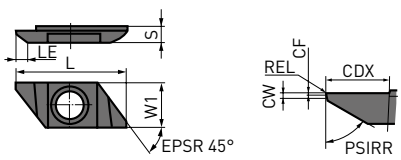
INSERTS

Order number	Hand	VP15TF	MS6015	PSIRR/L	REL	CF	L	W1	CW	S	CDX	LE *1
WITH BREAKER												
BTBT7055V5R-SMB	R	●		70°	0.05	0.3	25	9.4	1.35	3.5	6.5	5.5
BTBT705501MR-SMB	R	●		70°	0.08	0.3	25	9.4	1.35	3.5	6.5	5.5
BTBT705502MR-SMB	R	●		70°	0.18	0.3	25	9.4	1.35	3.5	6.5	5.5
BTBT604500R-B	R	●	●	60°	0	0.2	25	9.4	0.7	3.5	5.5	4.5
BTBT604500L-B	L	★		60°	0	0.2	25	9.4	0.7	3.5	5.5	4.5
BTBT604501MR-B	R		●	60°	0.08	0.3	25	9.4	0.7	3.5	5.5	4.5
BTBT604501R-B	R	●	●	60°	0.1	0.3	25	9.4	0.7	3.5	5.5	4.5
BTBT604501L-B	L	★		60°	0.1	0.3	25	9.4	0.7	3.5	5.5	4.5
WITHOUT BREAKER												
BTBT606000R	R	●		60°	0	0.2	25	9.4	0.7	3.5	7	6.0
BTBT606000L	L	★		60°	0	0.2	25	9.4	0.7	3.5	7	6.0

Geometry

Right hand insert shown.





1/1

(5 inserts in one case)

*1 Value with insert on the holder.
2. SMB type (Moulded)
3. B type (Ground)

● : Inventory maintained. ★ : Inventory maintained in Japan.

BTAH/CTBH

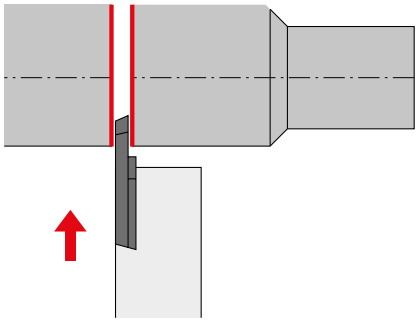
RECOMMENDED CUTTING CONDITIONS

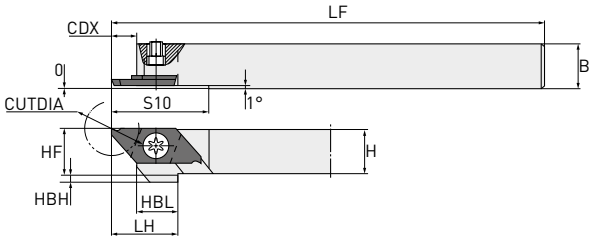
	Material	Hardness	Grade	Vc	f
P	Carbon steel, Alloy steel	180 HB – 280 HB	MS6015/VP15TF	100 (50 – 150)	0.08 (0.01 – 0.15)
P	Free cutting steel	—	MS6015	110 (30 – 180)	0.08 (0.01 – 0.15)
M	Stainless steel	<200 HB	VP15TF	80 (50 – 120)	0.06 (0.02 – 0.1)
N	Non-ferrous metal	—	MS6015	150 (70 – 230)	0.09 (0.03 – 0.15)

1/1

CTAH

EXTERNAL CUTTING OFF





Right hand tool holder shown.

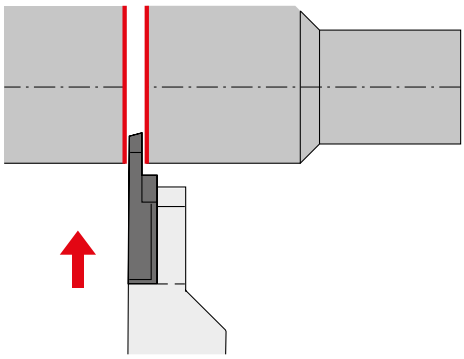
Order number	Stock R	Stock L	Insert type	H	B	HF	LF	LH	CDX	HBH	HBL	S10	CUTDIA *1	*3 Clamp screw	Wrench
CTAHR/L0810-120	●	●	CTAT ⬡⬡⬡⬡	8	10	8	120	15	5.5	4	9.5	22	12 (8) *2	NS402W	NKY15S
CTAHR/L1010-120	●	●		10	10	10	120	15	5.5	2	9.5	22		NS402W	NKY15S
CTAHR/L1212-120	●	●		12	12	12	120	15	5.5	—	9.5	22		NS403W	NKY15S
CTAHR/L1616-120	●	●		16	16	16	120	15	5.5	—	9.5	22		NS403W	NKY15S

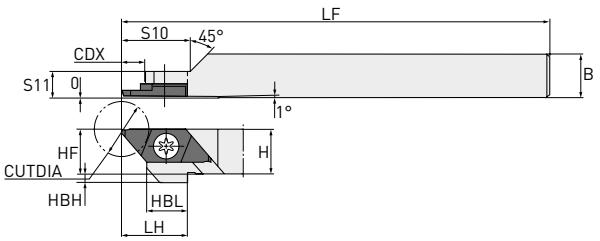
1/1

*1 CUTDIA: Max. cut off diameter
*2 When the parting off width (CW) is 0.7 mm.
*3 Clamp torque (N • m): NS401 = 3.5

CTAH-S

EXTERNAL CUTTING OFF





Right hand tool holder shown.

Order number	Stock R	Insert type	H	B	HF	LF	LH	CDX	HBH	HBL	S10	S11	CUTDIA *1	*3 Clamp screw	Wrench
CTAHR1010-120S	●	CTAT ⬡⬡⬡⬡	10	10	10	80	15	16	2	9.5	16	5.5	12 (8) *2	NS401	NKY25R

1/1

*1 CUTDIA: Max. cut off diameter
*2 When the parting off width (CW) is 0.7 mm.
*3 Clamp torque (N • m): NS401 = 3.5

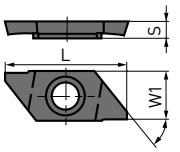
● : Inventory maintained. ★ : Inventory maintained in Japan.

INSERTS

Order number	Hand	VP15TF	MS6015	CW	CDX	RER/L	L	W1	S	LBB	CUTDIA*	Set geometry	Insert geometry
WITH BREAKER													
CTAT07080V5RR-B	R	●		0.7	4.5	0.05	20	8	2.5	1.5	8	16°	REL CDX CW ±0.05 RER LBB
CTAT10120V5RR-B	R	●	●	1.0	6.7	0.05	20	8	2.5	1.5	12		
CTAT15120V5RR-B	R	●	●	1.5	6.7	0.05	20	8	2.5	1.5	12		
CTAT20120V5RR-B	R	●	●	2.0	6.7	0.05	20	8	2.5	1.5	12		
CTAT15120V5RR-BX	R	●		1.5	6.7	0.05	20	8	2.5	1.5	12	16°	REL CDX CW ±0.05 RER LBB Strong edge type
CTAT20120V5RR-BX	R	●		2.0	6.7	0.05	20	8	2.5	1.5	12		
CTAT10120V5RN-B	N	●	●	1.0	6.7	0.05	20	8	2.5	1.5	12	0°	REL CDX CW ±0.05 RER LBB
CTAT15120V5RN-B	N	●	●	1.5	6.7	0.05	20	8	2.5	1.5	12		
CTAT20120V5RN-B	N	●	●	2.0	6.7	0.05	20	8	2.5	1.5	12		
CTAT15120V5RN-BX	N	●		1.5	6.7	0.05	20	8	2.5	1.5	12	0°	REL CDX CW ±0.05 RER LBB Strong edge type
CTAT20120V5RN-BX	N	●		2.0	6.7	0.05	20	8	2.5	1.5	12		
CTAT10110V5RL-B	L	●		1.0	6.7	0.05	20	8	2.5	1.5	11	16°	REL CDX CW ±0.05 RER LBB
CTAT15110V5RL-B	L	●		1.5	6.7	0.05	20	8	2.5	1.5	11		
CTAT20110V5RL-B	L	●		2.0	6.7	0.05	20	8	2.5	1.5	11		
WITHOUT BREAKER													
CTAT1012000RR	R	●	●	1.0	6.7	0	20	8	2.5	3.5	12	20°	REL CDX CW ±0.05 RER LBB
CTAT1512000RR	R	●	●	1.5	6.7	0	20	8	2.5	3.5	12		
CTAT2012000RR	R	●	●	2.0	6.7	0	20	8	2.5	3.5	12		
WITH BREAKER													
CTAT07080V5LL-B	L	●		0.7	4.5	0.05	20	8	2.5	1.5	8	16°	REL LBB CW ±0.05 RER CDX
CTAT10120V5LL-B	L	●		1.0	6.7	0	20	8	2.5	1.5	12		
CTAT15120V5LL-B	L	●		1.5	6.7	0	20	8	2.5	1.5	12		
CTAT20120V5LL-B	L	●		2.0	6.7	0	20	8	2.5	1.5	12		
CTAT10120V5LN-B	N	●	●	1.0	6.7	0.05	20	8	2.5	1.5	12	0°	REL LBB CW ±0.05 RER CDX
CTAT15120V5LN-B	N	●	●	1.5	6.7	0.05	20	8	2.5	1.5	12		
CTAT20120V5LN-B	N	●	●	2.0	6.7	0.05	20	8	2.5	1.5	12		
CTAT10110V5LR-B	R	●	●	1.0	6.7	0.05	20	8	2.5	1.5	11	16°	REL LBB CW ±0.05 RER CDX
CTAT15110V5LR-B	R	●	●	1.5	6.7	0.05	20	8	2.5	1.5	11		
CTAT20110V5LR-B	R	●	●	2.0	6.7	0.05	20	8	2.5	1.5	11		
WITHOUT BREAKER													
CTAT1012000LL	L	●		1.0	6.7	0	20	8	2.5	3.5	12	20°	REL LBB CW ±0.05 RER CDX
CTAT1512000LL	L	●		1.5	6.7	0	20	8	2.5	3.5	12		
CTAT2012000LL	L	●		2.0	6.7	0	20	8	2.5	3.5	12		

Geometry

Right hand insert shown.



EPSR 50°

1/1

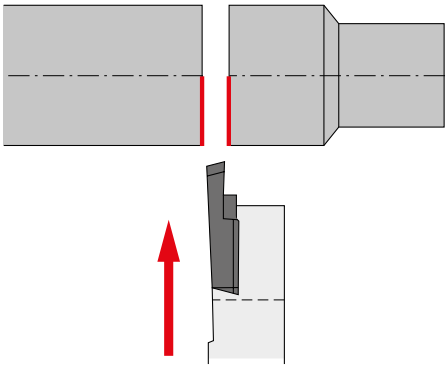
(5 inserts in one case)

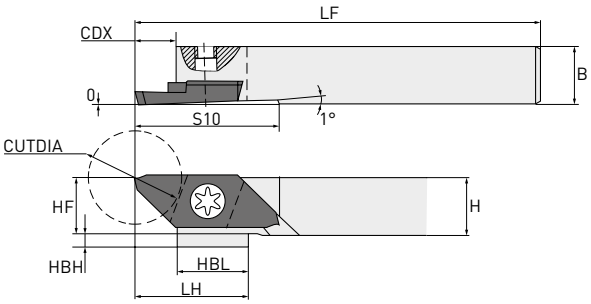
* CUTDIA: Max. cut off diameter

● : Inventory maintained. ★ : Inventory maintained in Japan.

CTBH

EXTERNAL CUTTING OFF





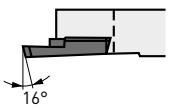
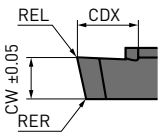
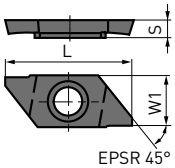
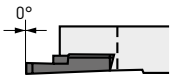
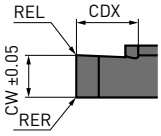
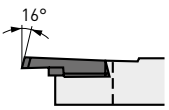
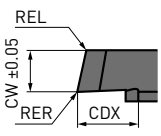
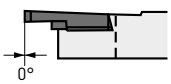
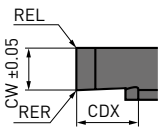
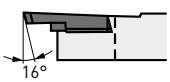
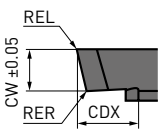
Right hand tool holder shown.

Order number	Stock R	Stock L	Insert type	H	B	HF	LF	LH	CDX	HBH	HBL	S10	CUTDIA*1	*2 Clamp screw	Wrench
CTBHR/L1010-160	●	●		10	10	10	120	19.5	7.5	2	9.5	25	16	NS402W	NKY15S
CTBHR/L1212-160	●	●	CTBT ◇◇◇◇	12	12	12	120	19.5	7.5	—	9.5	25	16	NS403W	NKY15S
CTBHR/L1616-160	●	●		16	16	16	120	19.5	7.5	—	9.5	25	16	NS403W	NKY15S

1/1

*1 CUTDIA: Max. cut off diameter
*2 Clamp torque (N • m): NS402W = 1.0, NS403W = 1.0

INSERTS

Order number	Hand	VP15TF	MS6015	CW	CDX	RER/L	L	W1	S	CUTDIA*	Set geometry	Insert geometry	Geometry
WITH BREAKER													*Right hand insert shown.*
CTBT15160V5RR-B	R	●	●	1.5	9.2	0.05	25	9.4	3.5	16			
CTBT20160V5RR-B	R	●	●	2.0	9.2	0.05	25	9.4	3.5	16			
CTBT20160V5RN-B	N	●	●	2.0	9.2	0.05	25	9.4	3.5	16			
CTBT20160V5LL-B	L	●		2.0	9.2	0.05	25	9.4	3.5	16			
CTBT20160V5LN-B	N	●	●	2.0	9.2	0.05	25	9.4	3.5	16			
CTBT20145V5LR-B	R	●	●	2.0	9.2	0.05	25	9.4	3.5	14.5			

1/1

(5 inserts in one case)
* CUTDIA: Max. cut off diameter

● : Inventory maintained. ★ : Inventory maintained in Japan.

CTAH / CTAH-S / CTBH

RECOMMENDED CUTTING CONDITIONS

	Material	Hardness	Grade	Vc	f
P	Carbon steels, Alloy steels	180 HB – 280 HB	MS6015/VP15TF	100 (50 – 150)	0.05 (0.02 – 0.09)
P	Free cutting steels	—	MS6015	110 (30 – 180)	0.05 (0.01 – 0.09)
M	Stainless steels	<200 HB	VP15TF	80 (50 – 120)	0.03 (0.02 – 0.05)
N	Non-ferrous metals	—	MS6015	150 (70 – 230)	0.07 (0.03 – 0.11)

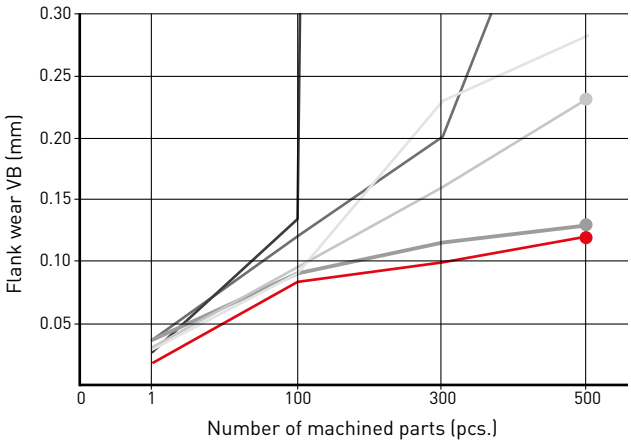
1/1

MS9025

CUTTING PERFORMANCE

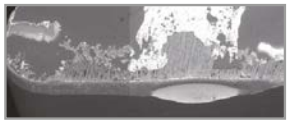
STAINLESS STEEL X105CRMO17 (DIN 1.4125), WEAR RESISTANCE COMPARISON

Workpiece material	X105CrMo17 (DIN 1.4125)
Insert	DCGT11T302
Vc (m/min)	100
f (mm/rev)	0.08
ap (mm)	1.0
Cutting mode	External Continuous cutting Wet cutting (Oil)

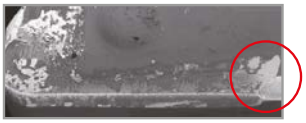


After machining 500 parts

MS9025



Conventional D:
Base material exposed

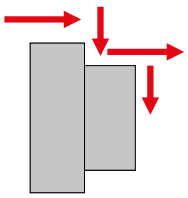


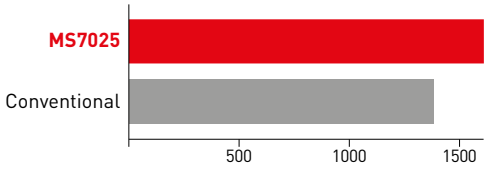
Conventional C:
Peeling of the coating

MS7025

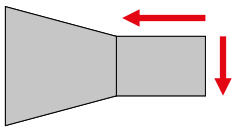
APPLICATION EXAMPLES

Workpiece material	X105CrMo17 (DIN 1.4125)
Insert	DCGT070202M-FS-P (MS7025)
Component	Valve
Application	External and face, continuous turning
Vc (m/min)	58
f (mm/rev)	0.04
ap (mm)	0.15
Cutting mode	Wet cutting (Oil)
Result	Compared to conventional products, the dimensional accuracy is stable and a high machining quality is maintained.

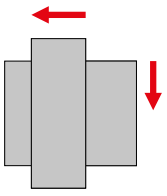




Workpiece material	X14CrMoS17 (DIN1.4104)
Insert	DCGT11T302M-FS-P (MS7025)
Component	Shaft Parts
Application	External and face, continuous turning
Vc (m/min)	130
f (mm/rev)	0.03
ap (mm)	0.56
Cutting mode	Wet cutting (Oil)
Result	Chip control has been improved and the quality of the machined surface is also excellent.



Workpiece material	X6Cr17 (DIN1.4016)
Insert	DCGT11T302M-FS-P (MS7025)
Component	Machine parts
Application	External and face, continuous turning
Vc (m/min)	100
f (mm/rev)	0.06
ap (mm)	0.25
Cutting mode	Wet cutting (Oil)
Result	By suppressing chip welding, cutting edge damage is reduced and the surface quality can be improved.

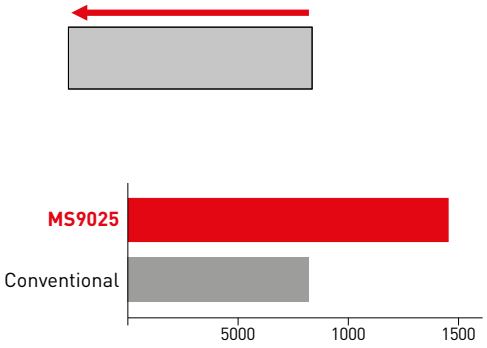


The application examples above are from customers workpieces and can therefore differ from the recommended cutting conditions.

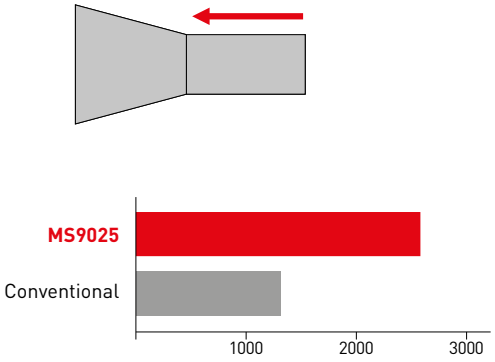
MS9025

APPLICATION EXAMPLES

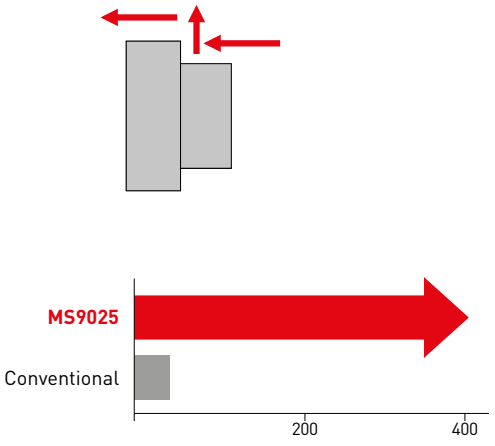
Workpiece material	X30Cr13 (DIN1.4028) Stainless steel
Insert	DCGT11T302M-LS-P
Component	Solenoid parts
Application	External continuous turning
Vc (m/min)	117
f (mm/rev)	0.1
ap (mm)	0.2
Cutting mode	Wet cutting (Oil)
Result	Improved wear resistance and tool life increased by a factor of 1.7.



Workpiece material	X105CrMo17 (DIN 1.4125) Electromagnetic stainless steel
Insert	DCGT070201M-FS-P
Component	Brake parts
Application	External continuous turning
Vc (m/min)	38
f (mm/rev)	0.05
ap (mm)	0.2
Cutting mode	Wet cutting (Oil)
Result	Improved welding resistance and double tool life when compared to a conventional tool.



Workpiece material	X40CrSi-Mo10-2 Heat resistant alloy
Insert	DCGT11T304M-LS-P
Component	Valve
Application	External and face, continuous turning
Vc (m/min)	80
f (mm/rev)	0.12 – 0.15
ap (mm)	0.3 – 0.5
Cutting mode	Wet cutting (Oil)
Result	Conventional products tend to produce a worsening surface finish during processing. However, the machined surface with MS9025 is stable even when the tool life is 5 times more.

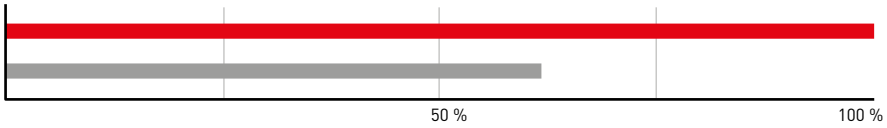


The application examples above are from customers workpieces and can therefore differ from the recommended cutting conditions.

MS6015

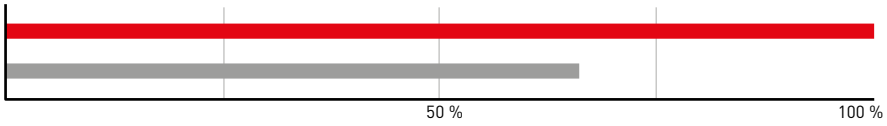
APPLICATION EXAMPLES

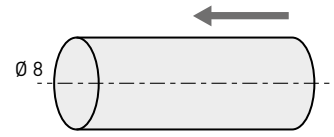
Insert	DCGT11T302M-SMG (MS6015)
Workpiece material	Pure iron (JIS SUr)
Cutting mode	External, continuous
Vc (m/min)	197 (4500 min^{-1})
f (mm/rev)	0.1
ap (mm)	0.1
Coolant	Wet cutting (oil)
Result	Number of workpieces: 500



An excellent finished surface and 1.4 x longer tool life compared with conventional products. Stability and good chip discharge management with the SMG breaker.

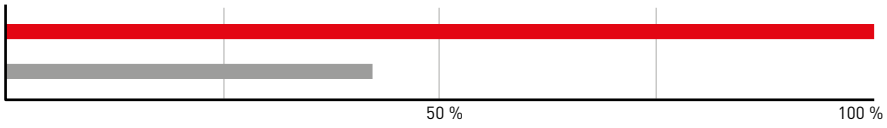
Insert	DCGT11T301MR-SN (MS6015)
Workpiece material	Free cutting steels (11SMnPb30 (DIN 1.0718))
Cutting mode	External, continuous
Vc (m/min)	125 (5000 min^{-1})
f (mm/rev)	0.05
ap (mm)	0.3
Coolant	Wet cutting (oil)
Result	Number of workpieces: 3000

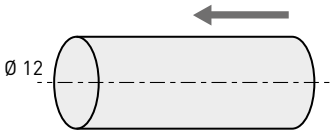




MS6015 shows minimal chip welding and maintains dimensional accuracy.

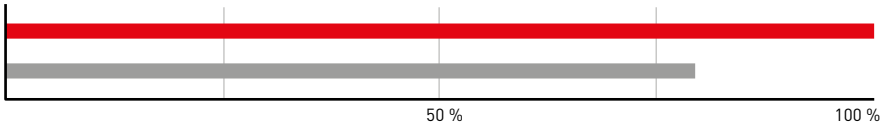
Insert	DCGT11T302MR-SN (MS6015)
Workpiece material	Carbon steel (DIN CK45)
Cutting mode	External, continuous
Vc (m/min)	113 (3000 min^{-1})
f (mm/rev)	0.03
ap (mm)	1.0
Coolant	Wet cutting (oil)
Result	Number of workpieces: 1100

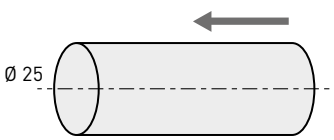




MS6015 has superior wear resistance and achieves 2 x longer tool life compared to conventional products.

Insert	DCGT11T302M-SMG (MS6015)
Workpiece material	Mild steel (DIN CK15)
Cutting mode	External, continuous
Vc (m/min)	100 (1300 min^{-1})
f (mm/rev)	0.12
ap (mm)	1.3
Coolant	Wet cutting (oil)
Result	Number of workpieces: 500





MS6015 has superior welding resistance and achieves 1.3 x longer tool life compared to conventional products.

: Mitsubishi Materials tool : Conventional tool

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