Technical Information **KORLOY**

Auto Tools

Turning solution for high precision machining of micro components

KORLOY

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Blade type


For Multi utility


TBGF


KGT/MGT

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ISO type

KHP Coolant (ISO Turning holder)

Blade type

For Multi utility

TBGF

KGT/MGT

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ESD Plus

MSB Tools

Fine Tools

ESD Plus

Auto Tools

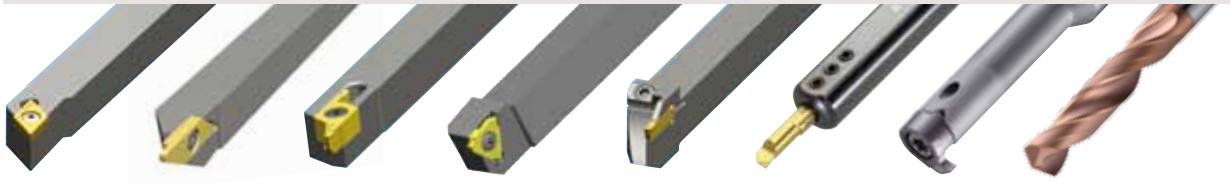
Auto Tools

- An automatic lathe, or a Swiss-type lathe refers to a multi-operational machine where different tools such as turning inserts, milling inserts, and drills can be mounted for automated high precision machining of micro components. It can be fed workpieces automatically by a bar feed system. It is possible to produce automatically large volumes of micro components under Ø30 such as electrical/electronics instruments and medical instruments. Automatic lathes can produce parts 24 hours a day. Generally, a maximum of 6 pieces of turning tools, a back plate, single sided drills, milling tools and drills can be mounted on the inner turrets.
- Many industrial products are getting smaller, lighter and more precise, while the demand grows for composite hard-to-cut materials, such as titanium alloy, nickel alloy, Inconel, etc. These parts require exacting requirements for sharp cutting edges with high class tolerances while reducing production cost and time.
- Auto Tools KF/KM are ISO type positive grooving inserts with class an E tolerance. These were designed for high feed or high depth of cut machining of both external and internal diameters. Sharp cutting edges produced by the highest quality grinding technology reduces cutting forces and provides an excellent surface finish.
- Auto Tools VP1 is a ground type insert for high precision machining. Its sharp cutting edges reduce cutting force and improve surface finish. The optimized chip breaker design provides smooth chip evacuation in hard to control applications with low depths of cut and low feeds.
- Auto Tools Blade type and multifunctional type are for high precision external machining of small parts. 4 types of inserts are available each for parting off, grooving, back turning, and threading. All can be clamped on a single holder for easy and fast tool changes, while also reducing inventory requirements.
- Auto Tools KGT/MGT are for parting off. Both provide a strong clamping system to improve stable and precise machining. They provide a wide selection of chip breakers in different cutting conditions ranging from low feed to high feed, and from continuous to interrupted machining.
- Auto Tools MSB is for internal machining of small diameters. Its high hardness grade provides excellent surface finish and long tool life. A wide application range is possible such as internal boring, grooving, threading, chamfering, etc.

Features

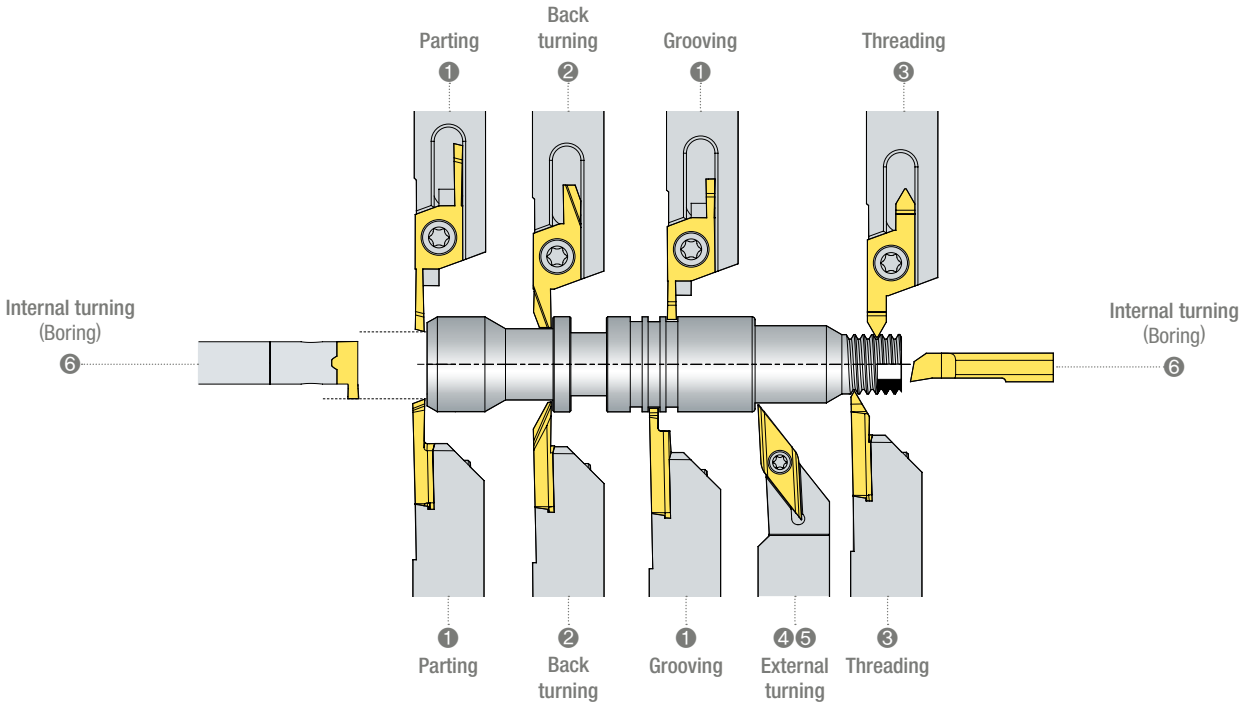
- High precision machining of small parts and complex forms, etc.
- High quality products through stable machining
- Exclusive insert for automatic lathes

Type



ISO type | Blade type | For Multi utility | TBGF | KGT/MGT | MSB Tools | Fine Tools | ESD Plus

Application example



Index

Specification	① Parting and Grooving						
Holder	SXGNR/L	SXGNR/L	SBHR/L	SBHR/L	TBGFHR/L	KGEHR/L	MGEHR/L
Insert	SG	SC	SBG	SBC	TBGF	KGMN	MGMN
Holder size	10~20 mm	10~20 mm	10~16 mm	10~16 mm	10~16 mm	10~16 mm	10~16 mm
Insert shape							
Cutting width	1~3 mm	1~3 mm	0.7~2.0 mm	0.5~2.5 mm	0.33~2.50 mm	2.0~3.0 mm	1.5~2.5 mm
ØDmax	-	-	-	-	-	Ø32	Ø32

Specification	② Back turning		
Holder	SXGNR/L	SXGNR/L	SBHR/L
Insert	SB	SGB	SBB
Holder size	10~20 mm	10~20 mm	10~16 mm
Insert shape			
Cutting width	2~4 mm	2~3 mm	3.18 mm
ØDmax	Tmax 8.5	Tmax 6.5	Tmax 8.0

Specification	③ Threading	
Holder	SXGNR/L	SBHR/L
Insert	ST	SBT
Holder size	10~20 mm	10~16 mm
Insert shape		
Screw ranges	Pitch ranges 0.5~1.5/ 1.5~3.0	Pitch ranges 0.2~1.5/ 1.0~2.0

Specification	④ External turning and Copy machining				⑤ External turning and Facing		
Holder	SDJCR/L	SDNCN	SVJBR/L	SVJCR/L	SCACR/L	SCLCR/L	STACR/L
Insert	DC□T	DC□T	VB□T	VC□T	CC□T	CC□T	TC□T
Holder size	8~16 mm	8~16 mm	10~16 mm	10~16 mm	8~16 mm	8~16 mm	8~10 mm
Insert shape							
Feature	Offset "0"				Offset "0"		

Specification	⑥ Internal turning (Boring)					
Holder	SCLCR/L	STUBR/L	STUPR/L	SWUBR/L	SL□□□□	NFTIH□□□□C
Insert	CC□T	TB□T	TP□T	WB□T	M□R/L	NFT□
Holder size	Ø10	Ø8	Ø8	Ø5~8	Ø3~10	Ø6~16
Insert shape						
ØDmax	Ø5	Ø8	Ø10	Ø5.5	Ø3.2	Ø8.0

ISO type

Features

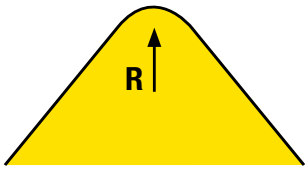
- ISO Inserts for automatic lathes
- Precise R shape with the use of minus tolerance of nose R
- Tolerance class precise enough in no need for adjusting tools with the use of accurate cutting edge height
- Sharp blade for excellent chip control and surface roughness with low cutting force
- High precision tools for electrical/ electronics instruments and medical instruments

Code system (ISO type)

Insert shape	Relief angle	Tolerance	Cross section type	Cutting edge length, diameter of inscribed circle	Height of cutting edge	Nose radius	Tolerance of nose R **M**: Minus	Condition of cutting edge **F**: Sharpe **E**: Honed **T**: Land **S**: Honed land	Hand **R**: Right **L**: Left **N**: Neutral	Chip breaker
V	C	E	T	11	03	01	M	F	R	KM

Only for premium classes

Nose R (Tolerance of Corner R)



Symbol	Tolerance	No
M	+0 -0.02	Tolerance of corner R

Cutting edge condition

Symbol	Shape	Edge prep state
F		Sharp selection
E		Honing selection
T		Land
S		Land & Honing

Hand of insert

Symbol	Shape
R	transfer
L	transfer
N	transfer, transfer

KF (E&G Class tolerance)

- For finishing
- Low cutting loads with sharp cutting edges
- Longer tool life due to lower chip evacuation resistance at high speed
- Excellent surface roughness

KM (E&G Class tolerance)

- For medium cutting to finishing
- Better chip flow due to wide chip pockets
- Longer tool life and better cutting action due to improved chip evacuation
- Excellent surface roughness

VP1 (G Class tolerance)

- Hard cutting edge for medium cutting
- Optimal width of chip breaker by each depth of cuts realizes wide workpiece machining.

MS (G Class tolerance)

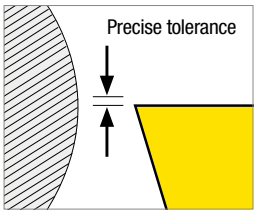
- Good surface finish for medium cutting
- Preventing welding in Titanium machining
- Increasing chip evacuation in high feed machining
- Protecting cutting edge due to structure for good chip evacuation

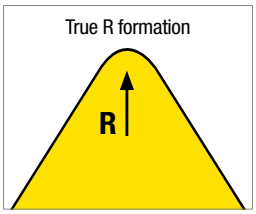
FS (G Class tolerance)

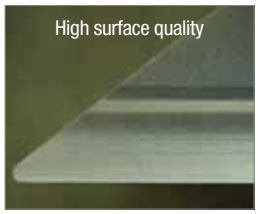
- For finishing (for surface roughness)
- 1st recommended chip breaker for chip control
- Better surface roughness, surface finish and chip control

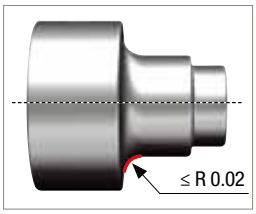
Insert tolerance

- Managing the tolerance of cutting edge, size of 'm' part, and the nose R under 0.02 mm at ultra precision level.
- The tolerance of nose R is managed by minus level to prevent expansion of the workpiece's nose R size from 0.02 mm

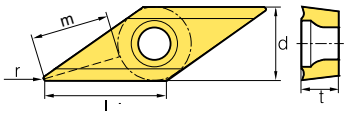








Symbol	d Inscribed circle	t Thickness	m Refer to figure	r Nose radius
G	±0.025	±0.04	±0.025	-
G + MFN (Ultra-precision)	±0.02	±0.02	±0.02	0~-0.02
E + MFN (Ultra-precision)	±0.013	±0.02	±0.013	0~-0.02

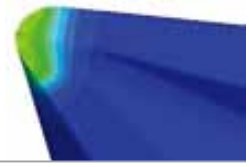


※ Tight tolerance and deviation management is applied to ultra-precision inserts, and it is recommended to use the tool in the condition of high precision and low deviation machining is necessity.

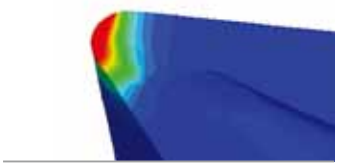
Sharp cutting edge

- To minimize cutting load and heat, extremely sharp and stable cutting edges have been realized by high technology (without full abrasive honing)

VP1



Competitor

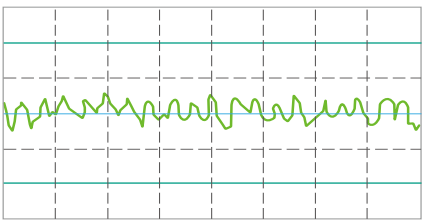


Precise cutting process and superior surface roughness

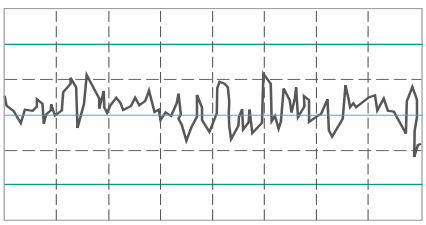
- Compared to other competitors our insert provides a sharper cutting edge, which helps ensuring the uniformed surface roughness.

Workpiece	Stainless steel (STS304)
Cutting conditions	**n** = 3,000 (rpm) **fn** = 0.05 (mm/rev) **ap** = 0.5 (mm)

KORLOY (Rz = 3.0 ㎛)



Competitor (Rz = 5.1 ㎛)



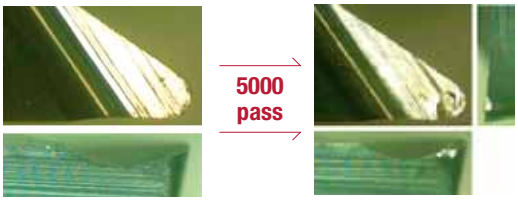
Cutting performance of KF/KM

Wear resistance- External machining

• **Workpiece:** Stainless steel (X5CrNi18-9)

Cutting conditions • **vc** = 200 m/min • **fn** = 0.05 mm/rev • **ap** = 0.5 mm • **etc** = Dia. Ø20 mm, Machining 20 pass

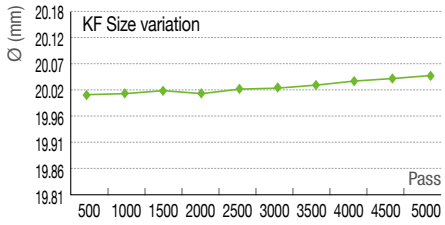
VPET080202MFR-KF (PC8110)	Competitor

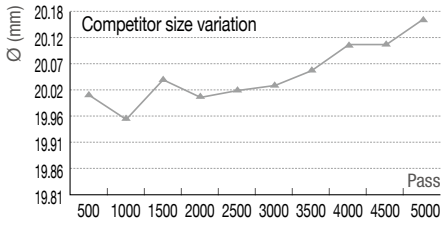


Roughness- External machining

• **Workpiece:** Stainless steel (X5CrNi18-9)

Cutting conditions • **vc** = 200 m/min • **fn** = 0.05 mm/rev • **ap** = 0.5 mm, Wet



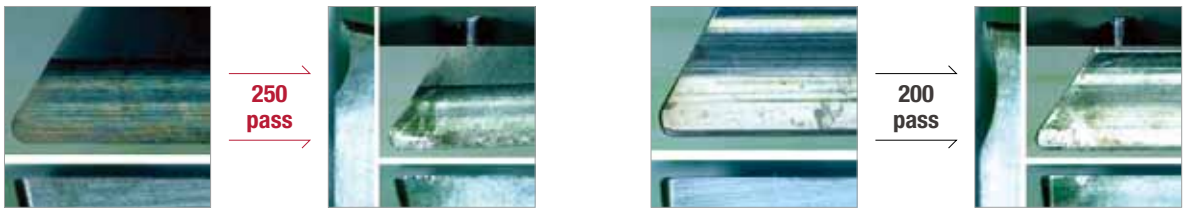


Wear resistance- External machining

• **Workpiece:** Stainless steel (X5CrNiMo17-12-2)

Cutting conditions • **vc** = 200 m/min • **fn** = 0.05 mm/rev • **ap** = 0.5 mm • **etc** = Dia. Ø20 mm, Machining 20 pass

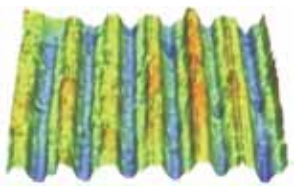
DCET11T302MFR-KM (PC8110)	Competitor



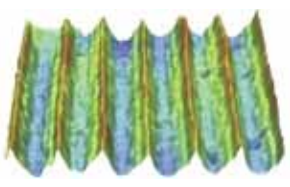
Roughness- External machining

• **Workpiece:** Stainless steel (X5CrNiMo17-12-2)

Cutting conditions • **vc** = 200 m/min • **fn** = 0.05 mm/rev • **ap** = 0.5 mm, Wet



Rz: 2.71 µm



Rz: 4.62 µm

VP1 Cutting performance

Wear resistance- External machining

• **Workpiece:** Stainless steel (X5CrNiMo17-12-2)

Cutting conditions • **vc** = 100 m/min • **fn** = 0.07 mm/rev • **ap** = 0.5 mm, Wet • **etc** = Dia. Ø20 mm, Machining 20 pass

DCGT11T302MFN-VP1 (PC8110)	Competitor

Roughness- External machining

• **Workpiece:** Stainless steel (X5CrNiMo17-12-2)

Cutting conditions • **vc** = 100 m/min • **fn** = 0.07 mm/rev • **ap** = 0.5 mm, Wet

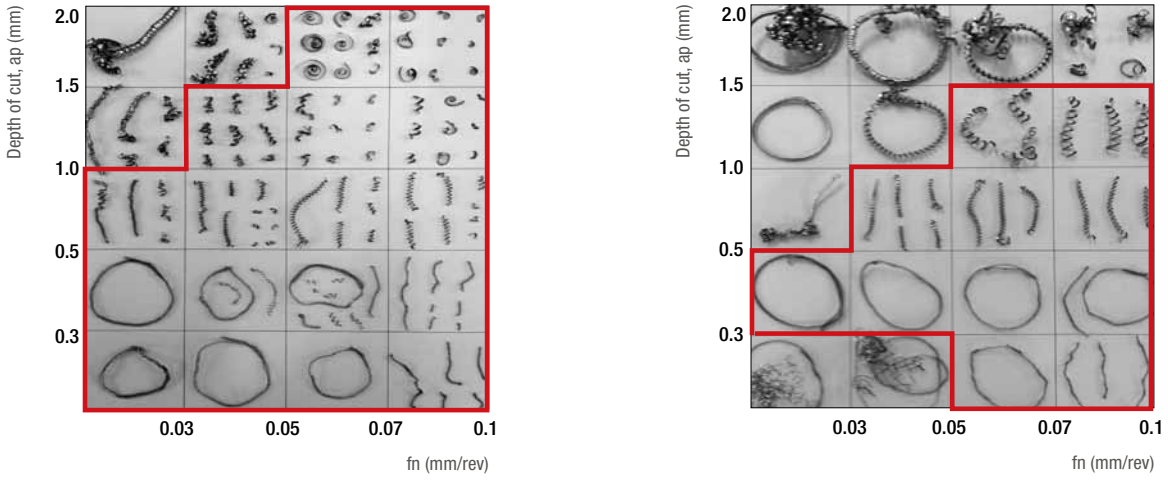
DCGT11T302MFN-VP1 | DCGT11T302

Chip breaking- External machining

• **Workpiece:** Stainless steel (X5CrNiMo17-12-2)

Cutting conditions • **vc** = 100 m/min • **fn** = 0.03~0.1 mm/rev • **ap** = 0.3~2.0 mm, Wet

DCGT11T302MFN-VP1 (PC8110)	Competitor



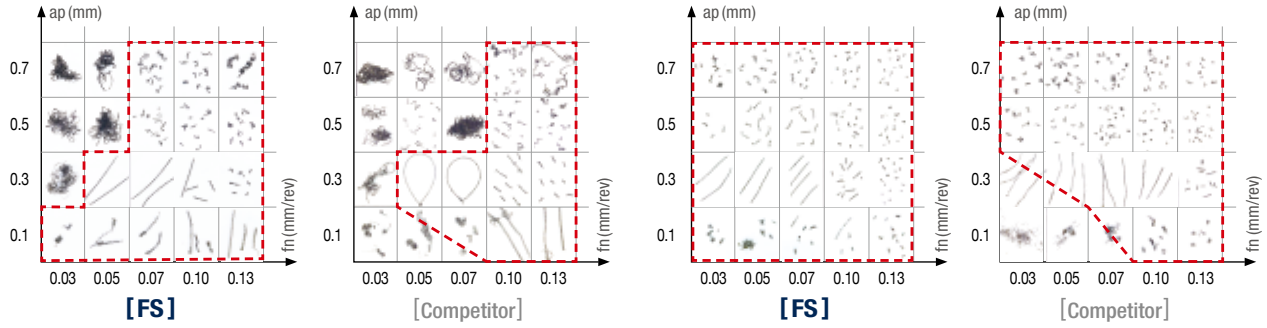
FS Cutting performance

Chip control

• **Workpiece:** Alloy steel (S42CrMo4), Stainless steel (X5CrNi18-9) • **Insert:** DCGT11T302-FS (PC5300) • **Holder:** SDJCR1212-X11A

Cutting conditions • **vc** = 100 m/min • **fn** = 0.03~0.13 mm/rev • **ap** = 0.5~1.0 mm, wet

Alloy steel (S42CrMo4) | **Stainless steel (X5CrNi18-9)**

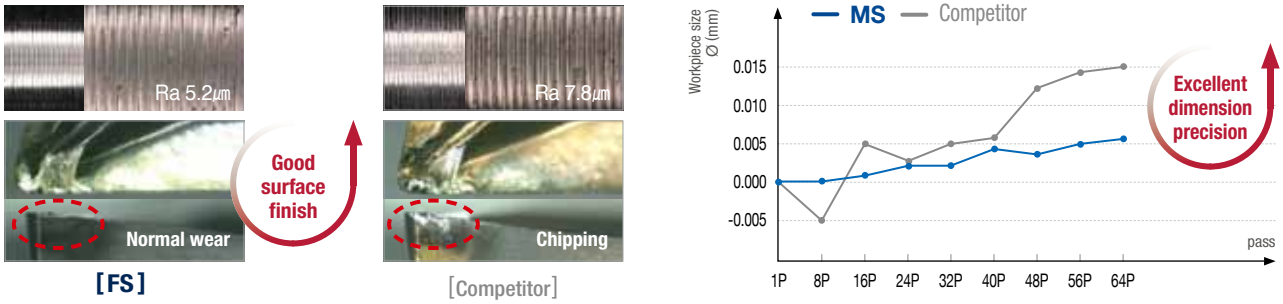


- 2 step rear angle shape ensures excellent chip control in alloy steel and stainless steel machining with from low to high depth of cut.

Workpiece size and surface finish

• **Workpiece:** Stainless steel (X12CrS13) • **Insert:** VCGT110301-FS (PC8110) • **Holder:** SVJCR1212-X11A

Cutting conditions • **vc** = 80 m/min • **n** = 1,000 rpm • **fn** = 0.05 mm/rev • **ap** = 0.1 mm, wet

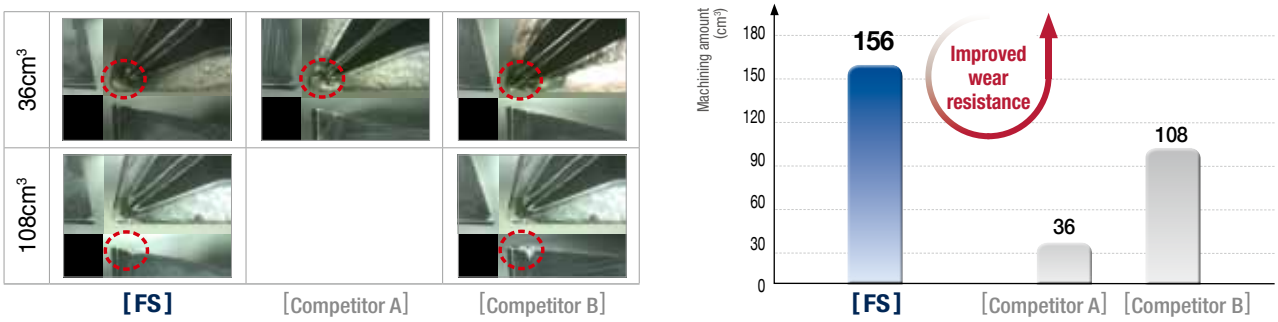


- 3-dimensional and sharp cutting edge reduces cutting load and cutting heat ensuring stable machining and surface finish.

Wear resistance

• **Workpiece:** Alloy steel (S42CrMo4) • **Insert:** CCGT09T304-FS (PC8110) • **Holder:** SCLCR1212-X09A

Cutting conditions • **vc** = 100 m/min • **n** = 1,000 rpm • **fn** = 0.05 mm/rev • **ap** = 0.5 mm, wet



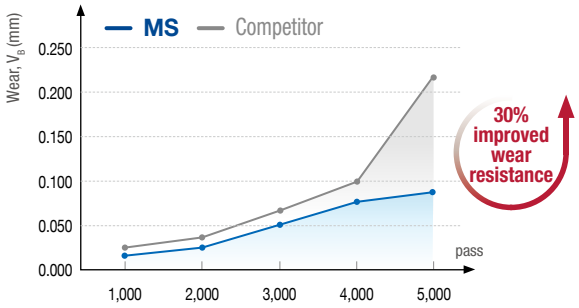
- FS chip breaker applied mirror-like finished cutting edge, ultra-fine substrate and high hardness coating ensure longer tool life than competitor's one.

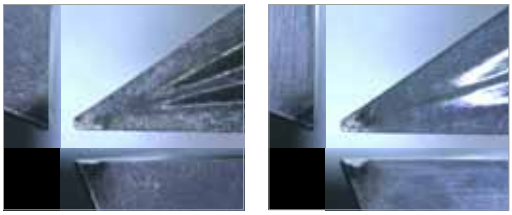
MS Cutting performance

Wear resistance

• **Workpiece:** Pure titanium (5832-2) • **Insert:** VCGT1203008FN-MS (PC8110) • **Holder:** SVJCR1212-X12A

Cutting conditions • **vc** = 100 m/min • **n** = 3,500 rpm • **fn** = 0.03 mm/rev • **ap** = 0.5 mm, wet





[MS] [Competitor]

- Ultra-fine substrate and high hardness coating ensure stable tool life.

Chip control and surface finish

• **Workpiece:** Stainless steel (X5CrNi18-9) • **Insert:** VCGT120302FN-MS (PC5300) • **Holder:** SVJCR1212-X12A

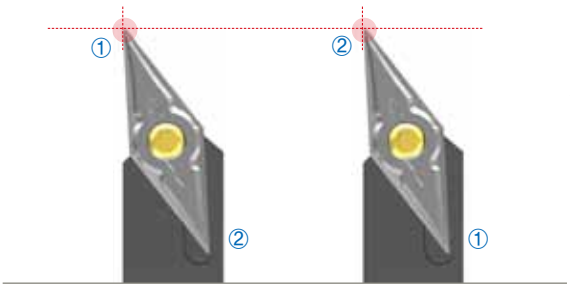
Cutting conditions • **vc** = 120 m/min • **n** = 4,000 rpm • **fn** = 0.03 mm/rev • **ap** = 0.1, 0.3, 0.5 (mm), wet

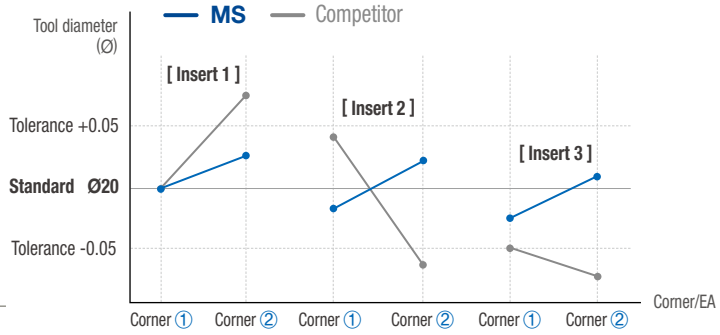
MS | Competitor

- Three-dimensional shaped design of chip breaker increases chip evacuation.

- Sharp and mirror-like finished cutting edge improves surface finish.

Dimension precision



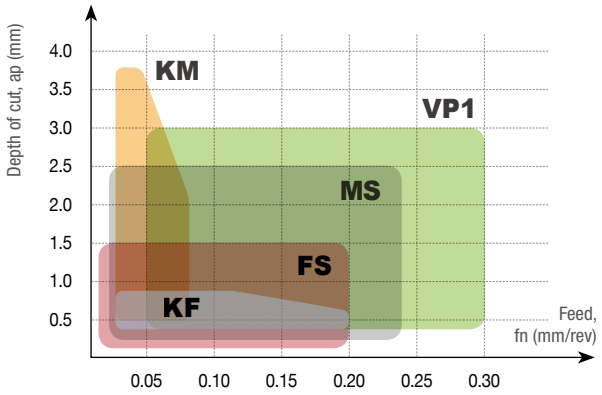


- Changing tool offset in switching insert corners and items is not necessary using MS chip breaker due to tight dimension deviation management.

The comparison of chip breaker

Category	Application	KORLOY	Competitor A	Competitor B	Competitor C	Competitor D	Competitor E	Competitor F	Competitor G
Chip breaker	Medium cutting (for toughness)	VP1	GF	SM	FS	-None	FC	AM3	FN-None
	Medium cutting (for surface finish)	MS	GQ	SH	LS	01	SC	AM3	FN-None
	Medium to finishing	KM	USF, U, J	GF	SN	JPP	FY, FX, F.Z	U, U1	FR-None FL-None
	Finishing	KF	FSF, F, A3	FF	SR	JRP	A2	FG	FR-None FL-None
	Finishing	FS	SK, CF	SA, SL	SMG, FJ	JS	SI	YL	-
Grade	General cutting	PC5300	PR1125	TT9020	VP15TF	SH725	AC1030U	DM4	D60
	S10	PC8110	PR1310	TT5080	VP10RT	SH730	AC510U	ZM3	D20

Application range



Cutting range	Chip breaker	ap (mm)	fn (mm/rev)
Medium cutting (for toughness)	VP1	0.3~3.5	0.05~0.30
Medium cutting (for surface roughness)	MS	0.2~2.5	0.03~0.25
Medium to finishing	KM	0.05~3.50	0.03~0.07
Finishing	KF	0.03~0.09	0.03~0.20
Finishing	FS	0.1~1.5	0.01~0.20

Grades and recommended cutting conditions

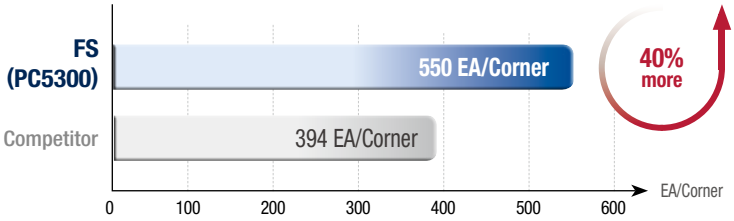
Workpiece		Grade	Recommended cutting speed, vc (m/min)
			50 100 200 300 500
P	Steel	PC8110	50 180
		PC5300	40 150
M	Stainless steel	PC8105	50 180
		PC8110	50 170
		PC8115	40 150
		PC5300	40 140
N	Non-ferrous metal	H01	130 460
		PC8110	150 500
S	HRSA	H01	20 40
		PC8105	25 60
		PC8110	20 60
		PC8115	20 50
		PC5300	20 40

Application examples (FS Chip breaker)

Stainless steel (X5CrNi18-9)

• **Workpiece use:** Component of automobile fuel gauge • **Insert:** CCGT09T302-FS (PC5300) • **Holder:** SCLCL1212-X09A

Cutting conditions • **vc** = 80 m/min • **n** = 2,500 rpm • **fn** = 0.11 mm/rev • **ap** = 0.5 mm, wet

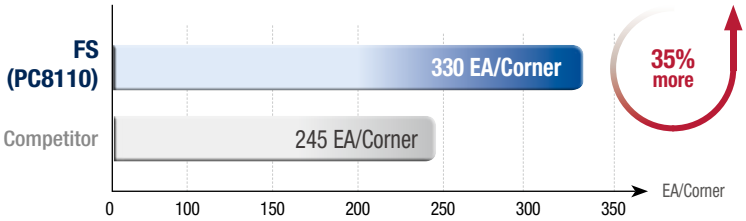


- Prevented welding due to sharp cutting edge and mirror-like finished coating
- Minimized cutting heat in stainless steel machining

Carbon steel (C10)

• **Workpiece use:** Component of automobile engine • **Insert:** DCGT11T302-FS (PC8110) • **Holder:** SDJCL1212-X11A

Cutting conditions • **vc** = 100 m/min • **n** = 3,000 rpm • **fn** = 0.1 mm/rev • **ap** = 0.5 mm, wet

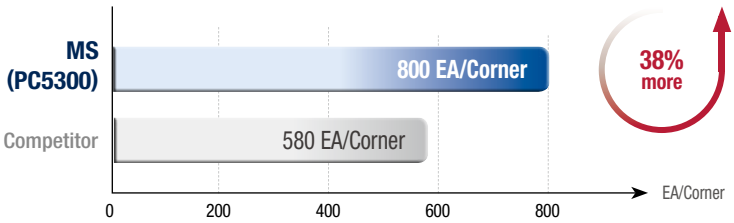


- Excellent chip evacuation due to better chip control

Carbon steel (C45)

• **Workpiece use:** Turbo charger roller pin • **Insert:** VCGT110301-FS (PC5300) • **Holder:** SVJCR1212-X11A

Cutting conditions • **vc** = 260 m/min • **n** = 2,000 rpm • **fn** = 0.1 mm/rev • **ap** = 0.5~1.0 mm, wet



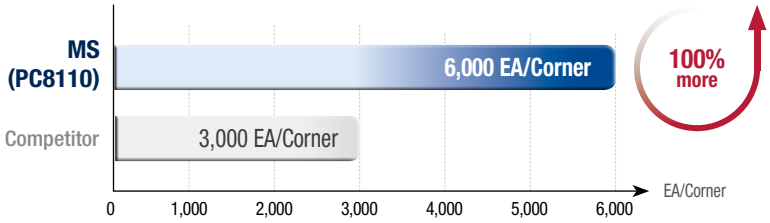
- Prevented welding due to sharp cutting edge and mirror-like finished coating
- Prevented microchipping by ultra-fine substrate and long tool life from high hardness oxidation coating

Application examples (MS Chip breaker)

Pure titanium (5832-2)

• **Workpiece use:** Component of automobile fuel gauge • **Insert:** CCGT09T302-FS (PC5300) • **Holder:** SCLCL1212-X09A

Cutting conditions • **vc** = 80 m/min • **n** = 2,500 rpm • **fn** = 0.11 mm/rev • **ap** = 0.5 mm, wet

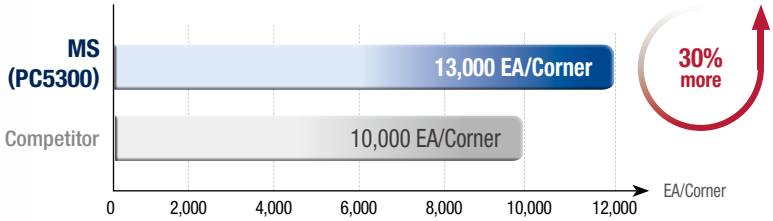


- Sharp cutting edge and mirror-like coating prevent cutting heat and welding.
- Ultra-fine substrate prevents micro chipping and coating layer with high hardness at high temperature and good oxidation resistance increases tool life.

Titanium alloy (5832-3)

• **Workpiece use:** Fixture (Implant) • **Insert:** VCGT120301FN-MS (PC5300) • **Holder:** SVJCR1212-X12A

Cutting conditions • **vc** = 120 m/min • **n** = 5,000 rpm • **fn** = 0.03 mm/rev • **ap** = 0.5 mm, wet

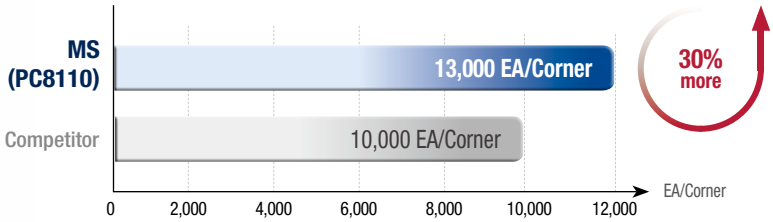


- Sharp cutting edge and mirror-like coating prevent cutting heat and welding.
- Ultra-fine substrate prevents micro chipping and coating layer with high hardness at high temperature and good oxidation resistance increases tool life.

Titanium alloy (5832-3)

• **Workpiece use:** Abutment (Implant) • **Insert:** VCGT1203008FN-MS (PC8110) • **Holder:** SVJCR1212-X12A

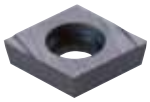
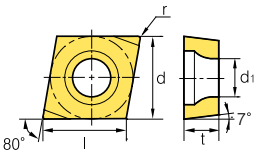
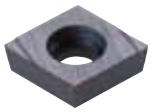
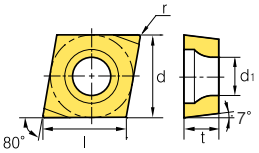
Cutting conditions • **vc** = 120 m/min • **n** = 5,000 rpm • **fn** = 0.05 mm/rev • **ap** = 0.1 mm, wet



- Sharp cutting edge and mirror-like coating prevent cutting heat and welding.
- Ultra-fine substrate prevents micro chipping and coating layer with high hardness at high temperature and good oxidation resistance increases tool life.

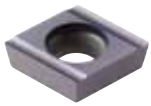
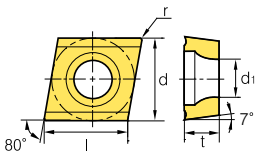
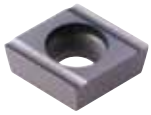
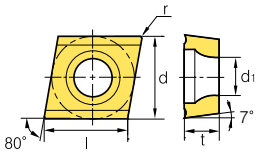
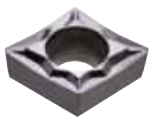
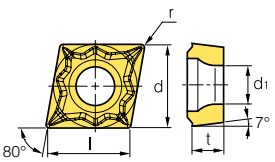
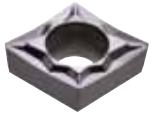
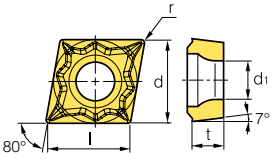
Applicable inserts

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Finishing (High precision)	KF 	CCGT	0301003R-KF	●		●			3.6	3.5	1.39	0.03	1.9	
			030101R-KF	●		●			3.5	3.5	1.39	0.10	1.9	
			030102R-KF	●		●			3.5	3.5	1.39	0.20	1.9	
			030104R-KF	●		●			3.5	3.5	1.39	0.40	1.9	
			0401003R-KF	●		●			4.4	4.3	1.79	0.03	2.3	
			040101R-KF	●		●			4.4	4.3	1.79	0.10	2.3	
			040102R-KF	●		●			4.3	4.3	1.79	0.20	2.3	
			040104R-KF	●		●			4.3	4.3	1.79	0.40	2.3	
			0602003R-KF						6.6	6.35	2.38	0.03	2.8	
			060201R-KF						6.4	6.35	2.38	0.10	2.8	
			060202R-KF						6.2	6.35	2.38	0.20	2.8	
			09T3003R-KF						9.8	9.525	3.97	0.03	4.4	
			09T301R-KF						9.6	9.525	3.97	0.10	4.4	
			09T302R-KF						9.2	9.525	3.97	0.20	4.4	
			0301003L-KF	●		●			3.6	3.5	1.39	0.03	1.9	
			030101L-KF	●		●			3.5	3.5	1.39	0.10	1.9	
			030102L-KF	●		●			3.5	3.5	1.39	0.20	1.9	
			030104L-KF	●		●			3.5	3.5	1.39	0.40	1.9	
			0401003L-KF	●		●			4.4	4.3	1.79	0.03	2.3	
			040101L-KF	●		●			4.4	4.3	1.79	0.10	2.3	
			040102L-KF	●		●			4.3	4.3	1.79	0.20	2.3	
			040104L-KF	●		●			4.3	4.3	1.79	0.40	2.3	
			0602003L-KF						6.6	6.35	2.38	0.03	2.8	
			060201L-KF						6.4	6.35	2.38	0.10	2.8	
			060202L-KF						6.2	6.35	2.38	0.20	2.8	
			09T3003L-KF						9.8	9.525	3.97	0.03	4.4	
			09T301L-KF						9.6	9.525	3.97	0.10	4.4	
			09T302L-KF						9.2	9.525	3.97	0.20	4.4	
Finishing (Ultra-precision)	KF 	CCET	0602005MFR-KF	●		●			6.6	6.35	2.38	<0.05	2.8	
			060201MFR-KF	●		●			6.4	6.35	2.38	<0.10	2.8	
			060202MFR-KF	●		●			6.2	6.35	2.38	<0.20	2.8	
			09T3005MFR-KF	●		●			9.8	9.525	3.97	<0.05	4.4	
			09T301MFR-KF	●		●			9.6	9.525	3.97	<0.10	4.4	
			09T302MFR-KF	●		●			9.2	9.525	3.97	<0.20	4.4	
			0602005MFL-KF	●		●			6.6	6.35	2.38	<0.05	2.8	
			060201MFL-KF	●		●			6.4	6.35	2.38	<0.10	2.8	
			060202MFL-KF	●		●			6.2	6.35	2.38	<0.20	2.8	
			09T3005MFL-KF	●		●			9.8	9.525	3.97	<0.05	4.4	
			09T301MFL-KF	●		●			9.6	9.525	3.97	<0.10	4.4	
			09T302MFL-KF	●		●			9.2	9.525	3.97	<0.20	4.4	

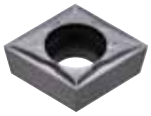
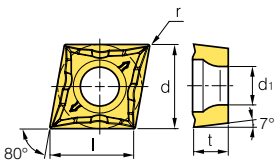
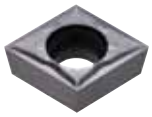
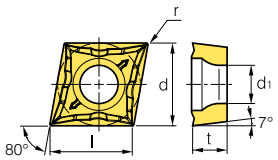
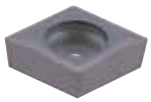
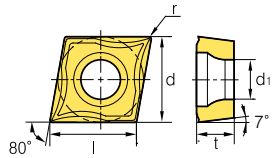
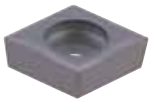
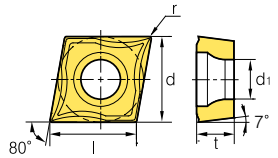
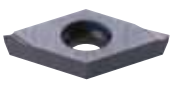
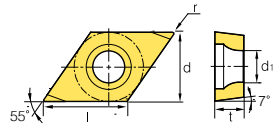
●: Stock item

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Medium to finishing (High precision)	KM 	CCGT	0602003R-KM	●		●			6.6	6.35	2.38	0.03	2.8	
			060201R-KM	●		●			6.4	6.35	2.38	0.10	2.8	
			060202R-KM	●		●			6.2	6.35	2.38	0.20	2.8	
			060204R-KM	●		●			6.2	6.35	2.38	0.40	2.8	
			09T3003R-KM	●		●			9.8	9.525	3.97	0.03	4.4	
			09T301R-KM	●		●			9.6	9.525	3.97	0.10	4.4	
			09T302R-KM	●		●			9.2	9.525	3.97	0.20	4.4	
			09T304R-KM	●		●			9.2	9.525	3.97	0.40	4.4	
			0602003L-KM	●		●			6.6	6.35	2.38	0.03	2.8	
			060201L-KM	●		●			6.4	6.35	2.38	0.10	2.8	
			060202L-KM	●		●			6.2	6.35	2.38	0.20	2.8	
			060204L-KM	●		●			6.2	6.35	2.38	0.40	2.8	
			09T3003L-KM	●		●			9.8	9.525	3.97	0.03	4.4	
			09T301L-KM	●		●			9.6	9.525	3.97	0.10	4.4	
			09T302L-KM	●		●			9.2	9.525	3.97	0.20	4.4	
			09T304R-KM	●		●			9.2	9.525	3.97	0.40	4.4	
Medium to finishing (Ultra-precision)	KM 	CCET	0602005MFR-KM	●		●			6.6	6.35	2.38	<0.05	2.8	
			060201MFR-KM	●		●			6.4	6.35	2.38	<0.10	2.8	
			060202MFR-KM	●		●			6.2	6.35	2.38	<0.20	2.8	
			09T3005MFR-KM	●		●			9.8	9.525	3.97	<0.05	4.4	
			09T301MFR-KM	●		●			9.6	9.525	3.97	<0.10	4.4	
			09T302MFR-KM	●		●			9.2	9.525	3.97	<0.20	4.4	
			0602005MFL-KM	●		●			6.6	6.35	2.38	<0.05	2.8	
			060201MFL-KM	●		●			6.4	6.35	2.38	<0.10	2.8	
			060202MFL-KM	●		●			6.2	6.35	2.38	<0.20	2.8	
			09T3005MFL-KM	●		●			9.8	9.525	3.97	<0.05	4.4	
			09T301MFL-KM	●		●			9.6	9.525	3.97	<0.10	4.4	
			09T302MFL-KM	●		●			9.2	9.525	3.97	<0.20	4.4	
Finishing (High precision)	FS 	CCGT	060201-FS	●		●			6.3	6.35	2.38	0.10	2.8	
			060202-FS	●		●			6.2	6.35	2.38	0.20	2.8	
			060204-FS	●		●			6.0	6.35	2.38	0.40	2.8	
			09T301-FS	●		●			9.8	9.525	3.97	0.10	4.4	
			09T302-FS	●		●			9.6	9.525	3.97	0.20	4.4	
			09T304-FS	●		●			9.2	9.525	3.97	0.40	4.4	
			09T308-FS	●		●			8.8	9.525	3.97	0.80	4.4	
Finishing (Ultra-precision)	FS 	CCGT	060201MFN-FS						6.3	6.35	2.38	< 0.1	2.8	
			060202MFN-FS						6.2	6.35	2.38	< 0.2	2.8	
			060204MFN-FS						6.0	6.35	2.38	< 0.4	2.8	
			09T301MFN-FS						9.8	9.525	3.97	< 0.1	4.4	
			09T302MFN-FS						9.6	9.525	3.97	< 0.2	4.4	
			09T304MFN-FS						9.2	9.525	3.97	< 0.4	4.4	
			09T308MFN-FS						8.8	9.525	3.97	< 0.8	4.4	

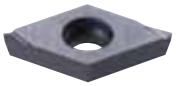
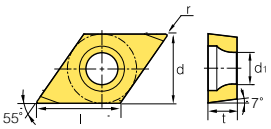
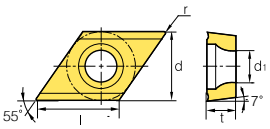
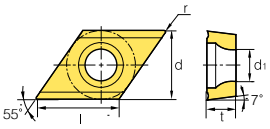
●: Stock item

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Medium cutting (High precision)	MS 	CCGT	09T301-MS	●		●			9.8	9.525	3.97	0.10	4.4	
			09T302-MS	●		●			9.6	9.525	3.97	0.20	4.4	
			09T304-MS	●		●			9.2	9.525	3.97	0.40	4.4	
Medium cutting (Ultra-precision)	MS 	CCGT	09T301MFN-MS	●		●			9.8	9.525	3.97	< 0.1	4.4	
			09T302MFN-MS	●		●			9.6	9.525	3.97	< 0.2	4.4	
			09T304MFN-MS	●		●			9.2	9.525	3.97	< 0.4	4.4	
Finishing (High precision)	VP1 	CCGT	60201-VP1	●	●	●	●	●	6.6	6.35	2.38	0.10	2.8	
			60202-VP1	●	●	●	●	●	6.4	6.35	2.38	0.20	2.8	
			60204-VP1	●	●	●	●	●	6.2	6.35	2.38	0.40	2.8	
			09T301-VP1	●	●	●	●	●	9.8	9.525	3.97	0.10	4.4	
			09T302-VP1	●	●	●	●	●	9.6	9.525	3.97	0.20	4.4	
			09T304-VP1	●	●	●	●	●	9.2	9.525	3.97	0.40	4.4	
Finishing (Ultra-precision)	VP1 	CCGT	060201MFN-VP1	●		●			6.6	6.35	2.38	<0.10	2.8	
			060202MFN-VP1	●		●			6.4	6.35	2.38	<0.20	2.8	
			060204MFN-VP1	●		●			6.2	6.35	2.38	<0.40	2.8	
			09T301MFN-VP1	●		●			9.8	9.525	3.97	<0.10	4.4	
			09T302MFN-VP1	●		●			9.6	9.525	3.97	<0.20	4.4	
			09T304MFN-VP1	●		●			9.2	9.525	3.97	<0.40	4.4	
Finishing (High precision)	KF 	DCGT	0702003R-KF	●		●			7.8	6.35	2.38	0.03	2.8	
			070201R-KF	●		●			7.8	6.35	2.38	0.10	2.8	
			070202R-KF	●		●			7.8	6.35	2.38	0.20	2.8	
			070204R-KF	●		●			7.8	6.35	2.38	0.40	2.8	
			11T3003R-KF	●		●			11.6	9.525	3.97	0.03	4.4	
			11T301R-KF	●		●			11.6	9.525	3.97	0.10	4.4	
			11T302R-KF	●		●			11.6	9.525	3.97	0.20	4.4	
			11T304R-KF	●		●			11.6	9.525	3.97	0.40	4.4	
			0702003L-KF	●		●			7.8	6.35	2.38	0.03	2.8	
			070201L-KF	●		●			7.8	6.35	2.38	0.10	2.8	
			070202L-KF	●		●			7.8	6.35	2.38	0.20	2.8	
			070204L-KF	●		●			7.8	6.35	2.38	0.40	2.8	
			11T3003L-KF	●		●			11.6	9.525	3.97	0.03	4.4	
			11T301L-KF	●		●			11.6	9.525	3.97	0.10	4.4	
			11T302L-KF	●		●			11.6	9.525	3.97	0.20	4.4	
			11T304L-KF	●		●			11.6	9.525	3.97	0.40	4.4	

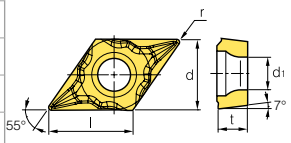
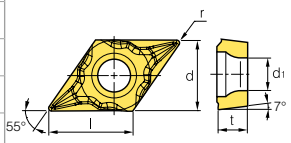
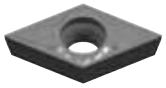
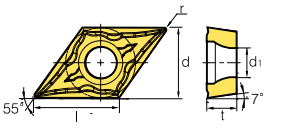
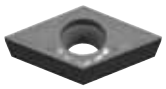
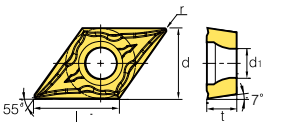
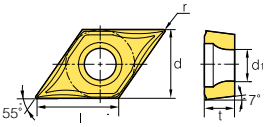
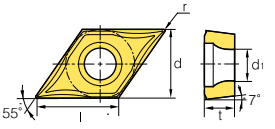
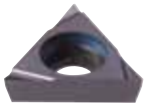
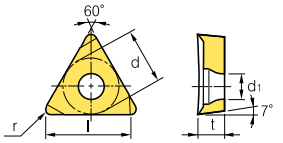
●: Stock item

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Finishing (Ultra-precision)	KF 	DCET	0702005MFR-KF	●		●			7.8	6.35	2.38	<0.05	2.8	
			070201MFR-KF	●		●			7.8	6.35	2.38	<0.10	2.8	
			070202MFR-KF	●		●			7.8	6.35	2.38	<0.20	2.8	
			11T3005MFR-KF	●		●			11.6	9.525	3.97	<0.05	4.4	
			11T301MFR-KF	●		●			11.6	9.525	3.97	<0.10	4.4	
			11T302MFR-KF	●		●			11.6	9.525	3.97	<0.20	4.4	
			0702005MFL-KF	●		●			7.8	6.35	2.38	<0.05	2.8	
			070201MFL-KF	●		●			7.8	6.35	2.38	<0.10	2.8	
			070202MFL-KF	●		●			7.8	6.35	2.38	<0.20	2.8	
			11T3005MFL-KF	●		●			11.6	9.525	3.97	<0.05	4.4	
			11T301MFL-KF	●		●			11.6	9.525	3.97	<0.10	4.4	
			11T302MFL-KF	●		●			11.6	9.525	3.97	<0.20	4.4	
Medium to finishing (High precision)	KM 	DCGT	0702003R-KM	●		●			7.8	6.35	2.38	0.03	2.8	
			070201R-KM	●		●			7.8	6.35	2.38	0.10	2.8	
			070202R-KM	●		●			7.8	6.35	2.38	0.20	2.8	
			070204R-KM	●		●			7.8	6.35	2.38	0.40	2.8	
			11T3003R-KM	●		●			11.6	9.525	3.97	0.03	4.4	
			11T301R-KM	●		●			11.6	9.525	3.97	0.10	4.4	
			11T302R-KM	●		●			11.6	9.525	3.97	0.20	4.4	
			11T304R-KM	●		●			11.6	9.525	3.97	0.40	4.4	
			0702003L-KM	●		●			7.8	6.35	2.38	0.03	2.8	
			070201L-KM	●		●			7.8	6.35	2.38	0.10	2.8	
			070202L-KM	●		●			7.8	6.35	2.38	0.20	2.8	
			070204L-KM	●		●			7.8	6.35	2.38	0.40	2.8	
			11T3003L-KM	●		●			11.6	9.525	3.97	0.03	4.4	
			11T301L-KM	●		●			11.6	9.525	3.97	0.10	4.4	
			11T302L-KM	●		●			11.6	9.525	3.97	0.20	4.4	
			11T304L-KM	●		●			11.6	9.525	3.97	0.40	4.4	
Medium to finishing (Ultra-precision)	KM 	DCET	0702005MFR-KM	●		●			7.8	6.35	2.38	<0.05	2.8	
			070201MFR-KM	●		●			7.8	6.35	2.38	<0.10	2.8	
			070202MFR-KM	●		●			7.8	6.35	2.38	<0.20	2.8	
			11T3005MFR-KM	●		●			11.6	9.525	3.97	<0.05	4.4	
			11T301MFR-KM	●		●			11.6	9.525	3.97	<0.10	4.4	
			11T302MFR-KM	●		●			11.6	9.525	3.97	<0.20	4.4	
			0702005MFL-KM	●		●			7.8	6.35	2.38	<0.05	2.8	
			070201MFL-KM	●		●			7.8	6.35	2.38	<0.10	2.8	
			070202MFL-KM	●		●			7.8	6.35	2.38	<0.20	2.8	
			11T3005MFL-KM	●		●			11.6	9.525	3.97	<0.05	4.4	
			11T301MFL-KM	●		●			11.6	9.525	3.97	<0.10	4.4	
			11T302MFL-KM	●		●			11.6	9.525	3.97	<0.20	4.4	

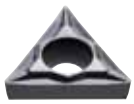
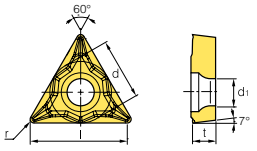
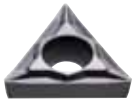
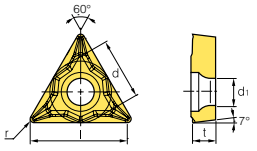
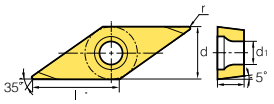
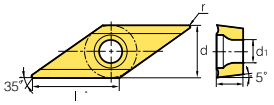
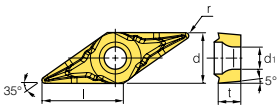
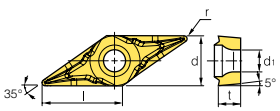
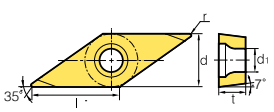
●: Stock item

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Finishing (High precision)	FS 	DCGT	070201-FS	●		●			7.6	6.35	2.38	0.10	2.8	
			070202-FS	●		●			7.5	6.35	2.38	0.20	2.8	
			11T301-FS	●		●			11.6	9.525	3.97	0.10	4.4	
			11T302-FS	●		●			11.6	9.525	3.97	0.20	4.4	
			11T304-FS	●		●			11.6	9.525	3.97	0.40	4.4	
			11T308-FS	●		●			11.6	9.525	3.97	0.80	4.4	
Finishing (Ultra-precision)	FS 	DCGT	070201MFN-FS						7.6	6.35	2.38	< 0.1	2.8	
			070202MFN-FS						7.5	6.35	2.38	< 0.2	2.8	
			11T301MFN-FS						11.6	9.525	3.97	< 0.1	4.4	
			11T302MFN-FS						11.4	9.525	3.97	< 0.2	4.4	
			11T304MFN-FS						11.2	9.525	3.97	< 0.4	4.4	
			11T308MFN-FS						11.0	9.525	3.97	< 0.8	4.4	
Medium cutting (High precision)	MS 	DCGT	11T301-MS	●		●			11.6	9.525	3.97	0.10	4.4	
			11T302-MS	●		●			11.6	9.525	3.97	0.20	4.4	
			11T304-MS	●		●			11.6	9.525	3.97	0.40	4.4	
Medium cutting (Ultra-precision)	MS 	DCGT	11T301MFN-MS	●		●			11.6	9.525	3.97	< 0.1	4.4	
			11T302MFN-MS	●		●			11.6	9.525	3.97	< 0.2	4.4	
			11T304MFN-MS	●		●			11.6	9.525	3.97	< 0.4	4.4	
Finishing (High precision)	VP1 	DCGT	070201-VP1	●	●	●	●	●	7.8	6.35	2.38	0.10	2.8	
			070202-VP1	●	●	●	●	●	7.8	6.35	2.38	0.20	2.8	
			070204-VP1	●	●	●	●	●	7.8	6.35	2.38	0.40	2.8	
			11T301-VP1	●		●			11.6	9.525	3.97	0.10	4.4	
			11T302-VP1	●	●	●	●	●	11.6	9.525	3.97	0.20	4.4	
			11T304-VP1	●	●	●	●	●	11.6	9.525	3.97	0.40	4.4	
Finishing (Ultra-precision)	VP1 	DCGT	070201MFN-VP1	●		●			7.8	6.35	2.38	<0.10	2.8	
			070202MFN-VP1	●		●			7.8	6.35	2.38	<0.20	2.8	
			070204MFN-VP1	●		●			7.8	6.35	2.38	<0.40	2.8	
			11T301MFN-VP1	●		●			11.6	9.525	3.97	<0.10	4.4	
			11T302MFN-VP1	●		●			11.6	9.525	3.97	<0.20	4.4	
			11T304MFN-VP1	●		●			11.6	9.525	3.97	<0.40	4.4	
Finishing (High precision)	KF 	TCGT	0802003R-KF						8.15	4.76	2.38	0.03	2.38	
			080201R-KF						8.0	4.76	2.38	0.10	2.38	
			080202R-KF						7.7	4.76	2.38	0.20	2.38	
			08020003L-KF						8.15	4.76	2.38	0.03	2.38	
			080201L-KF						8.0	4.76	2.38	0.10	2.38	
			080202L-KF						7.7	4.76	2.38	0.20	2.38	

●: Stock item

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Finishing (High precision)	FS 	TCGT	110201-FS	●		●			9.3	6.35	2.38	0.10	2.8	
			110202-FS	●		●			9.1	6.35	2.38	0.20	2.8	
			110204-FS	●		●			8.6	6.35	2.38	0.40	2.8	
Finishing (Ultra-precision)	FS 	TCGT	110201MFN-FS						9.3	6.35	3.18	< 0.1	3.4	
			110202MFN-FS						9.1	6.35	3.18	< 0.2	3.4	
			110204MFN-FS						8.6	6.35	3.18	< 0.4	3.4	
Finishing (High precision)	KF 	VBGT	1103003R-KF	●		●			7.8	6.35	2.38	0.03	2.8	
			110301R-KF	●		●			7.8	6.35	2.38	0.10	2.8	
			110302R-KF	●		●			7.8	6.35	2.38	0.20	2.8	
			1103003L-KF	●		●			11.6	9.525	3.97	0.03	4.4	
			110301L-KF	●		●			11.6	9.525	3.97	0.10	4.4	
			110302L-KF	●		●			11.6	9.525	3.97	0.20	4.4	
Medium to finishing (High precision)	KM 	VBGT	113003R-KM	●		●			7.8	6.35	2.38	0.03	2.8	
			110301R-KM	●		●			7.8	6.35	2.38	0.10	2.8	
			110302R-KM	●		●			7.8	6.35	2.38	0.20	2.8	
			1103003L-KM	●		●			11.6	9.525	3.97	0.03	4.4	
			110301L-KM	●		●			11.6	9.525	3.97	0.10	4.4	
			110302L-KM	●		●			11.6	9.525	3.97	0.20	4.4	
Finishing (High precision)	FS 	VBGT	110301-FS	●		●			11.0	6.35	3.18	0.10	2.8	
			110302-FS	●		●			11.0	6.35	3.18	0.20	2.8	
			110304-FS	●		●			11.0	6.35	3.18	0.40	2.8	
			160401-FS	●		●			16.3	9.525	4.76	0.10	4.4	
			160402-FS	●		●			16.1	9.525	4.76	0.20	4.4	
			160404-FS	●		●			15.7	9.525	4.76	0.40	4.4	
Finishing (Ultra-precision)	FS 	VBGT	110301MFN-FS						10.8	6.35	3.18	< 0.1	2.8	
			110302MFN-FS						10.6	6.35	3.18	< 0.2	2.8	
			110304MFN-FS						11.4	6.35	3.18	< 0.4	2.8	
			160401MFN-FS						16.3	9.525	4.76	< 0.1	4.4	
			160402MFN-FS						16.1	9.525	4.76	< 0.2	4.4	
			160404MFN-FS						15.7	9.525	4.76	< 0.4	4.4	
Finishing (High precision)	KF 	VCGT	1103003R-KF						11.0	6.35	3.18	0.03	2.8	
			110301R-KF						11.0	6.35	3.18	0.10	2.8	
			110302R-KF						11.0	6.35	3.18	0.20	2.8	
			1103003L-KF						11.0	6.35	3.18	0.03	2.8	
			110301L-KF						11.0	6.35	3.18	0.10	2.8	
			110302L-KF						11.0	6.35	3.18	0.20	2.8	

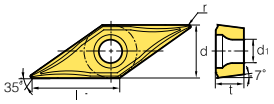
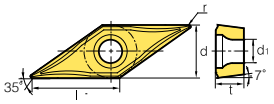
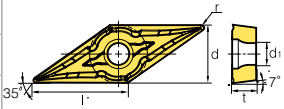
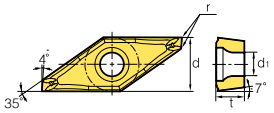
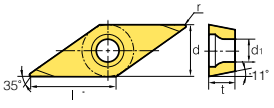
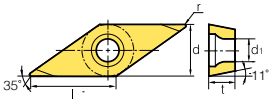
●: Stock item

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Finishing (Ultra-precision)	KF	VCET	1103005MFR-KF	●		●			11.0	6.35	3.18	<0.05	2.8	
			110301MFR-KF	●		●			11.0	6.35	3.18	<0.10	2.8	
			110302MFR-KF	●		●			11.0	6.35	3.18	<0.20	2.8	
			1103005MFL-KF	●		●			11.0	6.35	3.18	<0.05	2.8	
			110301MFL-KF	●		●			11.0	6.35	3.18	<0.10	2.8	
			110302MFL-KF	●		●			11.0	6.35	3.18	<0.20	2.8	
Medium to finishing (High precision)	KM	VCGT	1103003R-KM						11.0	6.35	3.18	0.03	2.8	
			110301R-KM						11.0	6.35	3.18	0.10	2.8	
			110302R-KM						11.0	6.35	3.18	0.20	2.8	
			1103003L-KM						11.0	6.35	3.18	0.03	2.8	
			110301L-KM						11.0	6.35	3.18	0.10	2.8	
			110302L-KM						11.0	6.35	3.18	0.20	2.8	
Medium to finishing (Ultra-precision)	KM	VCET	1103005MFR-KM	●		●			11.0	6.35	3.18	<0.05	2.8	
			110301MFR-KM	●		●			11.0	6.35	3.18	<0.10	2.8	
			110302MFR-KM	●		●			11.0	6.35	3.18	<0.20	2.8	
			11T3005MFL-KM	●		●			11.0	6.35	3.18	<0.05	2.8	
			11T301MFL-KM	●		●			11.0	6.35	3.18	<0.10	2.8	
			11T302MFL-KM	●		●			11.0	6.35	3.18	<0.20	2.8	
Finishing (High precision)	FS	VCGT	110301-FS	●		●			11.0	6.35	3.18	0.10	2.8	
			110302-FS	●		●			11.0	6.35	3.18	0.20	2.8	
			110304-FS	●		●			11.0	6.35	3.18	0.40	2.8	
			160401-FS	●		●			16.3	9.525	4.76	0.10	4.4	
			160402-FS	●		●			16.1	9.525	4.76	0.20	4.4	
			160404-FS	●		●			15.7	9.525	4.76	0.40	4.4	
Finishing (Ultra-precision)	FS	VCGT	110301MFN-FS						10.8	6.35	3.18	< 0.1	2.8	
			110302MFN-FS						10.6	6.35	3.18	< 0.2	2.8	
			110304MFN-FS						11.4	6.35	3.18	< 0.4	2.8	
			160401MFN-FS						16.3	9.525	4.76	< 0.1	4.4	
			160402MFN-FS						16.1	9.525	4.76	< 0.2	4.4	
			160404MFN-FS						15.7	9.525	4.76	< 0.4	4.4	
Medium cutting (High precision)	MS	VCGT	110301-MS	●		●			10.8	6.35	3.18	0.10	2.8	
			110302-MS	●		●			10.6	6.35	3.18	0.20	2.8	
			110304-MS	●		●			11.4	6.35	3.18	0.40	2.8	
Medium cutting (Ultra-precision)	MS	VCGT	110301MFN-MS	●		●			10.8	6.35	3.18	< 0.1	2.8	
			110302MFN-MS	●		●			10.6	6.35	3.18	< 0.2	2.8	
			110304MFN-MS	●		●			11.4	6.35	3.18	< 0.4	2.8	

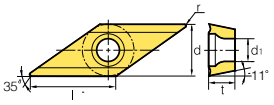
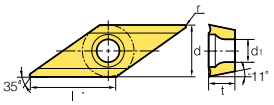
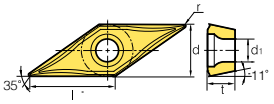
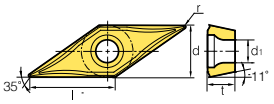
●: Stock item

Insert

Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Finishing (High precision)	VP1 	VCGT	110301-VP1	●	●	●	●	●	11.0	6.35	3.18	0.10	2.8	
			110302-VP1	●	●	●	●	●	11.0	6.35	3.18	0.20	2.8	
			110304-VP1	●	●	●	●	●	11.0	6.35	3.18	0.40	2.8	
Finishing (Ultra-precision)	VP1 	VCGT	110301MFN-VP1	●		●			11.0	6.35	3.18	<0.10	2.8	
			110302MFN-VP1	●		●			11.0	6.35	3.18	<0.20	2.8	
			110304MFN-VP1	●		●			11.0	6.35	3.18	<0.40	2.8	
Medium cutting (Ultra-precision)	MS 	VCGT	1203008FN-MS	●		●			11.0	7.50	3.00	<0.08	2.8	
			120301FN-MS	●		●			11.0	7.50	3.00	<0.10	2.8	
			120302FN-MS	●		●			11.0	7.50	3.00	<0.20	2.8	
			120304FN-MS	●		●			11.0	7.50	3.00	<0.40	2.8	
Finishing (Ultra-precision)	VP1  챔퍼타입	VCGX	120300MFR-VP1	●		●			11.0	7.50	3.18	0.00	2.8	
			120301MFR-VP1	●		●			11.0	7.50	3.18	<0.10	2.8	
			120302MFR-VP1	●		●			11.0	7.50	3.18	<0.20	2.8	
			120304MFR-VP1	●		●			11.0	7.50	3.18	<0.40	2.8	
			120308MFR-VP1	●		●			11.0	7.50	3.18	<0.80	2.8	
Finishing (High precision)	KF 	VPGT	080201R-KF	●		●			8.0	4.76	2.38	0.1	2.3	
			080202R-KF	●		●			8.0	4.76	2.38	0.2	2.3	
			1103003R-KF	●		●			11.0	6.35	3.18	0.03	2.8	
			110301R-KF	●		●			11.0	6.35	3.18	0.1	2.8	
			110302R-KF	●		●			11.0	6.35	3.18	0.2	2.8	
			080201L-KF	●		●			8.0	4.76	2.38	0.1	2.3	
			080202L-KF	●		●			8.0	4.76	2.38	0.2	2.3	
			1103003L-KF	●		●			11.0	6.35	3.18	0.03	2.8	
			110301L-KF	●		●			11.0	6.35	3.18	0.1	2.8	
			110302L-KF	●		●			11.0	6.35	3.18	0.2	2.8	
Finishing (Ultra-precision)	KF 	VPET	0802005MFR-KF	●		●			8.0	6.35	2.38	<0.05	2.3	
			080201MFR-KF	●		●			8.0	6.35	2.38	<0.10	2.3	
			080202MFR-KF	●		●			8.0	6.35	2.38	<0.20	2.3	
			0802005MFL-KF	●		●			8.0	6.35	2.38	<0.05	2.3	
			080201MFL-KF	●		●			8.0	6.35	2.38	<0.10	2.3	
			080202MFL-KF	●		●			8.0	6.35	2.38	<0.20	2.3	

●: Stock item

Insert

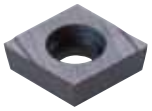
Type	C/B Picture	Designation		Coated PC5300	Coated PC8105	Coated PC8110	Coated PC8115	Uncoated H01	Dimensions (mm) l	Ød	t	r	Ød1	Configuration
Medium to finishing (High precision)	KM 	VPGT	080201R-KM	●		●			8.0	4.76	2.38	0.1	2.3	
			080202R-KM	●		●			8.0	4.76	2.38	0.2	2.3	
			1103003R-KM	●		●			11.0	6.35	3.18	0.03	2.8	
			110301R-KM	●		●			11.0	6.35	3.18	0.1	2.8	
			110302R-KM	●		●			11.0	6.35	3.18	0.2	2.8	
			080201L-KM	●		●			8.0	4.76	2.38	0.1	2.3	
			080202L-KM	●		●			8.0	4.76	2.38	0.2	2.3	
			1103003L-KM	●		●			11.0	6.35	3.18	0.03	2.8	
			110301L-KM	●		●			11.0	6.35	3.18	0.1	2.8	
			110302L-KM	●		●			11.0	6.35	3.18	0.2	2.8	
Medium to finishing (Ultra-precision)	KM 	VPET	0802005MFR-KM	●		●			8.0	6.35	3.18	<0.05	2.8	
			080201MFR-KM	●		●			8.0	6.35	3.18	<0.10	2.8	
			080202MFR-KM	●		●			8.0	6.35	3.18	<0.20	2.8	
			0802005MFL-KM	●		●			8.0	6.35	3.18	<0.05	2.8	
			080201MFL-KM	●		●			8.0	6.35	3.18	<0.10	2.8	
			080202MFL-KM	●		●			8.0	6.35	3.18	<0.20	2.8	
Medium cutting (High precision)	VP1 	VPGT	110301-VP1	●	●	●	●	●	11.0	6.35	3.18	0.10	2.8	
			110302-VP1	●	●	●	●	●	11.0	6.35	3.18	0.20	2.8	
			110304-VP1	●	●	●	●	●	11.0	6.35	3.18	0.40	2.8	
Medium cutting (Ultra-precision)	VP1 	VPGT	110301MFN-VP1	●		●			11.0	6.35	3.18	<0.10	2.8	
			110302MFN-VP1	●		●			11.0	6.35	3.18	<0.20	2.8	
			110304MFN-VP1	●		●			11.0	6.35	3.18	<0.40	2.8	

●: Stock item

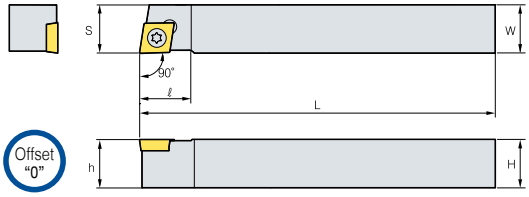
Available tool holders

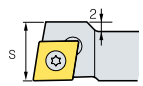
Holders

SCACR/L

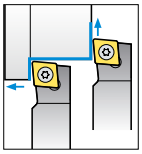


CC□T





※ Only SCACR/L1010-X09A is designed as above picture.

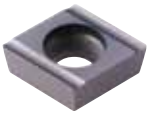


90º

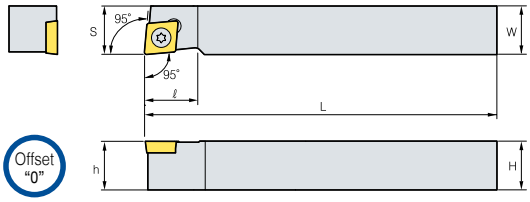
• R type insert

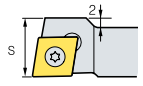
Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench
		R	L	H	W	L	S	h	ℓ			
SCACR/L	0808-X06A	●	●	8	8	120	8	8	10	CC□T0602□□	FTKA02565	TW07P
	1010-X06A	●	●	10	10	120	10	10	10			
	1010-X09A	●	●	10	10	120	12	10	13	CC□T09T3□□	FTKA0410	TW15P
	1212-X09A	●	●	12	12	120	12	12	16			
	1616-X09A	●	●	16	16	120	16	16	16			

SCLCR/L

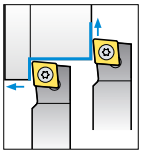


CC□T





※ Only SCLCR/L1010-X09A is designed as above picture.

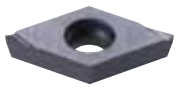


95º

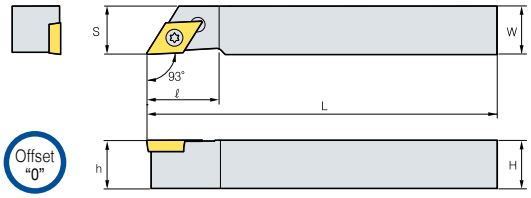
• R type insert

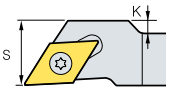
Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench
		R	L	H	W	L	S	h	ℓ			
SCLCR/L	0808-X06A	●	●	8	8	120	8	8	10	CC□T0602□□	FTKA02565	TW07P
	1010-X06A	●	●	10	10	120	10	10	10			
	1010-X09A	●	●	10	10	120	12	10	13	CC□T09T3□□	FTKA0410	TW15P
	1212-X09A	●	●	12	12	120	12	12	16			
	1616-X09A	●	●	16	16	120	16	16	16			

SDJCR/L

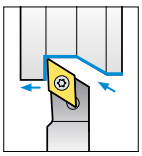


DC□T





※ Only SDJCR/L0808-X07A, 1010-X11A, 1212-X11A is designed as above picture.



93º

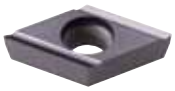
• R type insert

Designation		Stock		Dimensions (mm)							Insert	Screw	Wrench
		R	L	H	W	L	S	h	K	ℓ			
SDJCR/L	0808-X07A	●	●	8	8	120	10	8	2	18	DC□T0702□□	FTKA02565	TW07P
	1010-X07A	●	●	10	10	120	10	10	-	15			
	1010-X11A	●	●	10	10	120	14	10	4	18	DC□T11T3□□	FTKA0410	TW15P
	1212-X11A	●	●	12	12	120	14	12	2	18			
	1616-X11A	●	●	16	16	120	16	16	-	22			

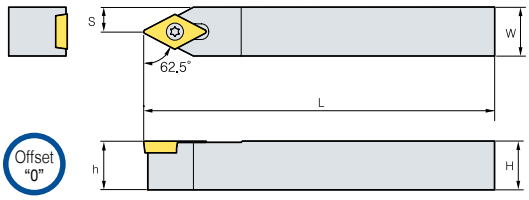
●: Stock item

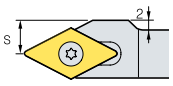
Holders

SDNCN

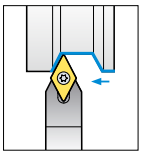


DC□T





※ Only SDNCN1010-X11A is designed as above picture.

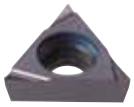


62.5º

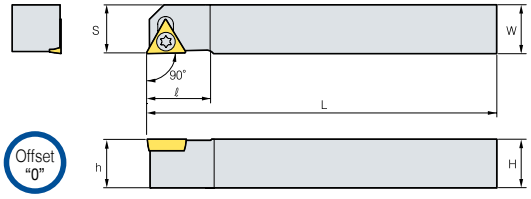
• R type insert

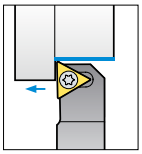
Designation		Stock	Dimensions (mm)					Insert	Screw	Wrench
			H	W	L	S	h			
SDNCN	0808-X07A	●	8	8	120	4	8	DC□T0702□□	FTKA02565	TW07P
	1010-X07A	●	10	10	120	5	10			
	1010-X11A	●	10	10	120	7	10	DC□T11T3□□	FTKA0410	TW15P
	1212-X11A	●	12	12	120	6	12			
	1616-X11A	●	16	16	120	8	16			

STACR/L



TC□T





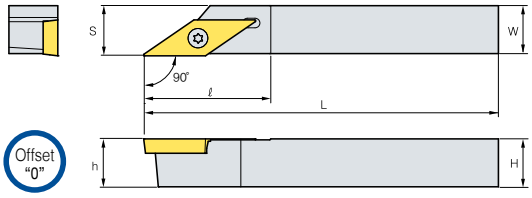
90º

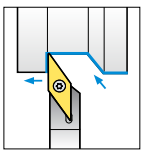
• R type insert

Designation		Stock		Dimensions (mm)							Insert	Screw	Wrench
		R	L	H	W	L	S	h	K	ℓ			
STACR/L	0808-X08A	●	●	8	8	120	8	8	1	18	TC□T0802□□	FTKA0206	TW06P
	1010-X08A	●	●	10	10	120	10	10	3	15			

SVACR/L

VC□□





90º

• R type insert

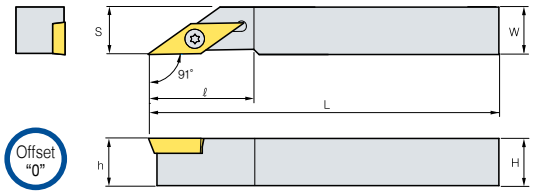
Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench
		R	L	H	W	L	S	h	ℓ			
SVACR/L	0808-X12A	●	●	8	8	120	8.5	8	26	VC□T1203□□	FTKA02565	TW07P
	1010-X12A	●	●	10	10	120	10.5	10	26			
	1212-X12A	●	●	12	12	120	12.5	12	26			
	1616-X12A	●	●	16	16	120	16.5	16	26			
SVACR/L	0808-X12C	●	●	8	8	120	8.5	8	26	VC□X1203□□	FTKA02565	TW07P
	1010-X12C	●	●	10	10	120	10.5	10	26			
	1212-X12C	●	●	12	12	120	12.5	12	26			
	1616-X12C	●	●	16	16	120	16.5	16	26			

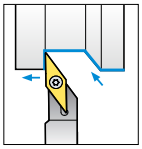
●: Stock item

Holders

SVAPR/L

VP□T





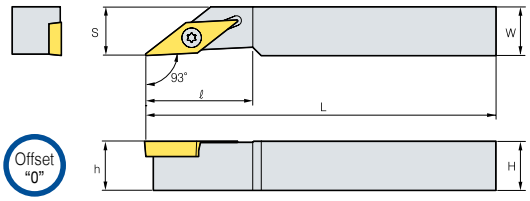
91°

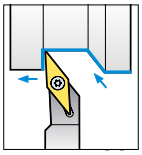
• R type insert

Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench
		R	L	H	W	L	S	h	ℓ			
SVAPR/L	0808-X11A	●	●	8	8	120	8	8	22	VP□T1103□□	FTKA02565	TW07P
	1010-X11A	●	●	10	10	120	10	10	22			
	1212-X11A	●	●	12	12	120	12	12	22			
	1616-X11A	●	●	16	16	120	16	16	24			

SVJBR/L

VB□T



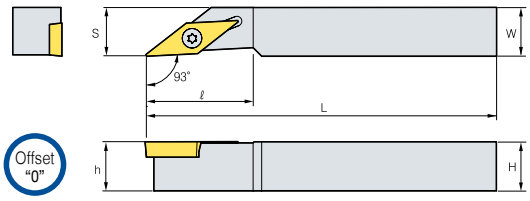


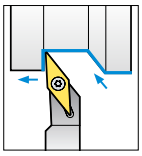
• R type insert

Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench
		R	L	H	W	L	S	h	ℓ			
SVJBR/L	1010-X11A	●	●	10	10	120	10	10	22	VB□T1103□□	FTKA02565	TW07P
	1212-X11A	●	●	12	12	120	12	12	22			
	1616-X11A	●	●	16	16	120	16	16	24			

SVJCR/L

VC□T





93°

• R type insert

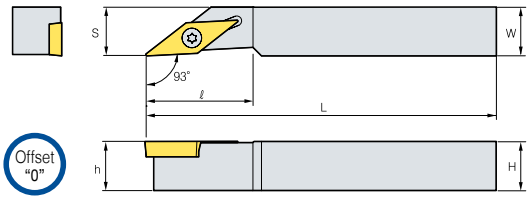
Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench
		R	L	H	W	L	S	h	ℓ			
SVJCR/L	1010-X11A	●	●	10	10	120	10	10	22	VC□T1103□□	FKTA02565	TW07P
	1212-X11A	●	●	12	12	120	12	12	22			
	1616-X11A	●	●	16	16	120	16	16	24			
	0810-X12A	●	●	8	10	120	10	8	26	VC□T1203□□	FKTA02565	TW07P
	1010-X12A	●	●	10	10	120	10	10	26			
	1212-X12A	●	●	12	12	120	12	12	26			
	1616-X12A	●	●	16	16	120	16	16	26			
SVJCR/L	0810-X12C	●	●	8	10	120	10	8	26	VC□X1203□□	FKTA02565	TW07P
	1010-X12C	●	●	10	10	120	10	10	26			
	1212-X12C	●	●	12	12	120	12	12	26			
	1616-X12C	●	●	16	16	120	16	16	26			

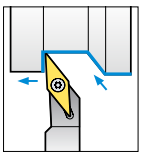
●: Stock item

Holders

SVJPR/L

VP□T





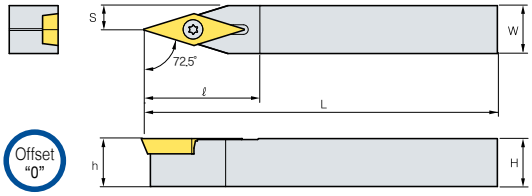
93º

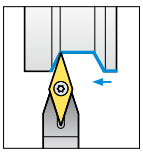
• R type insert

Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench
		R	L	H	W	L	S	h	ℓ			
SVJPR/L	0810-X11A	●	●	8	10	120	8	10	22	VP□T1103□□	FKTA02565	TW07P
	1010-X11A	●	●	10	10	120	10	10	22			
	1212-X11A	●	●	12	12	120	12	12	22			
	1616-X11A	●	●	16	16	120	16	16	24			

SVVPN

VP□T





72.5º

• R type insert

Designation		Stock	Dimensions (mm)						Insert	Screw	Wrench
			H	W	L	S	h	ℓ			
SVVPN	0808-X11A	●	8	8	120	4	8	24	VP□T1103□□	FTKA02565	TW07P
	1010-X11A	●	10	10	120	5	10	24			
	1212-X11A	●	12	12	120	6	12	24			
	1616-X11A	●	16	16	120	8	16	28			

●: Stock item

KHP Coolant

(ISO Turning holder)

Excellent coolant effect
- Direct spraying coolant on the edge of insert and on the top and bottom sides of insert

High productivity
- Tested up to 300% increased tool life comparing to machining with low pressure coolant system
- Increased cutting speeds and high feeds

KHP Coolant

Improved chip control
- Better chip evacuation

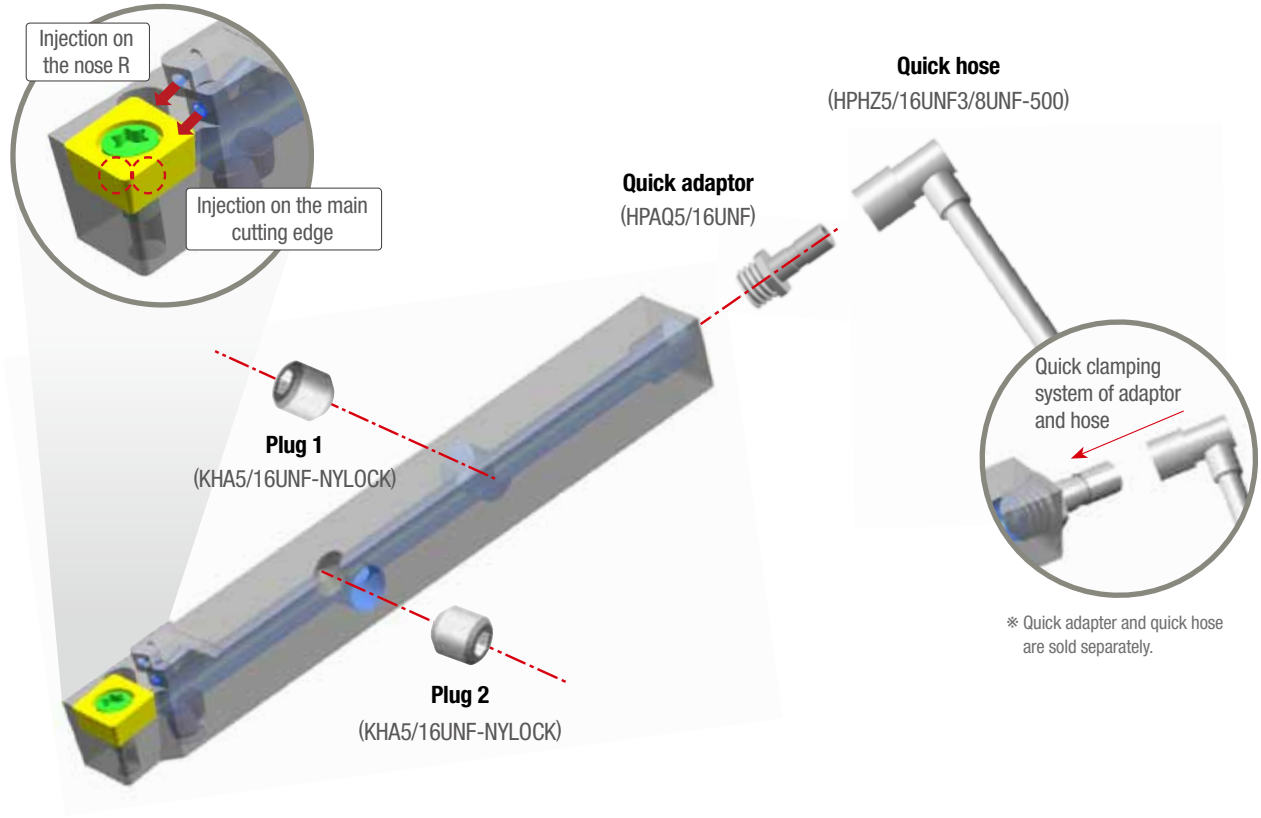
Easy to clamp
- Sliding clamp system

Code system

S	C	L	C	R/L	12	12	-	X	09	A	-	KHP

- **S** — Clamping method of insert: **S**: Screw on system
- **C** — Insert shape: **C**: C type, **D**: D type, **V**: V type
- **L** — Holder style: **L**: 95°, **J**: 93°
- **C** — Clearance angle of insert: **C**: 7°
- **R/L** — Hand: **R**: Right handed, **L**: Left handed
- **12** — Height of shank: 12 mm
- **12** — Width of shank: 12 mm
- **X** — Length of holder: X: 120 mm
- **09** — Length of insert cutting edge: 07, 09, 11, 12
- **A** — Auto tools
- **KHP** — KORLOY high pressure coolant

Structure of holder



※ Quick adapter and quick hose are sold separately.

Features

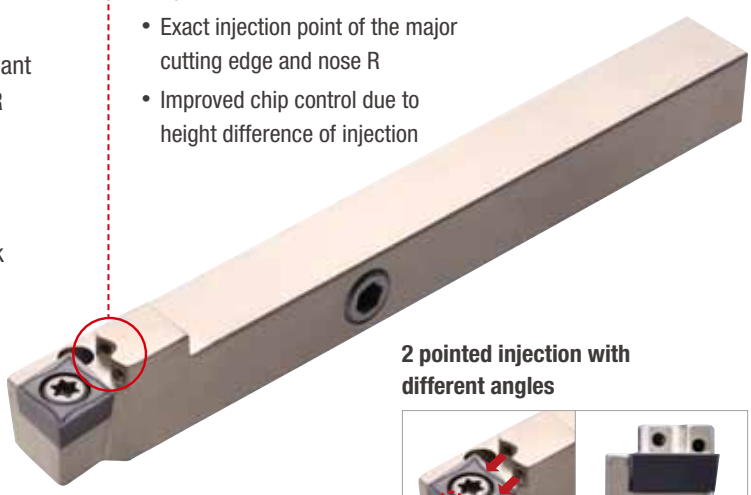
- High pressure coolant holder for high productivity of precise parts machining on automatic lathe
- Improved cooling and chip control due to injecting coolant through two holes to the main cutting edge and nose R concentrically
- Two holes with different injection angles each other increase chip control
- Easy clamping system of quick hose adapter and quick hose provides convenient using

MAX 300 bar

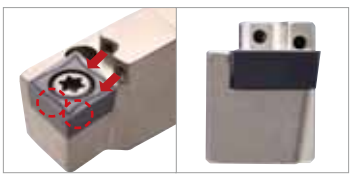
Workpiece	The minimum pressure	The maximum pressure
P	100	300
M	120	
K	110	
N	100	
S	120	

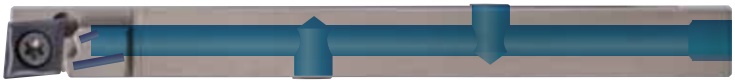
Injection nozzle

- Optimal coolant nozzle size
- Exact injection point of the major cutting edge and nose R
- Improved chip control due to height difference of injection



2 pointed injection with different angles



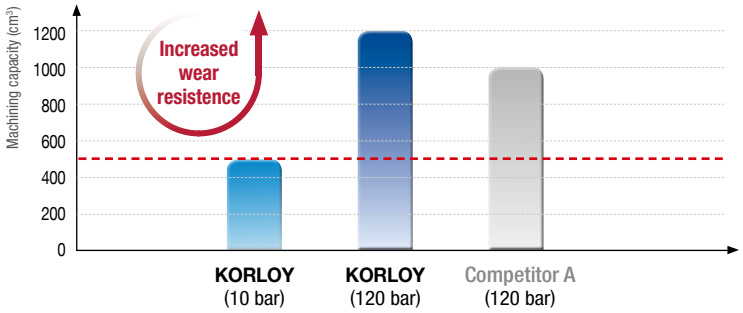


KHP Coolant cutting performance

Wear resistance

• **Workpiece:** Stainless steel (X5CrNi18-9) • **Insert:** CCGT09T302MFN-VP1 (PC8110) • **Holder:** SCLCR1212-X09A-KHP

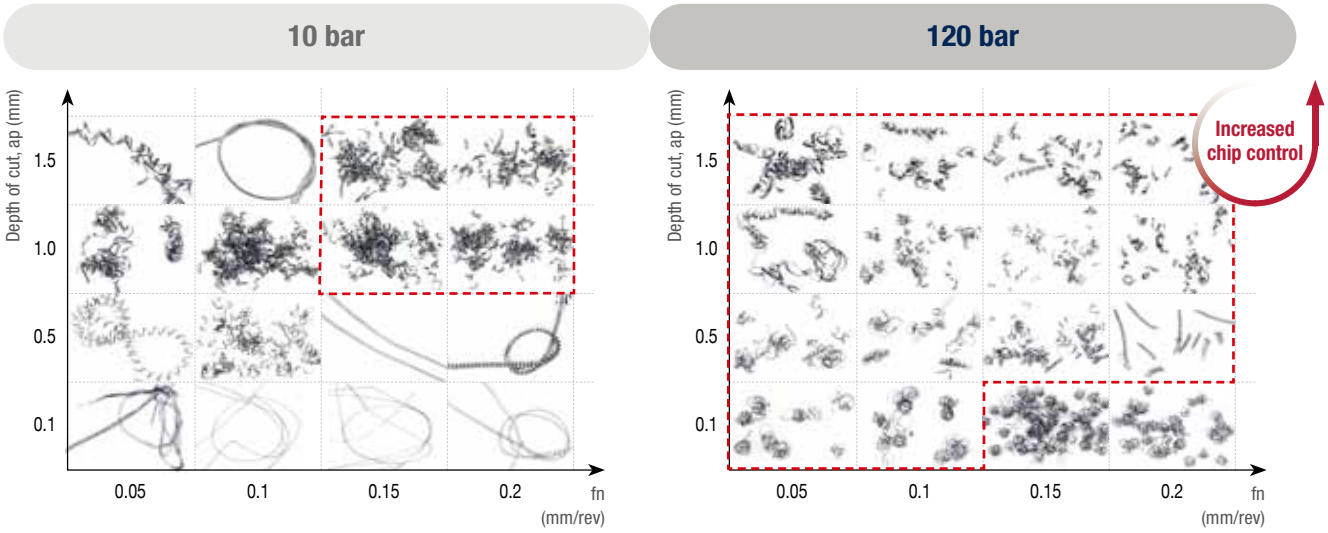
Cutting conditions • **vc** = 169 m/min • **fn** = 0.15 mm/rev • **ap** = 0.5 mm, wet (120 bar)



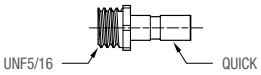
Chip control

• **Workpiece:** Stainless steel (X5CrNi18-9) • **Insert:** CCGT09T302MFN-VP1 (PC8110) • **Holder:** SCLCR1212-X09A-KHP

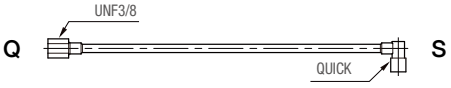
Cutting conditions • **vc** = 169 m/min • **fn** = 0.15 mm/rev • **ap** = 0.5 mm, wet (120 bar)



Parts

Parts	Designation	Shape of parts	
Quick adapter	HPAQ5/16UNF		

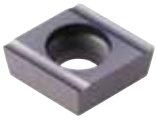
High pressure hose

The shape of the high pressure hose		Length	Standard Q	Standard S
Quick to straight (HPHZ5/16UNF3/8UNF-500)		500 mm	UNF5/16	-

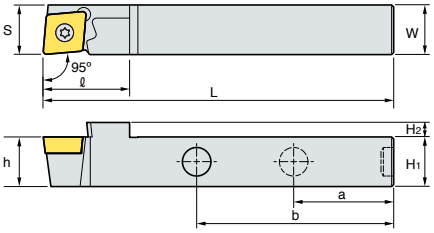
Available tool holders

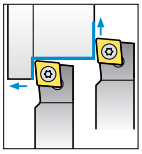
Holders

SCLCR/L



CC□T





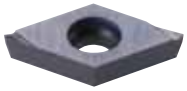
95°

• R type insert

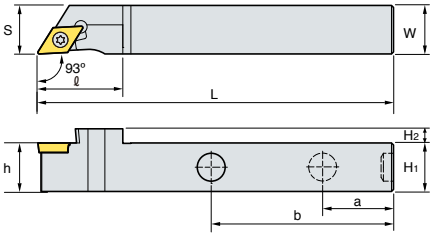
Designation		Stock		Dimensions (mm)									Insert	Screw	Plug	Wrench
		R	L	H_1	H_2	W	L	S	h	ℓ	a	b				
SCLCR/L	1212-X09A-KHP	●	●	12	3.5	12	120	12	12	21	40	70	CC□T09T3□□	FTKA0410	KHA0404-NYLOCK KHA5/16UNF-NYLOCK	TW15P

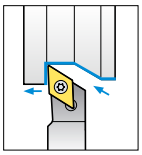
Applicable inserts: page. 15~17

SDJCR/L



DC□T





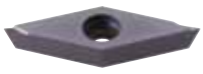
93°

• R type insert

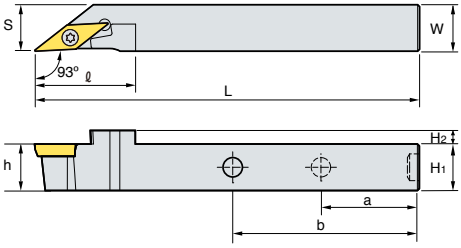
Designation		Stock		Dimensions (mm)									Insert	Screw	Plug	Wrench
		R	L	H_1	H_2	W	L	S	h	ℓ	a	b				
SDJCR/L	1212-X07A-KHP	●	●	12	3.5	12	120	12	12	21	40	70	DC□T0702□□	FTKA02565	KHA0404-NYLOCK KHA5/16UNF-NYLOCK	TW07P
	1212-X11A-KHP	●	●	12	3.5	12	120	14	12	29.8	40	70	DC□T11T3□□	FTKA0408	KHA0404-NYLOCK KHA5/16UNF-NYLOCK	TW15P

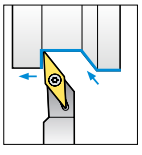
Applicable inserts: page. 17~19

SVJCR/L



VC□□





93°

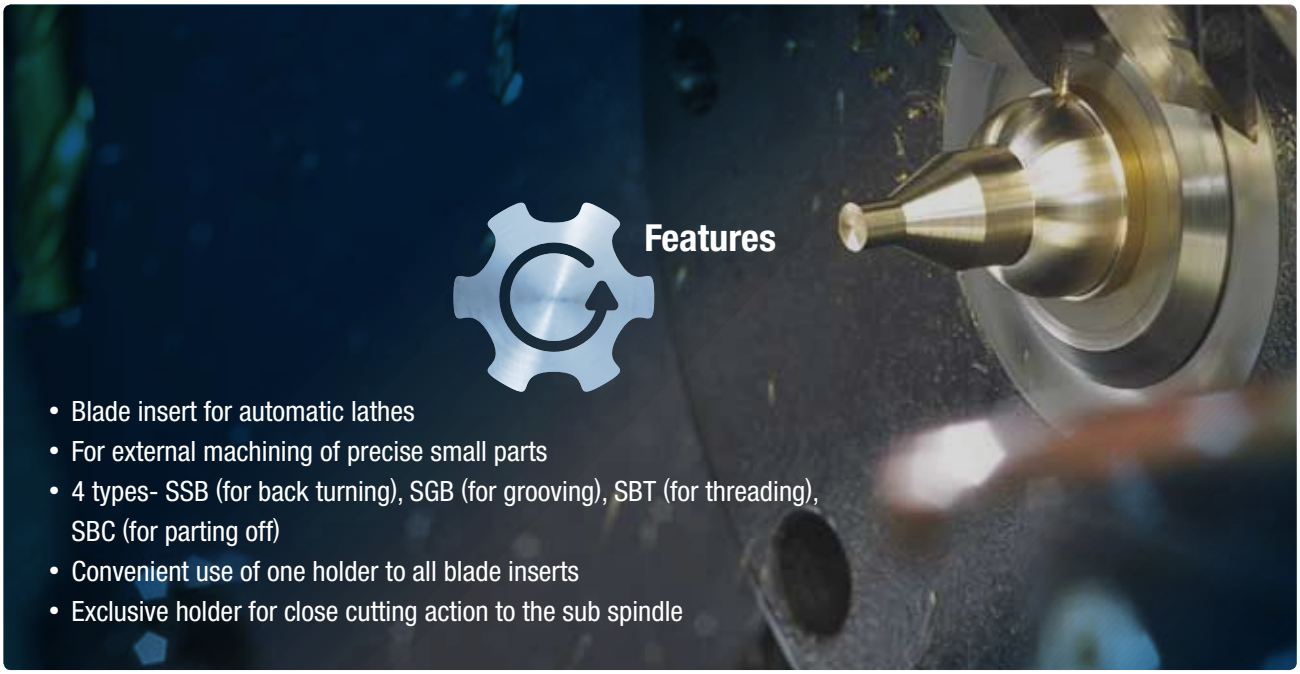
• R type insert

Designation		Stock		Dimensions (mm)									Insert	Screw	Plug	Wrench
		R	L	H_1	H_2	W	L	S	h	ℓ	a	b				
SVJCR/L	1212-X11A-KHP	●	●	12	3.5	12	120	12	12	26	40	70	VC□T1103□□	FTKA02565	KHA0404-NYLOCK KHA5/16UNF-NYLOCK	TW07P
	1212-X12A-KHP	●	●	12	3.5	12	120	12	12	26	40	70	VC□□1203□□	FTKA02565	KHA0404-NYLOCK KHA5/16UNF-NYLOCK	TW07P

Applicable inserts: page. 20~22

●: Stock item

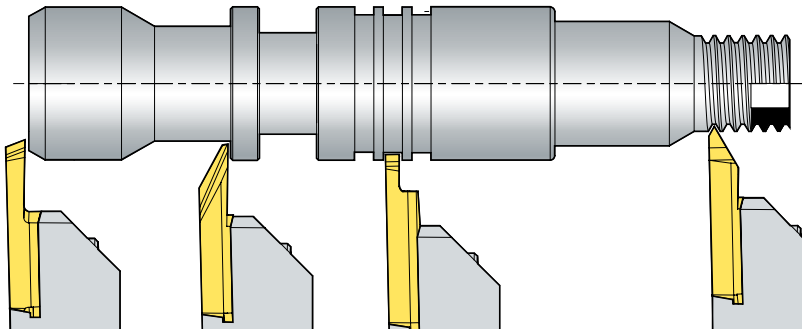
Blade type



Features

- Blade insert for automatic lathes
- For external machining of precise small parts
- 4 types- SSB (for back turning), SGB (for grooving), SBT (for threading), SBC (for parting off)
- Convenient use of one holder to all blade inserts
- Exclusive holder for close cutting action to the sub spindle

Application example



SBC (Parting off) **SBB** (Back turning) **SBG** (Grooving) **SBT** (Theading)

Types of blade insert

SBC - For cut off/Parting

- **Cutting width:** 0.7~2.0
- **D Max.:** 16 mm
- **Nose R:** 0.05 mm

SBB - For back turning

- **Approach angle:** 59°
- **Max. cutting depth:** 4 mm
- **Nose R:** 0.05, 0.1, 0.2 mm

SBG - For grooving

- **Width:** 0.5~2.5 mm
- **Nose R:** 0.05 mm

SBT - For threading

- **V profile:** 60°
- **Pitch:** 0.2~1.0 mm
- **Nose R:** 0.05 mm

Code system of auto tools insert

Turning (Back turning)

SB	B	R	25	005
Small blade	Back turning	Hand R: Right L: Left	Length of insert	Nose R

Grooving

SB	G	R	25	20
Small blade	Grooving	Hand R: Right L: Left	Length of insert	Width of cutting edge

Threading

SB	T	R	25	60	N	010
Small blade	Threading	Hand R: Right L: Left	Length of insert	Angle of thread	Hand of R: Right L: Left N: Neutral	Nose R

Parting

SB	C	R	25	20	16	N
Small blade	Cut off / Parting	Hand R: Right L: Left	Length of insert	Width of cutting edge	Max. machining diameter	Hand of thread R: Right L: Left N: None T: C/B none

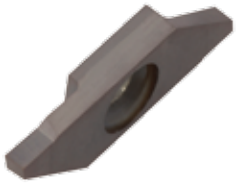
Code system of auto tools holder

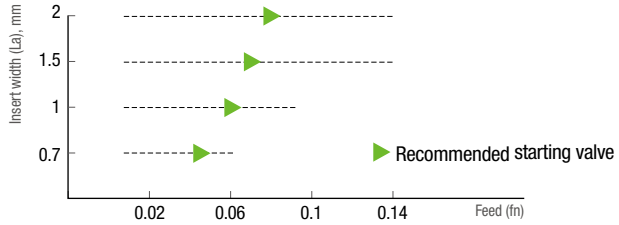
Blade

SB	H	R	10	10	-	K25	-	X
Small blade	Holder	Hand R: Right L: Left	Height of shank	Width of shank		Length of insert		Sub spindle

Recommended cutting condition

SBCR Insert

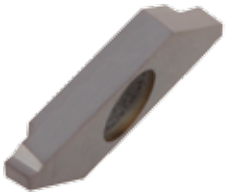


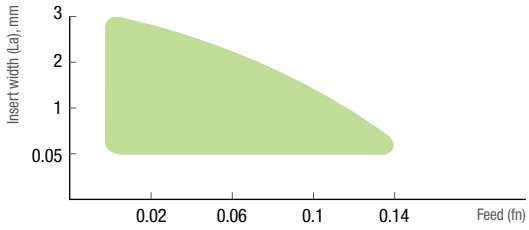


Parting

- When parting with a sub-spindle it is more productive to use a straight cutting edge. This is a more stable parting method and will generate the best surface finish.
- When parting without a sub-spindle we recommend you use an insert with a maximum 15° front angle to minimise the risk of burr and pips on the component.
- When parting off with 15° front angled inserts we recommend reducing the feed by approximately 30%.

SBGR Insert

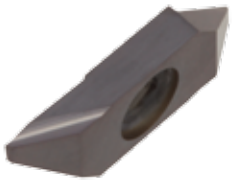


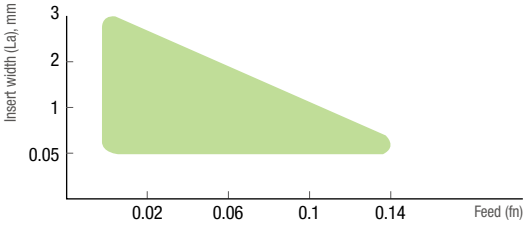


Grooving

- Try not to use a smaller cutting depth than the nose radius. Thiswill generate higher radial forces and will result in inaccurate dimensions.
- Too low cutting speed will result in inadequate tool life and it is advisable to follow cutting speed recommendations

SBBR Insert





Back Turning

- If running with a cutting depth larger than 0.079 inch we recommend you use the insert with 0.008 inch nose radius.
- When using a large cutting depth it is important to reduce the feed as there is a large amount of pressure on the actual insert tip.
- If a larger cutting depth than 0.118 inch is needed switch to the VCGX inserts which have more edge strength.

Grades and recommended cutting conditions

Workpiece		Grade	Recommended cutting speed, vc (m/min)
P	Steel	PC8110	100 – 200
		PC5300	80 – 160
M	Stainless steel	PC8110	90 – 190
		PC5300	80 – 150
N	Non-ferrous metal	PC8110	310 – 620
		PC5300	260 – 520
S	HRSA	PC8110	30 – 60
		PC5300	20 – 50

※ The cutting conditions above is for cutting, grooving and threading and for back turning, 20% lower cutting conditions is recommended.

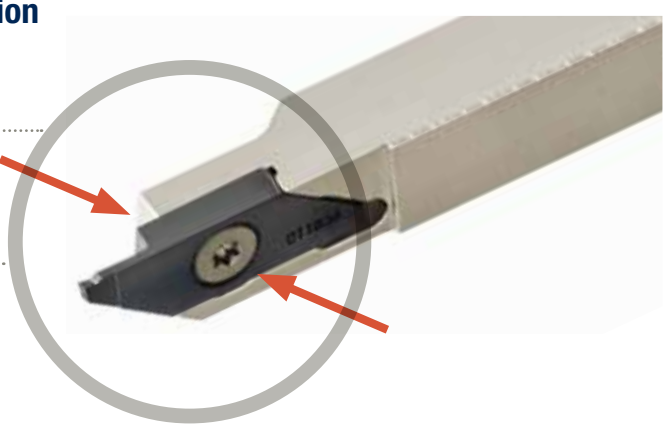
Easy tool change with constant high precision

Screw holes on both sides

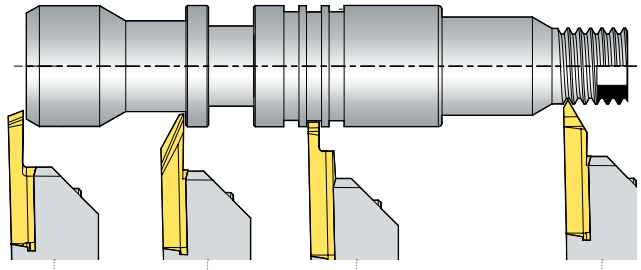
- Easy to exchange inserts ➔ **Improved productivity**

Insert corner change

- Tolerance repetition ±0.001 within ➔ **Save setting time**



Combination of inserts and holders



Processed form		Cut off	Back turning	Grooving	Threading
Insert	Designation	**SBCR252016-R**	**SBBR25010**	**SBGR2515**	**SBTR2560-R-005**
	Nose R	0.05	0.05, 0.1, 0.2	0.05	0.05, 0.1
	Edge width	0.7, 1.0, 1.5, 2.0	3.18	0.5, 1.0, 1.5, 2.0,2.5	-
Holder	Designation	SBHR1212-K25	SBHR1212-K25	SBHR1212-K25	SBHR1212-K25
	Size	10x10, 12x12, 16x16	10x10, 12x12, 16x16	10x10, 12x12, 16x16	10x10, 12x12, 16x16

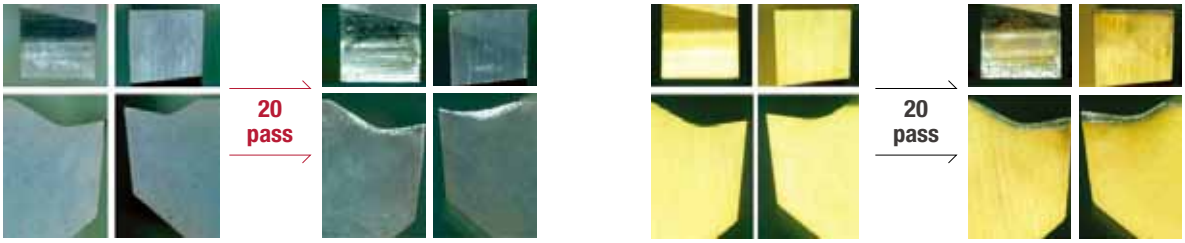
Blade cutting performance

Wear resistance- External machining

• **Workpiece:** Stainless steel (X5CrNi18-9)

Cutting conditions • **vc** = 100 m/min • **fn** = 0.14 mm/rev • **ap** = 0.2 mm, Wet

SBCR252016 (PC8110)	Competitor

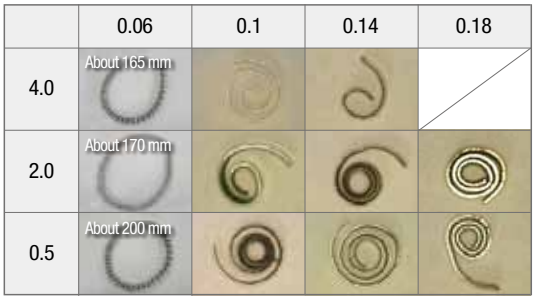


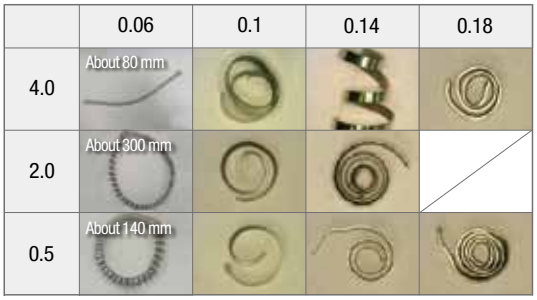
Chip Breaking- External machining

• **Workpiece:** Stainless steel (X5CrNi18-9)

Cutting conditions • **vc** = 100 m/min • **fn** = 0.02~0.18 mm/rev • **ap** = 0.5~4.0 mm, Wet

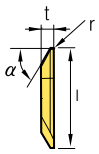
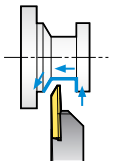
SBCR252016 (PC8110)	Competitor

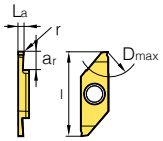
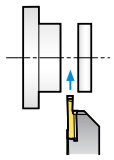
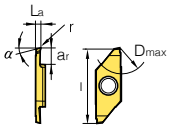
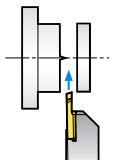
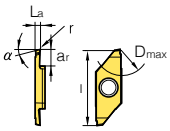
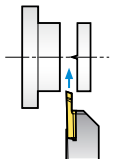
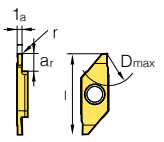
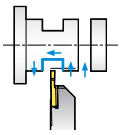


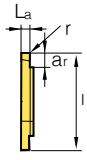
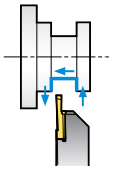


Applicable inserts

Insert

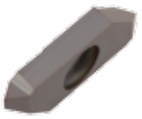
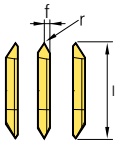
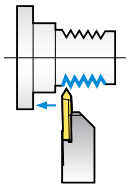
Application	Picture	Designation	Coated PC8110 R	PC8110 L	PC5300 R	PC5300 L	Dimensions (mm) l	α°	t	r	Configuration	Feed direction
Back turning		SBBR/L 25005	●	●	●	●	25	59	3.18	0.05		
		25010	●	●	●	●	25	59	3.18	0.10		
		25020	●	●	●	●	25	59	3.18	0.20		

Application	Picture	Designation	Coated PC8110 R	PC8110 L	PC5300 R	PC5300 L	Dimensions (mm) l	α°	r	La	ar	DMAX	Configuration	Feed direction
Parting off		SBCR/L 250708-N	●	●	●	●	25	0	0.05	0.7	4.3	8		
		251012-N	●	●	●	●	25	0	0.05	1.0	6.3	12		
		251512-N	●	●	●	●	25	0	0.05	1.5	6.3	12		
		252016-N	●	●	●	●	25	0	0.05	2.0	8.3	16		
		250708-R	●	●	●	●	25	15	0.05	0.7	4.3	8		
		251012-R	●	●	●	●	25	15	0.05	1.0	6.3	12		
		251512-R	●	●	●	●	25	15	0.05	1.5	6.3	12		
		252016-R	●	●	●	●	25	15	0.05	2.0	8.3	16		
		250708-L	●	●	●	●	25	15	0.05	0.7	4.3	8		
		251012-L	●	●	●	●	25	15	0.05	1.0	6.3	12		
		251512-L	●	●	●	●	25	15	0.05	1.5	6.3	12		
		252016-L	●	●	●	●	25	15	0.05	2.0	8.3	16		
		251012-T	●	●	●	●	25	0	0.05	1.0	6.3	12		
		251512-T	●	●	●	●	25	0	0.05	1.5	6.3	12		
		252016-T	●	●	●	●	25	0	0.05	2.0	8.3	16		

Application	Picture	Designation	Coated PC8110 R	PC8110 L	PC5300 R	PC5300 L	Dimensions (mm) l	r	La	ar	Configuration	Feed direction
Grooving		SBGR/L 2505	●	●	●	●	25	0.05	0.5	1.35		
		2510	●	●	●	●	25	0.05	1.0	2.75		
		2515	●	●	●	●	25	0.05	1.5	3.75		
		2520	●	●	●	●	25	0.05	2.0	3.75		
		2525	●	●	●	●	25	0.05	2.5	3.75		

●: Stock item

Insert

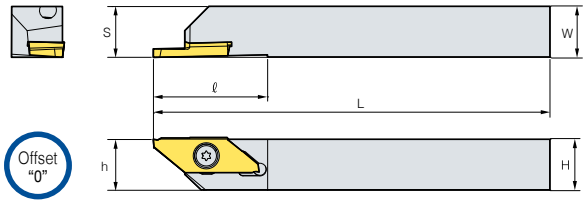
Application	Picture	Designation		Coated PC8110 R	Coated PC8110 L	Coated PC5300 R	Coated PC5300 L	Dimensions (mm) l	r	f	Pitch range Min.	Pitch range Max	Configuration	Feed direction
Theading		SBTR/L	2560-N-005	●	●	●	●	25	0.05	1.59	0.2	2.0		
			2560-N-010	●	●	●	●	25	0.10	1.59	1.0	2.0		
			2560-R-005	●	●	●	●	25	0.05	0.60	0.2	1.5		
			2560-R-010	●	●	●	●	25	0.10	0.60	1.0	1.5		
			2560-L-005	●	●	●	●	25	0.05	0.60	0.2	1.5		
			2560-L-010	●	●	●	●	25	0.10	0.60	1.0	1.5		

Available tool holders

Holders

SBHR/L

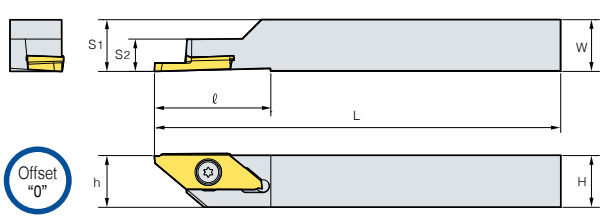
SBBR SBGR
SBTR SBCR



Designation		Stock R	Stock L	Dimensions (mm) H	W	L	S	h	ℓ	Insert	Screw	Wrench
SBHR/L	1010-K25	●	●	10	10	125	10	10	27	SB □ R/L25	FTKA0409S	TW09P
	1212-K25	●	●	12	12	125	12	12	27			
	1616-K25	●	●	16	16	125	16	16	27			

SBHR/L-X (Sub spindle)

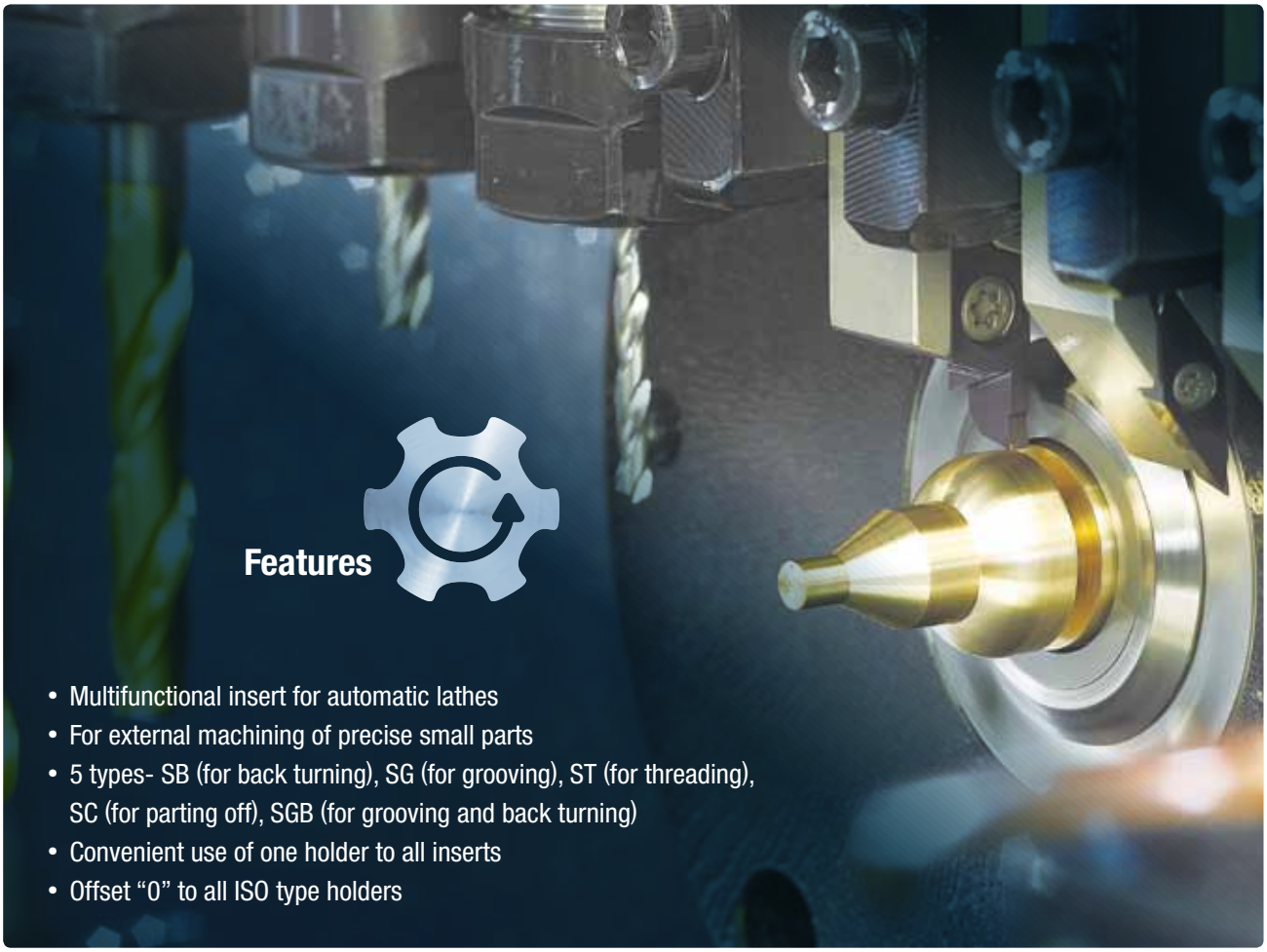
SBBR SBGR
SBTR SBCR



Designation		Stock R	Stock L	Dimensions (mm) H	W	L	S_1	S_2	h	ℓ	Insert	Screw	Wrench
SBHR/L	1010-K25-X	●	●	10	10	125	10	7.5	10	27	SB □ R/L25	FTKA0409S	TW09P
	1212-K25-X	●	●	12	12	125	12	7.5	12	27			

●: Stock item

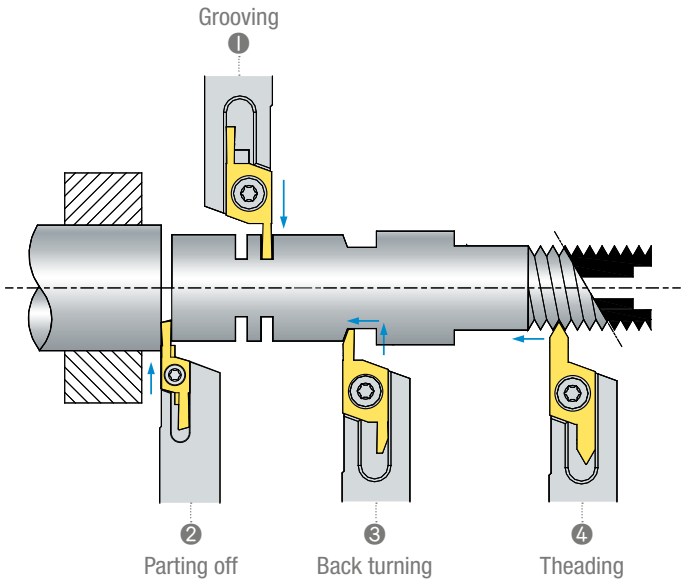
Multy utility



Features

- Multifunctional insert for automatic lathes
- For external machining of precise small parts
- 5 types- SB (for back turning), SG (for grooving), ST (for threading), SC (for parting off), SGB (for grooving and back turning)
- Convenient use of one holder to all inserts
- Offset “0” to all ISO type holders

Combination of inserts and holders



Types of multifunctional insert

SG Grooving

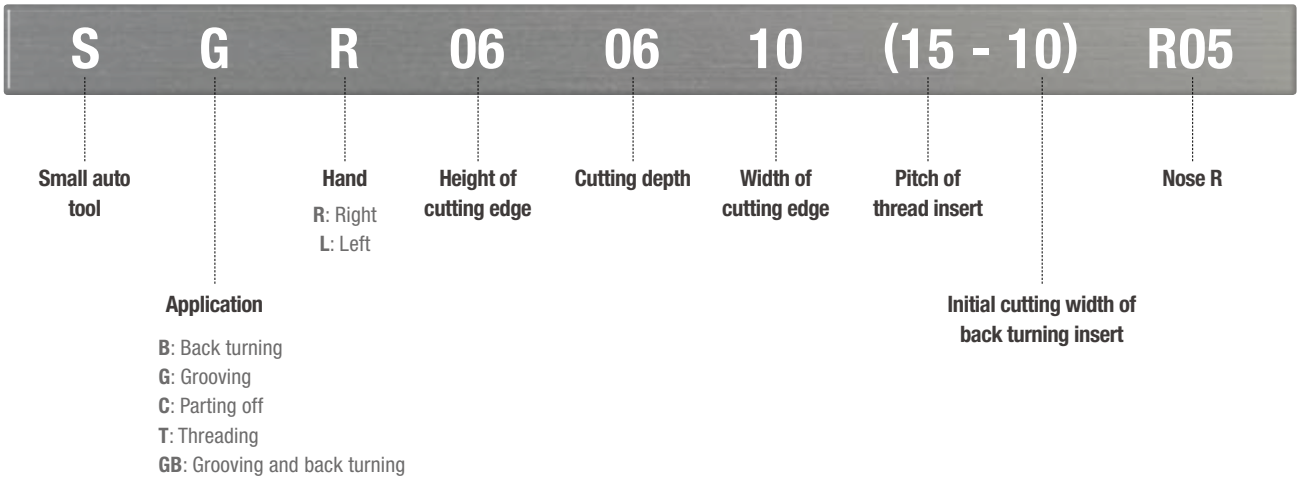
ST Threading

SB Back turning

SGB Grooving and back turning

SC Parting off

Insert code system (Multi utility type)

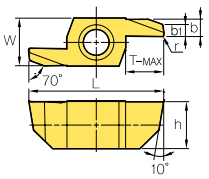
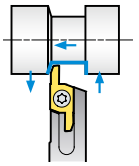


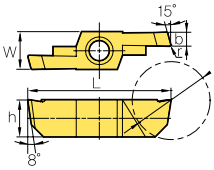
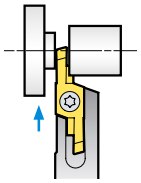
Recommended cutting conditions

Workpiece		Turning		Grooving		Parting off		Back turning	
		Cutting speed, vc (m/min)	Feed, fn (mm/rev)	Cutting speed, vc (m/min)	Feed, fn (mm/rev)	Cutting speed, vc (m/min)	Feed, fn (mm/rev)	Cutting speed, vc (m/min)	Feed, fn (mm/rev)
P	Carbon steel	50~150	0.01~0.25	50~150	0.02~0.08	50~150	0.01~0.08	50~150	0.01~0.25
	Free cutting steel	30~150	0.02~0.25	30~150	0.02~0.08	30~150	0.01~0.08	30~150	0.01~0.25
M	Stainless steel	50~120	0.02~0.20	30~120	0.02~0.05	30~120	0.02~0.05	30~120	0.02~0.20
S	Non-ferrous metal	70~200	0.03~0.25	70~200	0.03~0.10	70~200	0.03~0.10	70~200	0.03~0.30

Applicable inserts

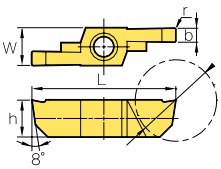
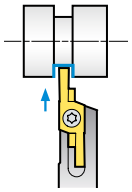
Insert

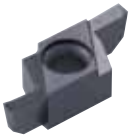
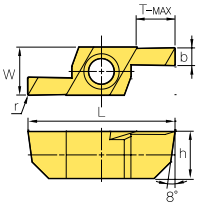
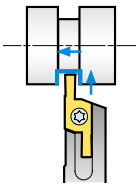
Application	Picture	Designation		Coated PC9030 R	Coated PC9030 L	Dimensions (mm) b_1	b_2	w	L	r	h	T-MAX	Configuration	Feed Direction
Back turning		SBR/L	060520-10-R00			1.0	2	8	22	0.00	6	5.5		
			060520-10-R05			1.0	2	8	22	0.05	6	5.5		
			060520-10-R10			1.0	2	8	22	0.10	6	5.5		
			060630-20-R00			2.0	3	8	24	0.00	6	6.5		
			060630-20-R05			2.0	3	8	24	0.05	6	6.5		
			060630-20-R10			2.0	3	8	24	0.10	6	6.5		
			080630-20-R00			2.0	3	8	23	0.00	8	6.5		
			080630-20-R05			2.0	3	8	23	0.05	8	6.5		
			080630-20-R10			2.0	3	8	23	0.10	8	6.5		
			080840-20-R00			2.0	4	8	27	0.00	8	8.5		
			080840-20-R05			2.0	4	8	27	0.05	8	8.5		
			080840-20-R10			2.0	4	8	27	0.10	8	8.5		

Application	Picture	Designation		Coated PC9030 R	Coated PC9030 L	Dimensions (mm) b	w	L	r	h	ØD	Configuration	Feed Direction
Parting off		SCR/L	060610-R00			1.0	8	24	0.00	6	11		
			060610-R05	●		1.0	8	24	0.05	6	11		
			060610-R10	●		1.0	8	24	0.10	6	11		
			060615-R00			1.5	8	24	0.00	6	11		
			060615-R05	●		1.5	8	24	0.05	6	11		
			060615-R10	●		1.5	8	24	0.10	6	11		
			060620-R00			2.0	8	24	0.00	6	11		
			060620-R05	●		2.0	8	24	0.05	6	11		
			060620-R10	●		2.0	8	24	0.10	6	11		
			081015-R00			1.5	8	31	0.00	8	18		
			081015-R05			1.5	8	31	0.05	8	18		
			081015-R10			1.5	8	31	0.10	8	18		
			081020-R00			2.0	8	31	0.00	8	18		
			081020-R05			2.0	8	31	0.05	8	18		
			081020-R10	●		2.0	8	31	0.10	8	18		
			081025-R00			2.5	8	31	0.00	8	18		
			081025-R05	●		2.5	8	31	0.05	8	18		
			081025-R10	●		2.5	8	31	0.10	8	18		
			081030-R00	-		3.0	8	31	0.00	8	18		
			081030-R05	●		3.0	8	31	0.05	8	18		
			081030-R10			3.0	8	31	0.10	8	18		

●: Stock item

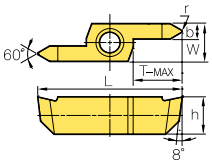
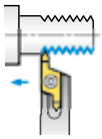
Insert

Application	Picture	Designation		Coated PC9030 R	Coated PC9030 L	Dimensions (mm) b	w	L	r	h	ØD	Configuration	Feed direction
Grooving		SGR/L	060610-R00			1.0	8	24	0.00	6	11		
			060610-R05	●		1.0	8	24	0.05	6	11		
			060610-R10	●		1.0	8	24	0.10	6	11		
			060615-R00			1.5	8	24	0.00	6	11		
			060615-R05	●		1.5	8	24	0.05	6	11		
			060615-R10	●		1.5	8	24	0.10	6	11		
			060620-R00			2.0	8	24	0.00	6	11		
			060620-R05	●		2.0	8	24	0.05	6	11		
			060620-R10	●		2.0	8	24	0.10	6	11		
			081015-R00			1.5	8	31	0.00	8	18		
			081015-R05			1.5	8	31	0.05	8	18		
			081015-R10			1.5	8	31	0.10	8	18		
			081020-R00			2.0	8	31	0.00	8	18		
			081020-R05	●		2.0	8	31	0.05	8	18		
			081020-R10			2.0	8	31	0.10	8	18		
			081025-R00			2.5	8	31	0.00	8	18		
			081025-R05			2.5	8	31	0.05	8	18		
			081025-R10			2.5	8	31	0.10	8	18		
			081030-R00			3.0	8	31	0.00	8	18		
			081030-R05			3.0	8	31	0.05	8	18		
			081030-R10			3.0	8	31	0.10	8	18		

Application	Picture	Designation		Coated PC9030 R	Coated PC9030 L	Dimensions (mm) b	w	L	r	h	T-MAX	Configuration	Feed direction
Grooving and back turning		SGBR/L	0604520-R00			2.0	8	22	0.00	6	4.5		
			0604520-R05			2.0	8	22	0.05	6	4.5		
			0604520-R10			2.0	8	22	0.10	6	4.5		
			0604525-R00			2.5	8	22	0.00	6	4.5		
			0604525-R05			2.5	8	22	0.05	6	4.5		
			0604525-R10			2.5	8	22	0.10	6	4.5		
			0605530-R00			3.0	8	24	0.00	6	5.5		
			0605530-R05			3.0	8	24	0.05	6	5.5		
			0605530-R10			3.0	8	24	0.10	6	5.5		
			0805525-R00			2.5	8	24	0.00	8	5.5		
			0805525-R05			2.5	8	24	0.05	8	5.5		
			0805525-R10			2.5	8	24	0.10	8	5.5		
			0806530-R00			3.0	8	26	0.00	8	6.5		
			0806530-R05			3.0	8	26	0.05	8	6.5		
			0806530-R10			3.0	8	26	0.10	8	6.5		

●: Stock item

Insert

Application	Picture	Designation	Coated PC9030 R	Coated PC9030 L	Dimensions (mm) b	w	L	r	h	T-MAX	Pitch	Configuration	Feed direction
Threading		STR/L 06073215			3.2	8	25	0.06	6	7.0	0.5 ~1.5		
		06073230			3.2	8	25	0.19	6	7.0	1.5 ~3.0		
		08103215			3.2	8	31	0.06	8	10.5	0.5 ~1.5		
		08103230			3.2	8	31	0.19	8	10.5	1.5 ~3.0		

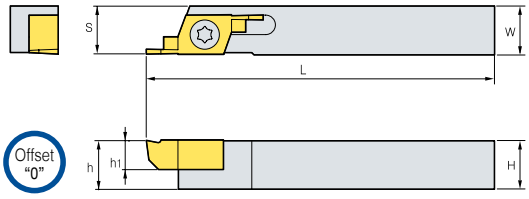
●: Stock item

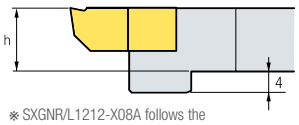
Available tool holders

Holders

SXGNR/L

SBR SGBR
SCR STR SGR





※ SXGNR/L1212-X08A follows the configuration above.

• R type insert

Designation		Stock R	Stock L	Dimensions (mm) H	W	L	S	h	h1	Insert	Screw	Wrench
SXGNR/L	1010-X06A	●		10	10	125	10	10	6	S□R/L 06	FTNA0408	TW15P
	1212-X06A	●		12	12	125	12	12	6			
	1616-X06A	●		16	16	125	16	16	6			
	2020-X06A	●		20	20	125	20	20	6			
	1212-X08A	●		12	12	130	12	12	8	S□R/L 08	FTNA0411	TW15P
	1616-X08A			16	16	130	16	16	8			
	2020-X08A			20	20	130	20	20	8			

●: Stock item

TBGF

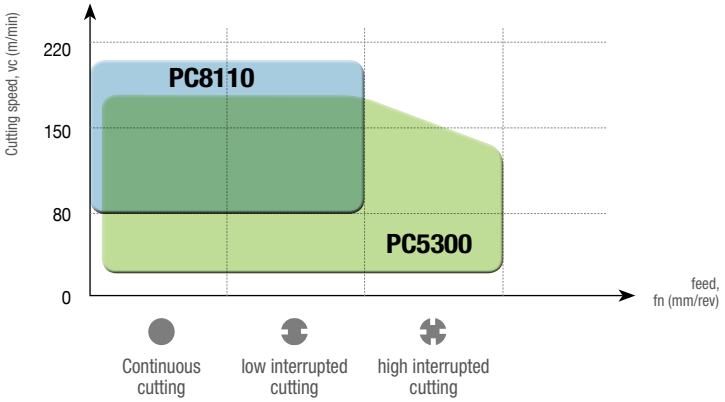
Insert code system

TBGF	3	150	R/L	-	010
Triangle blade grooving fine	Inscribed circle 3: 9.525 mm	Width of cutting edge 0.33~2.50 mm	Hand **R**: Right **L**: Left		Nose R 0.05~0.10 mm

Holder code system

TBGFH	3	16	R/L
Triangle blade grooving fine holder	Inscribed circle 3: 9.525 mm	Shank size 10~16 mm	Hand **R**: Right **L**: Left

Application range

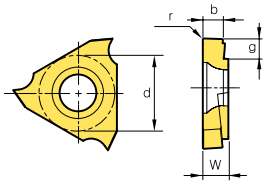
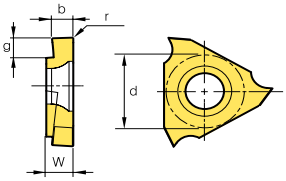


Grades and recommended cutting conditions

Workpiece		Grade	Recommended cutting speed, vc (m/min)
			30 60 90 120 150 180 210 240 270 300
P	Carbon steel	PC8110	90 – 200
		PC5300	80 – 180
	Alloy steel	PC8110	90 – 190
		PC5300	80 – 160
M	Stainless steel	PC8110	90 – 180
		PC5300	70 – 150
K	Cast iron	PC8110	80 – 170
		PC5300	70 – 140

Applicable inserts

Insert

Type	Picture	Designation	Coated		Dimensions (mm)					Configuration
			PC5300	PC8110	b	g (T-MAX)	r	w	d	
Grooving	 (Right-handed)	TBGF 3033R-005			0.33	0.8	0.05	3.18	9.525	
		3050R-005	●	●	0.50	1.2	0.05	3.18	9.525	
		3075R-010	●	●	0.75	2.0	0.10	3.18	9.525	
		3080R-010			0.80	2.0	0.10	3.18	9.525	
		3100R-010	●	●	1.00	2.0	0.10	3.18	9.525	
		3120R-010	●	●	1.20	2.0	0.10	3.18	9.525	
		3125R-010	●	●	1.25	2.0	0.10	3.18	9.525	
		3140R-010	●	●	1.40	2.0	0.10	3.18	9.525	
		3145R-010	●	●	1.45	2.0	0.10	3.18	9.525	
		3150R-010	●	●	1.50	2.0	0.10	3.18	9.525	
		3175R-010	●	●	1.75	2.0	0.10	3.18	9.525	
		3200R-010	●	●	2.00	2.5	0.10	3.18	9.525	
		3250R-010	●	●	2.50	2.5	0.10	3.18	9.525	
	 (Left-handed)	TBGF 3033L-005			0.33	0.8	0.05	3.18	9.525	
		3050L-005			0.50	1.2	0.05	3.18	9.525	
		3075L-010			0.75	2.0	0.10	3.18	9.525	
		3080L-010			0.80	2.0	0.10	3.18	9.525	
		3100L-010			1.00	2.0	0.10	3.18	9.525	
		3120L-010			1.20	2.0	0.10	3.18	9.525	
		3125L-010			1.25	2.0	0.10	3.18	9.525	
		3140L-010			1.40	2.0	0.10	3.18	9.525	
		3145L-010			1.45	2.0	0.10	3.18	9.525	
		3150L-010			1.50	2.0	0.10	3.18	9.525	
		3175L-010			1.75	2.0	0.10	3.18	9.525	
		3200L-010			2.00	2.5	0.10	3.18	9.525	
		3250L-010			2.50	2.5	0.10	3.18	9.525	

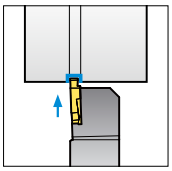
●: Stock item

Available tool holders

Holders

TBGFH

TBGF



• R type insert

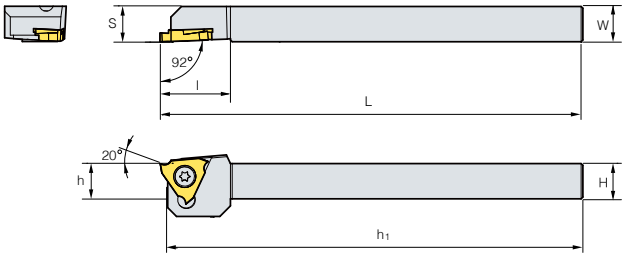


Fig. 1

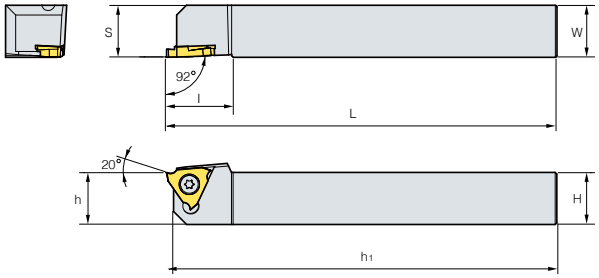


Fig. 2

Designation		Stock		Dimensions (mm)						Insert	Screw	Wrench	Fig.
		R	L	H=h	W	L	l	h_1	S				
TBGFH	310R/L	●	●	10	10	120	20	5	10	TBGF3□□□R/L-□	FTNA0408	TW15P	1
	312R/L	●	●	12	12	120	20	3	12				
	316R/L	●	●	16	16	120	20	-	16	TBGF3□□□R/L-□	FTNA0408	TW15P	2

●: Stock item

KGT/MGT

- Grooving insert for automatic lathes
- Exclusive holder for automatic lathes
- Economic double sided insert
- Strong clamping system secures stable machining and precision.
- A wide selection of chip breakers according to various cutting conditions such as low/high feed, continuous/interrupted machining, etc.

Features

Chip breaker line-up - KGT Insert

KGMN - L

- Sharp cutting edge
- For low feed machining
- For small diameter parts

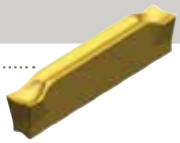
KGMN - R

- Reinforced cutting edge
- For high feed machining
- For interrupted cutting

KGMN - T

- Sharp cutting edge
- Stronger chip control
- For turning and grooving

KGMR/L - LP



- Sharp cutting edge
- For low feed machining
- Small diameter component
- Right/Left handed
- Low carbon steel

KGMR/L - RP

- Strong cutting edge
- For high feed machining
- For iInterrupted cutting
- Right/Left handed

KRMN - C

- Improved chip control
- Copying
- Relief

Chip breaker line-up - MGT insert

MGMN - M

- Easier chip control by narrowing chip width with the use of chip breaker on rake surface center
- Smooth chip flow by small dots in external machining
- Available for both external machining and grooving

MGMN - G

- Specially designed chip breaker allows narrower chips to promote better chip flow with the use of center dots
- Exclusive chip breaker for grooving

Insert code system (KGT)

KG	M	N	300	04	T
System code **KGT system** (KORLOY Grooving)	**Tolerance** **M**: Pressed class **G**: Ground class	**Hand** **N**: Neutral **R**: Right **L**: Light **I**: Internal	**Width of cutting edge** 2.0~8.0 mm	**Corner nose radius of insert** 0.2 mm 0.3 mm 0.4 mm	**Chip breaker** C/L/R/T LP/RP

Insert code system (MGT)

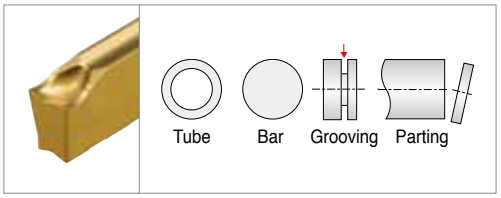
MG	M	N	300	04	T
System code **MGT system** (Multi Grooving)	**Tolerance** **M**: Pressed class **G**: Ground class	**Hand** **N**: Neutral **R**: Right **L**: Light **I**: Internal	**Width of cutting edge** 2.0~8.0 mm	**Corner nose radius of insert** 0.2 mm 0.3 mm 0.4 mm	**Chip breaker** M/G L/R/T

Holder code system (KGT/MGT)

KG	E	H	R	1212	3	D25A
System code **KGT** **MGT**	**Application** **E**: External machining **I**: Internal machining	**Holder type** **H**: Horizontal type **V**: Vertical type **U**: Undercut type	**Hand** **R**: Right **L**: Light	**Shank size** Height 12 mm, width 12 mm (For internal machining: Min. machining diameter)	**Cutting width** 2.0~3.0 mm	**Max. cutting diameter** Ø15~32 mm **A**: Compact type **B**: high rigidity type

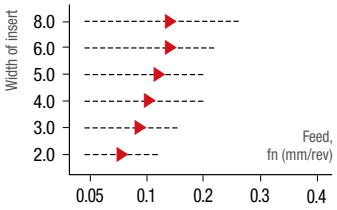
C/B guide

L For Light Grooving

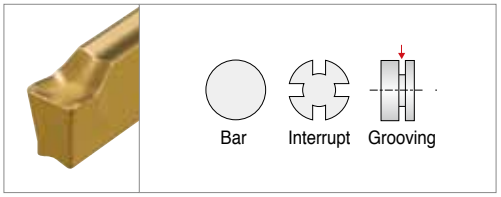


- Sharp cutting edge
- Low feed machining
- Small diameter component

- Low carbon steel
- Alloy steel
- Stainless

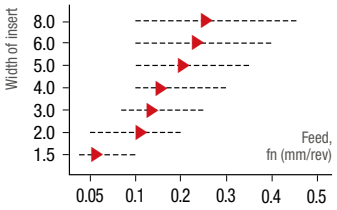


R For Rough Grooving

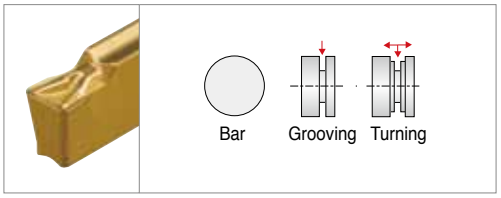


- Strong cutting edge
- High feed machining
- Interrupted cutting
- Carbon steel

- Alloy steel
- Stainless
- Cast iron

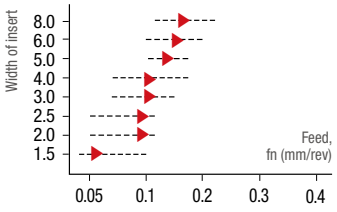


T For Turning and Multi Grooving

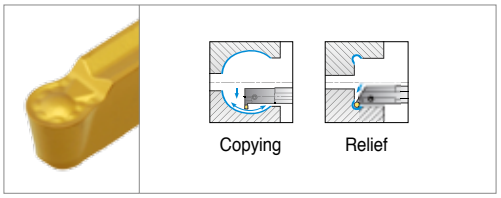


- Sharp cutting edge
- Improved chip control
- Turning & grooving machining

- Carbon steel
- Alloy steel
- Stainless
- Cast iron

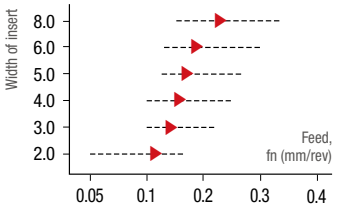


C For Copying and Relief

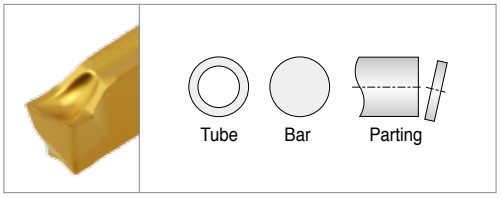


- Improved chip control
- Copying
- Relief
- Carbon steel

- Alloy steel
- Stainless
- Cast iron

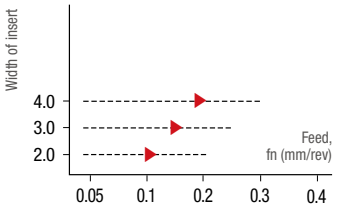


LP For Light Parting

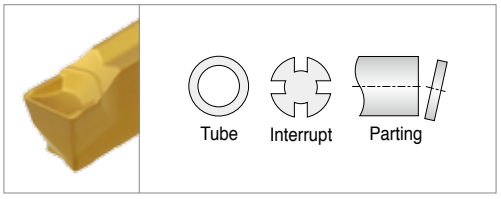


- Sharp cutting edge
- Low feed machining
- Small diameter component
- Right/Left handed

- Low carbon steel
- Carbon steel
- Alloy steel
- Stainless

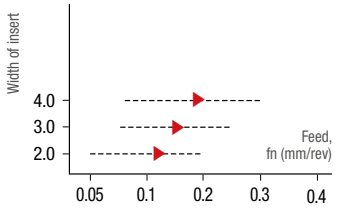


RP For Rought Parting



- Strong cutting edge
- High feed machining
- Interrupted cutting
- Right/Left handed

- Carbon steel
- Alloy steel
- Cast iron

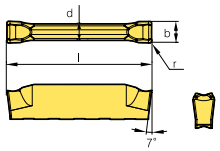
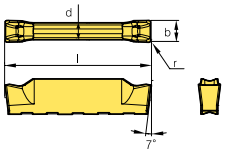
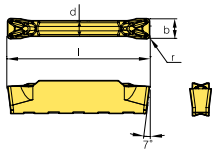
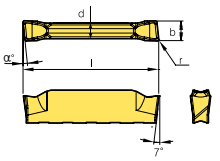
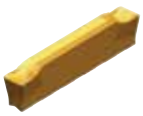
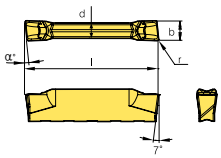
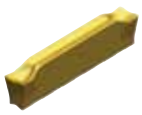
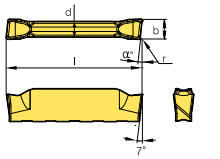
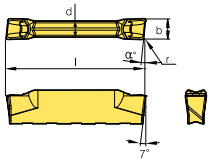
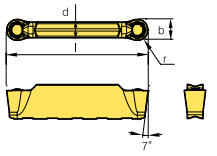


Grades and recommended cutting conditions

Workpiece		Grade	Order of recommended grade	Recommended cutting speed, vc (m/min) 50 100 150 200
P	Carbon steel	PC3035	1	80 220
		PC5300	2	80 200
		NC3225	3	130 220
		NC5330	4	120 200
	Alloy steel	PC3035	1	80 180
		PC5300	2	80 160
		NC3225	3	130 200
		NC5330	4	90 180
M	Stainless steel	PC5300	1	70 120
		PC9030	2	70 115
		NC5330	3	75 125
K	Cast iron	PC5300	1	55 90
		NC5330	2	95 160
S	HRSA	PC5300	1	20 35

Applicable inserts (KGT)

Insert

Type	C/B Picture	Designation		Coated NC3225	NC5330	PC3035	PC5300	PC9030	Dimensions (mm) b	r	ℓ	d	α°	Configuration
Grooving	**KGMN-L** 	KGMN	200-02-L	●	●	●	●	●	2	0.2	20	1.7	-	
			300-02-L	●	●	●	●	●	3	0.2	20	2.3	-	
Grooving • Parting off	**KGMN-R** 	KGMN	200-02-R	●	●	●	●	●	2	0.2	20	1.7	-	
			300-02-R	●	●	●	●	●	3	0.2	20	2.3	-	
Grooving • turning	**KGMN-T** 	KGMN	200-02-T	●	●	●	●	●	2	0.2	20	1.7	-	
			300-02-T	●	●	●	●	●	3	0.2	20	2.3	-	
			300-04-T	●	●	●	●	●	3	0.4	20	2.3	-	
Parting off (Right handed)	**KGMR-LP** 	KGMR	200-6D-LP		●		●		2	0.2	20	1.7	6	
			200-15D-LP		●		●		2	0.2	20	1.7	15	
			300-6D-LP		●		●		3	0.2	20	2.3	6	
			300-15D-LP		●		●		3	0.2	20	2.3	15	
Parting off (Right handed)	**KGMR-RP** 	KGMR	200-6D-RP		●		●		2	0.2	20	1.7	6	
			200-15D-RP		●		●		2	0.2	20	1.7	15	
			300-6D-RP		●		●		3	0.2	20	2.3	6	
			300-15D-RP		●		●		3	0.2	20	2.3	15	
Parting off (Left handed)	**KGML-LP** 	KGML	200-6D-LP						2	0.2	20	1.7	6	
			200-15D-LP						2	0.2	20	1.7	15	
			300-6D-LP						3	0.2	20	2.3	6	
			300-15D-LP						3	0.2	20	2.3	15	
Parting off (Left handed)	**KGML-RP** 	KGML	200-6D-RP						2	0.2	20	1.7	6	
			200-15D-RP						2	0.2	20	1.7	15	
			300-6D-RP						3	0.2	20	2.3	6	
			300-15D-RP						3	0.2	20	2.3	15	
Grooving • Turning	**KRMN-C** 	KRMN	200-C	●	●	●	●		2	1.0	20	1.7	-	
			300-C	●	●	●	●		3	1.5	20	2.2	-	

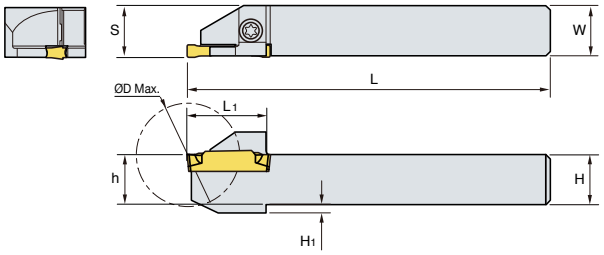
●: Stock item

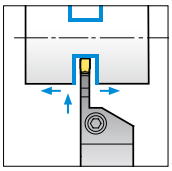
Available tool holders (KGT)

Holders

KGEHR/L-D00A (Compact type)

KGGN KGMN KGMR/L
KRGN KRMN





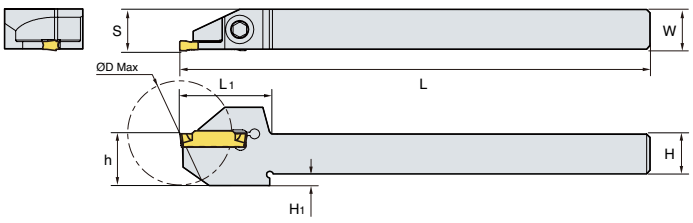
• R type insert

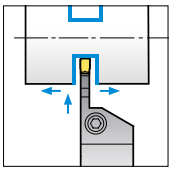
Designation		Stock		Dimensions (mm)							Insert	Screw	Wrench
		R	L	H=h	W	L_1	L	S	H_1	ØD			
KGEHR/L	1010-2-D20A	●	●	10	10	19	125	10.2	2	20	KGMN200-□-□ KGMR/L200-□-□ KRMN200-C	ETNA0412	TW15L
	1212-2-D25A	●	●	12	12	19	125	12.2	2	25			
	1414-2-D25A	●	●	14	14	19	125	14.2	-	25			
	1616-2-D32A	●	●	16	16	24	125	16.2	-	32			
	1212-3-D25A	●	●	12	12	19	130	12.4	2	25	KGMN300-□-□ KGMR/L300-□-□ KRMN300-C		
	1616-3-D32A	●	●	16	16	24	130	16.4	-	32			

●: Stock item

KGEHR/L-D00B (High rigidity type)

KGGN KGMN KGMR/L
KRGN KRMN





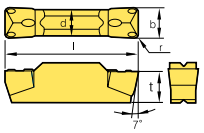
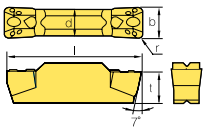
• R type insert

Designation		Stock		Dimensions (mm)							Insert	Screw	Wrench
		R	L	H=h	W	L_1	L	S	H_1	ØD			
KGEHR/L	1010-2-D30B	●	●	10	10	29.6	140	10.2	6.6	30	KGMN200-□-□ KGMR/L200-□-□ KRMN200-C	MHA0512	HW40L
	1212-2-D25B	●	●	12	12	27.1	140	12.2	3.5	25			
	1212-2-D30B	●	●	12	12	29.6	140	12.2	3.5	30			
	1616-2-D32B	●	●	16	16	30.6	140	16.2	-	32			
	1212-3-D25B	●	●	12	12	27.1	140	12.4	3.5	25	KGMN300-□-□ KGMR/L300-□-□ KRMN300-C		
	1212-3-D32B	●	●	12	12	30.6	140	12.4	3.5	32			
	1616-3-D32B	●	●	16	16	30.6	140	16.4	-	32			

●: Stock item

Applicable inserts (MGT)

Insert

Type	C/B Picture	Designation		Coated NC3225	Coated NC3030	Coated PC5300	Coated PC9030	Dimensions (mm) b	r	l	d	t	Configuration
Grooving	**MGMN-G** 	MGMN	150-G	●	●	●	●	1.5	0.15	16.0	1.2	3.50	
			200-G	●	●		●	2.0	0.20	16.0	1.6	3.50	
			250-G	●	●	●	●	2.5	0.20	18.5	2.0	3.85	
Grooving · turning	**MGMN-M** 	MGMN	200-M	●	●	●	●	2.0	0.20	16.0	1.6	3.50	
			250-M	●	●	●	●	2.5	0.20	18.5	2.0	3.85	

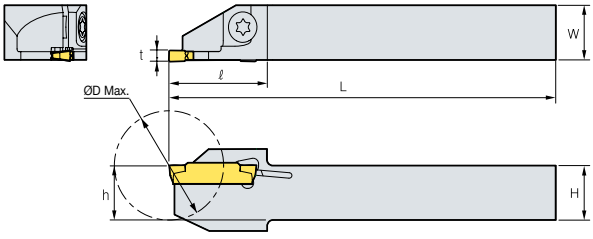
●: Stock item

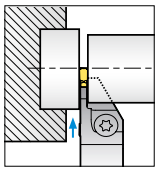
Available tool holders (MGT)

Holders

MGEHR/L

MGGN MGMN





• R type insert

Designation		Stock R	Stock L	Dimensions (mm) H=h	W	L	ℓ	t	ØD	Insert	Screw	Wrench
MGEHR/L	1010-X15A	●		10	10	125	18.0	1.5	20	MGMN150-G	ETNA0412	TW15L
	1212-X15A	●		12	12	125	19.5	1.5	25			
	1010-X20A	●		10	10	125	18.0	2.0	20	MGMN200-M MGMN200-G	ETNA0412	TW15L
	1212-X20A	●		12	12	125	19.5	2.0	25			
	1616-X20A			16	16	125	25.0	2.0	32			
	1010-X25A	●		10	10	125	20.0	2.5	20	MGMN250-M MGMN250-G	ETNA0412	TW15L
	1212-X25A	●		12	12	125	20.0	2.5	25			
	1616-X25A			16	16	125	25.0	2.5	32			

●: Stock item

MSB Tools

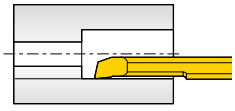
- High hardness grade guarantees longer tool life
- Various kinds of machining (Fitting, Valve, Medical parts, Automobile component, and Semiconductor equipment) are available
- Various types of MSB tools (Boring, Grooving, Threading)

Grades

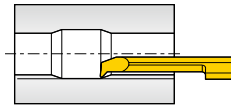
Grades	Coating	Application and features
Z12M	Carbide	• Ultra fine grain substrate ensures superior wear resistance and toughness • Application: Cast iron, Aluminum alloy and non-ferrous metals machining
PC30M	TiN coating	• TiN coated ultra fine grain substrate ensures long tool life • Application: Stainless steel, heat resisting alloy and hard-to-cut material machining

Types

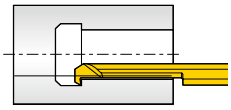
Boring



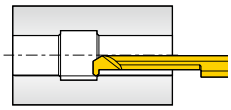
Boring
Min. dia. of machining: Ø3.2



Copying
Min. dia. of machining: Ø4.2

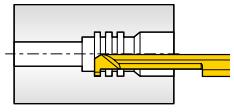


Back boring
Min. dia. of machining: Ø3.2

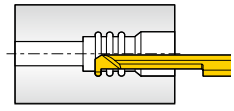


Chamfering
Min. dia. of machining: Ø4.2

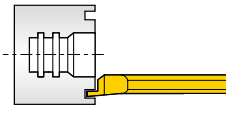
Grooving



Square grooving
Min. dia. of machining: Ø3.2

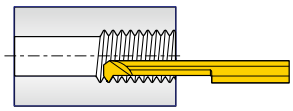


Round grooving
Min. dia. of machining: Ø3.2



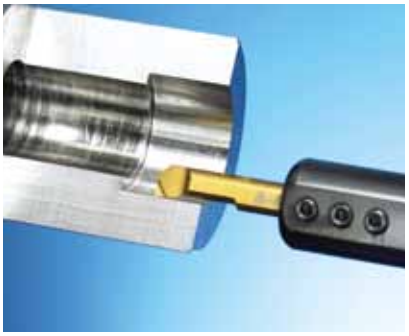
Face grooving
Min. dia. of machining: Ø6.0

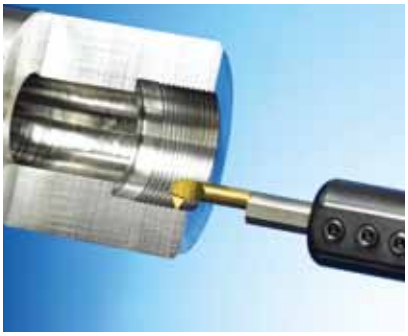
Threading



Threading
Min. dia. of machining: Ø3.3

Machining types





Code system

M G R 06 06 1.5/◇60 - 1

Type
M: Micro

Application
B: Boring
BC: Copying
BB: Back boring
BF: Chamfering
G: Square grooning
GR: Round grooving
GF: Face grooving
T: Threading

Hand
R: Right
L: Left

Shank dia.
03: 3.0
04: 4.0
06: 6.0
08: 8.0
10: 10.0

Max. aspect ratio
10: 10.0
15: 15.0
20: 20.0
25: 25.0
30: 30.0

Machining size

Boring		No code	
Copying		Width of groove	
Threading		60°	55°
		Pitch	tpi
◇	F	0.25~1.0	72~24
	A	0.5~1.5	48~16
	AG	0.5~3.0	48~8

Cutting edge
1: Single ended
None: Double ended

MSB tool code system

Types		Application		Designation
01	Boring	Boring		MBR/LA○○○○☆☆☆
02		Copying		MBCR/LA○○○○☆☆☆
03		Back boring		MBBR/LA○○○○☆☆☆
04		Chamfering		MBFR/LA○○○○☆☆☆
05	Grooving	Square grooning		MGR/LA○○○○☆☆☆-□□
06		Round grooving		MGRR/LA○○○○☆☆☆-□□
07		Face grooving		MGFR/LA○○○○☆☆☆-□□
08	Threading	Partial	60°	MTR/LA○○○○☆☆☆-◇60
			55°	MTR/LA○○○○☆☆☆-◇55

Marks					
	○○○○	Shank dia.			
	☆☆☆	Max. depth of boring			
	□□	Width of groove			
	◇	Pitch/tpi	F	0.25~1.0	72~24
			A	0.5~1.5	48~16
			AG	0.5~3.0	48~8

Recommended cutting conditions

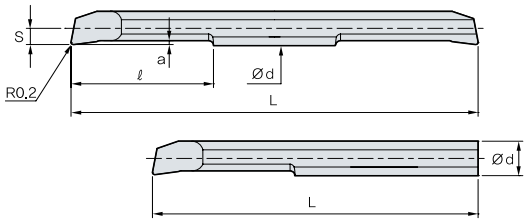
※ For using PC30M

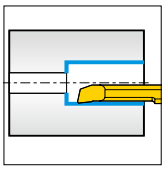
Workpiece		Recommended cutting speed, vc (m/min)
		30 60 90 120 150 180 210 240 270 300 330
P	Steel	90 – 190
M	Stainless steel	30 – 90
K	Cast iron	40 – 70
N	Non-ferrous metal	80 – 300
S	Heat resistant alloy, Titanium alloy	10 – 40
H	Hardened steel	25 – 45

Applicable MSB tools

MSB tools

Boring (MBR)



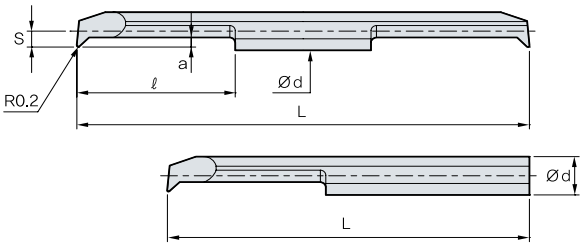


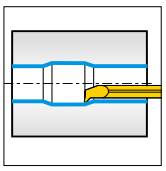
(mm)

Twin edge				Single edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge	
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M				L		a	S
											Double ended	Single ended		
MBR	0310	●		MBR	0310-1			3.0	3.2	10	40	35	0.5	1.4
	0315	●			0315-1					15	50	45		
	0410	●			0410-1			4.0	4.2	10	40	35	0.6	1.9
	0415	●			0415-1					15	50	45		
	0420	●			0420-1					20	60	50		
	0610	●			0610-1			6.0	6.2	10	45	40	0.75	2.9
	0615	●			0615-1					15	55	45		
	0620	●			0620-1					20	65	50		
	0810	●			0810-1			8.0	8.2	10	50	45	0.8	3.9
	0820	●			0820-1					20	70	60		
	0830	●			0830-1					30	80	70		
	1015	●			1015-1			10.0	10.2	15	60	60	1.0	4.9
	1025	●			1025-1					25	80	70		
	1035	●			1035-1					35	100	80		

●: Stock item

Boring (MBCR)





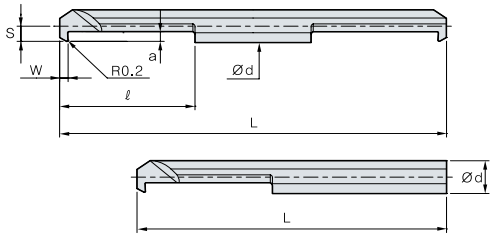
(mm)

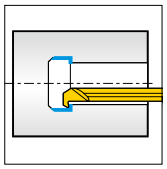
Twin edge				Single edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge	
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M				L		a	S
											Double ended	Single ended		
MBCR	0410	●		MBCR	0410-1			4.0	4.2	10	40	35	1.0	1.9
	0415	●			0415-1					15	50	45		
	0420	●			0420-1					20	60	50		
	0610	●			0610-1			6.0	6.2	10	45	40	1.3	2.9
	0615	●			0615-1					15	55	45		
	0620	●			0620-1					20	60	50		

●: Stock item

MSB tools

Back boring (MBBR)



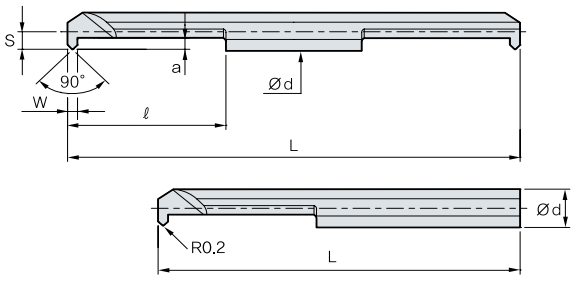


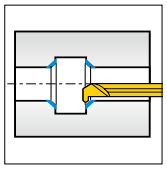
(mm)

Twin edge				Single edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M				L Double ended	L Single ended	W	a	S
MBBR	0310	●		MBBR	0310-1			3.0	3.2	10	40	35	1.5	0.8	1.4
	0315	●			0315-1					15	50	45			
	0410	●			0410-1			4.0	4.2	10	40	35	2.0	1.3	1.9
	0415	●			0415-1					15	50	45			
	0420	●			0420-1					20	60	50			
	0610	●			0610-1			6.0	6.2	10	45	40	2.0	1.9	2.9
	0615	●			0615-1					15	55	45			
	0620	●			0620-1					20	65	50			

●: Stock item

Chamfering (MBFR)





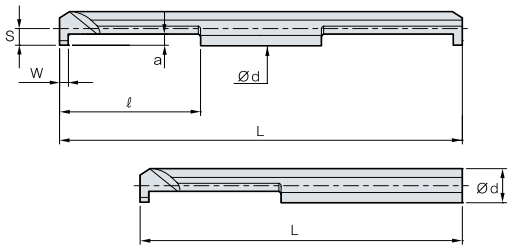
(mm)

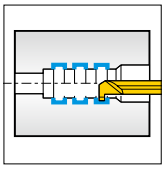
Twin edge				Single edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M				L Double ended	L Single ended	W	a	S
MBFR	0410	●		MBFR	0410-1			4.0	4.2	10	40	35	0.8	1.0	1.9
	0415	●			0415-1					15	50	45			
	0420	●			0420-1					20	60	50			
	0610	●			0610-1			6.0	6.2	10	45	40	1.4	1.2	2.9
	0615	●			0615-1					15	55	45			
	0620	●			0620-1					20	60	50			

●: Stock item

MSB tools

Square grooving (MGR)





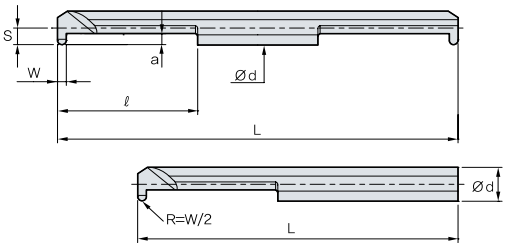
(mm)

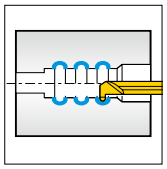
Twin edge				Single edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M				L Double ended	L Single ended	W	a	S
MGR	0310-1.0	●		MGR	0310-1.0-1			3.0	3.2	10	40	35	1.0	0.8	1.4
	0315-1.0	●			0315-1.0-1					15	50	45			
	0310-1.5	●			0310-1.5-1					10	40	35	1.5		
	0315-1.5	●			0315-1.5-1					15	50	45			
	0410-1.0	●			0410-1.0-1			4.0	4.2	10	40	35	1.0	1.4	1.9
	0420-1.0				0420-1.0-1					20	60	50			
	0410-1.5				0410-1.5-1					10	40	35	1.5		
	0420-1.5				0420-2.0-1					20	60	50			
	0410-2.0	●			0410-2.0-1					10	40	35	2.0		
	0420-2.0				0420-2.0-1					20	60	50			
	0610-1.0	●			0610-1.0-1			6.0	6.2	10	45	40	1.0	1.8	2.9
	0620-1.0	●			0620-1.0-1					20	65	50			
	0610-1.5	●			0610-1.5-1					10	45	40	1.5		
	0620-1.5	●			0620-1.5-1					20	65	50			
	0610-2.0	●			0610-2.0-1					10	45	40	2.0		
	0620-2.0	●			0620-2.0-1					20	65	50			
	0610-2.5	●			0610-2.5-1					10	45	40	2.5	2.0	
	0620-2.5	●			0620-2.5-1					20	65	50			
	0820-1.5	●			0820-1.5-1			8.0	8.2	20	70	60	1.5	0.8	3.9
	0820-2.0	●			0820-2.0-1								2.0		
	0820-2.5	●			0820-2.5-1								2.5	1.3	
	0820-3.0	●			0820-3.0-1								3.0		
	1025-1.5	●			1025-1.5-1			10.0	10.2	25	80	70	1.5	0.8	4.9
	1025-2.0	●			1025-2.0-1								2.0		
	1025-2.5	●			1025-2.5-1								2.5	1.3	
	1025-3.0	●			1025-3.0-1								3.0		

●: Stock item

MSB tools

Round grooving (MGRR)





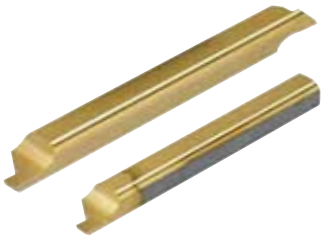
(mm)

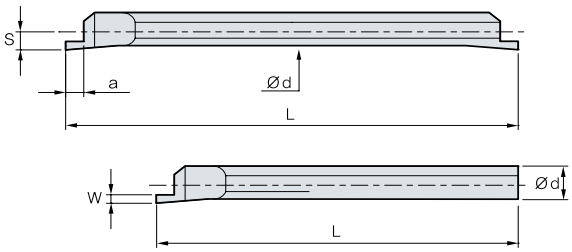
Twin edge				Single edge				Ød	Min.dia. of machining	ℓ	Overall length		Detailed cutting edge		
Designation		Coated	Uncoated	Designation		Coated	Uncoated				L		W	a	S
		PC30M	Z12M			PC30M	Z12M				Double ended	Single ended			
MGRR	0310-0.8	●		MGRR	0310-0.8-1			3.0	3.2	10	40	35	0.8	0.8	1.4
	0315-0.8	●			0315-0.8-1					15	50	45			
	0410-1.0	●			0410-1.0-1			4.0	4.2	10	40	35	1.0	1.0	1.9
	0420-1.0	●			0420-1.0-1					20	60	50			
	0610-1.0	●			0610-1.0-1			6.0	6.2	10	45	40	1.0	2.0	2.9
	0620-1.0	●			0620-1.0-1					20	65	50			
	0610-1.5	●			0610-1.5-1					10	45	40	1.5		
	0620-1.5	●			0620-1.5-1					20	65	50			
	0610-2.0	●			0610-2.0-1					10	45	40	2.0		
	0620-2.0	●			0620-2.0-1					20	65	50			
	0820-1.0	●			0820-1.0-1			8.0	8.2	20	70	60	1.0	2.3	3.9
	0820-1.5	●			0820-1.5-1								1.5		
	0820-2.0				0820-2.0-1								2.0		
	1025-1.0	●			1025-1.0-1			10.0	10.2	25	80	70	1.0	2.8	4.9
	1025-1.5	●			1025-1.5-1								1.5		
	1025-2.0	●			1025-2.0-1								2.0		

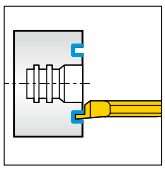
●: Stock item

MSB tools

Face grooving (MGFR)





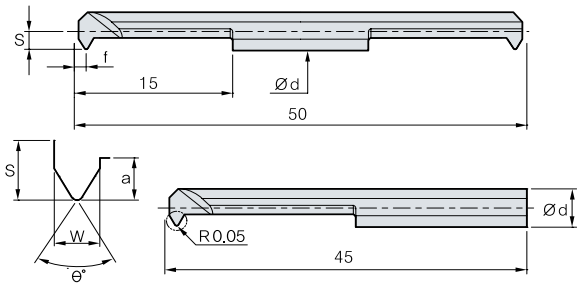


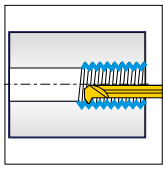
(mm)

Twin edge				Single edge				Ød	Min.dia. of machining	Overall length		Detailed cutting edge		
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M			L Double ended	L Single ended	W	a	S
MGFR	0400-1.0	●		MGFR	0400-1.0-1			4.0	6.0	50	45	1.0	1.5	1.8
	0400-1.5	●			0400-1.5-1							1.5	2.0	
	0600-1.0	●			0600-1.0-1			6.0	8.5	50	45	1.0	1.5	2.9
	0600-1.5	●			0600-1.5-1							1.5	2.0	
	0600-2.0	●			0600-2.0-1							2.0	2.5	
	0800-1.0	●			0800-1.0-1			8.0	10.4	70	60	1.0	1.5	3.9
	0800-1.5	●			0800-1.5-1							1.5	2.0	
	0800-2.0	●			0800-2.0-1							2.0	2.5	
	0800-2.5	●			0800-2.5-1							2.5	3.0	
	0800-3.0	●			0800-3.0-1							3.0	3.5	
					0800-3.5-1							3.5	4.0	
	1000-2.0	●			1000-2.0-1			10.0	12.4	80	70	2.0	2.5	4.9
	1000-2.5	●			1000-2.5-1							2.5	3.0	
	1000-3.0	●			1000-3.0-1							3.0	3.5	
	1000-3.5	●			1000-3.5-1							3.5	4.0	
	1000-4.0	●			1000-4.0-1							4.0	4.5	
	1000-4.5	●			1000-4.5-1							4.5	5.0	

●: Stock item

Threading (MTR)





(mm)

Twin edge				Single edge				Ød	Min.dia. of machining	Threading			Detailed cutting edge		
Designation		Coated PC30M	Uncoated Z12M	Designation		Coated PC30M	Uncoated Z12M			W	Pitch (mm/tpi)	θ°	S	a	f
MTR	0315-F60	●		MTR	0315-F60-1			3.0	3.3	1.2	0.5~1.0 (mm)	60°	1.45	1.2	0.6
	0415-F60	●			0415-F60-1			4.0	4.3				1.95		
	0615-A60	●			0615-A60-1			6.0	6.2	2.0	0.5~1.5 (mm)		2.90	2.2	1.0
	0315-F55	●			0315-F55-1			3.0	3.3	1.2	48~24 (tpi)	55°	1.45	1.2	0.6
	0415-F55	●			0415-F55-1			4.0	4.3				1.95		
	0615-A55	●			0615-A55-1			6.0	6.2	2.0	28~16 (tpi)		2.90	2.2	1.0

●: Stock item

Applicable sleeve

Sleeve

Sleeve (SL)

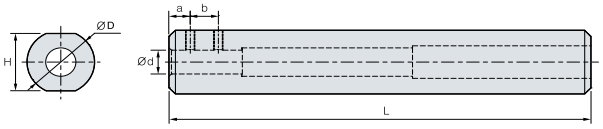


Fig.1

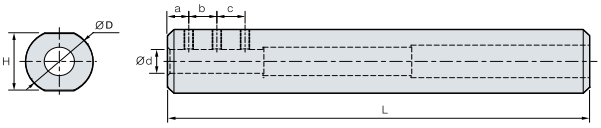


Fig.2

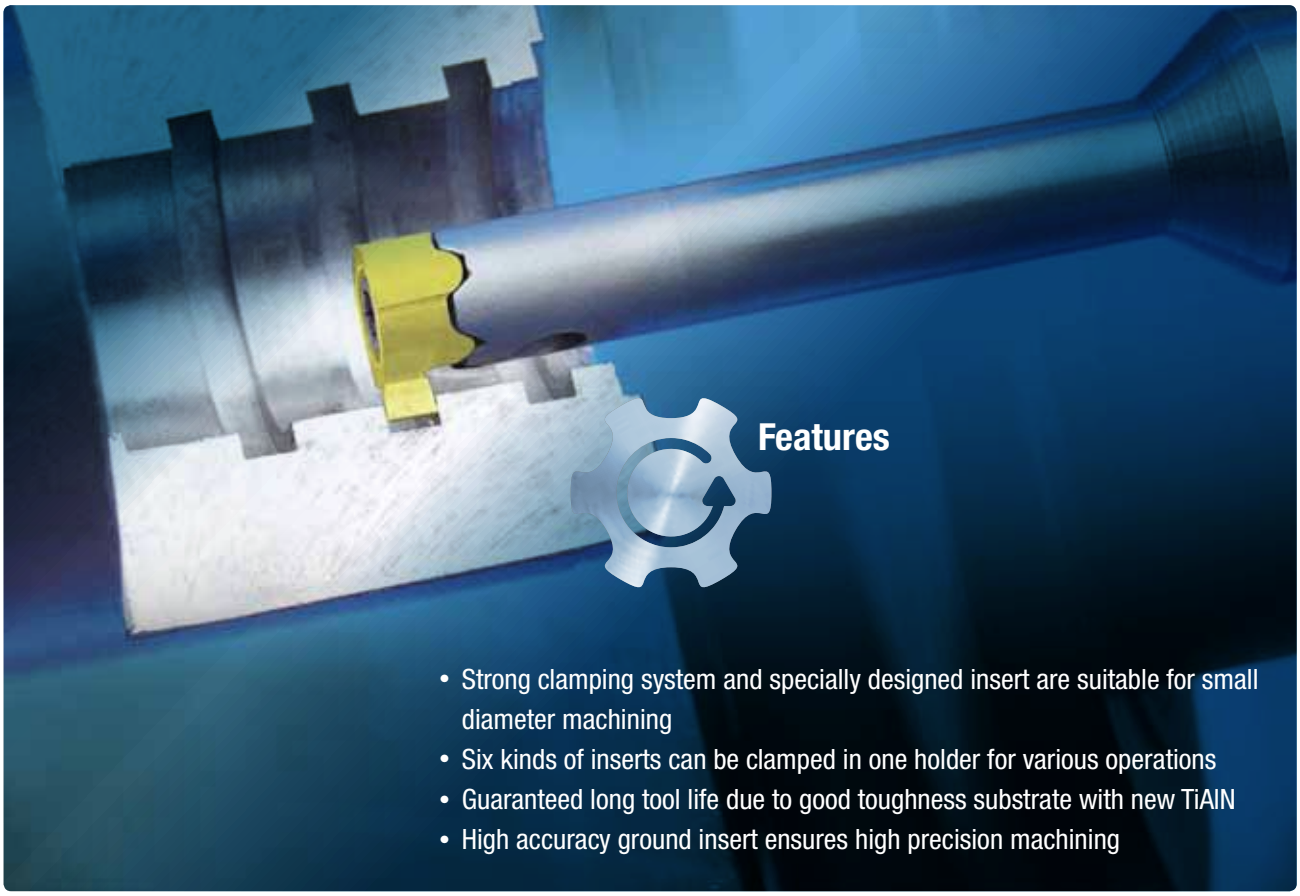
(mm)

Designation		Stock	Dimensions (mm)							Screw	Wrench	Fig.
			Ød	a	B	c	ØD	H	L			
SL	1603	●	3	5	-	-	16	14	100	M3	HW15L	1
	1604	●	4	5	6	-	16	14	100	M4	HW20L	
	1605	●	5	5	8	-	16	14	100	M4	HW20L	
	1606	●	6	5	6	6	16	14	100	M4	HW20L	2
	1607	●	7	5	6	8	16	14	100	M4	HW20L	
	2008	●	8	5	10	10	20	18	100	M4	HW20L	
	2010	●	10	5	10	10	20	18	100	M5	HW20L	

●: Stock item

Fine Tools

(NFTG)

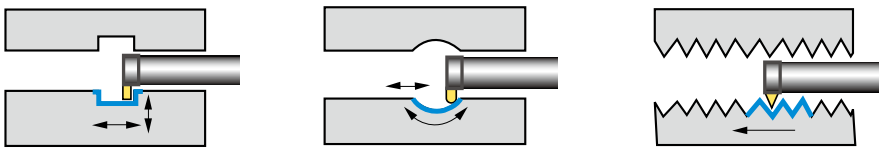


Features

- Strong clamping system and specially designed insert are suitable for small diameter machining
- Six kinds of inserts can be clamped in one holder for various operations
- Guaranteed long tool life due to good toughness substrate with new TiAlN
- High accuracy ground insert ensures high precision machining

Application range

- Internal grooving, Profiling, Threading and boring at Ø8 mm~Ø16 mm

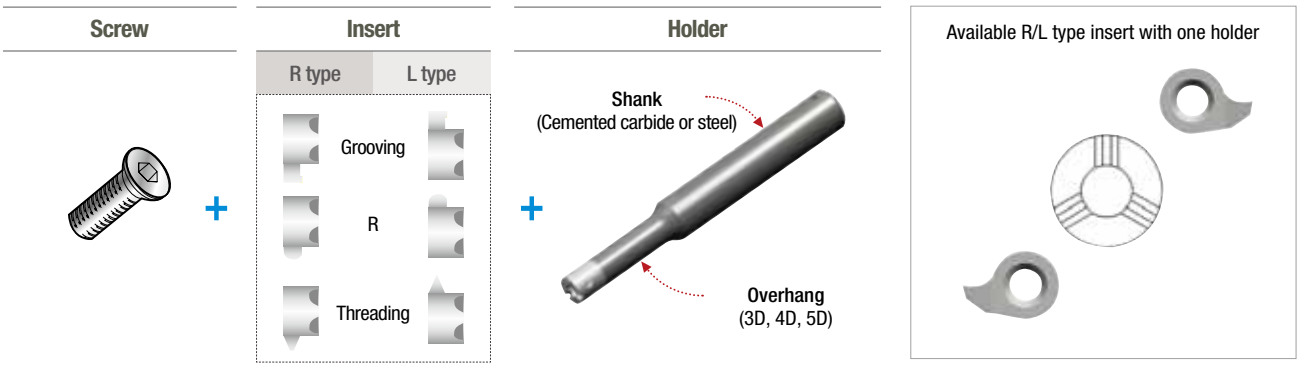


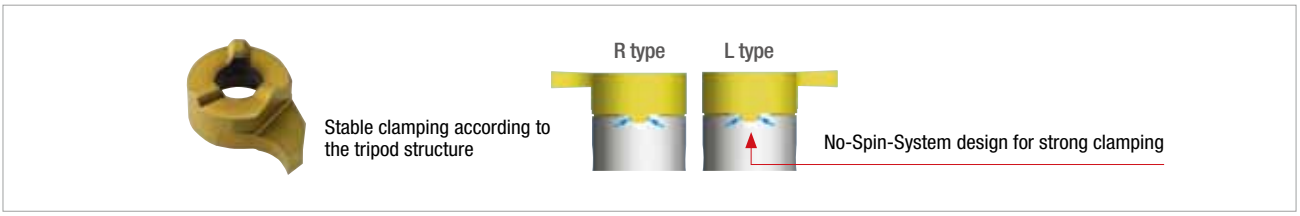
(Grooving, Turning) (Forming) (Threading)

Code system

NFTIH	08	3	12	-	S
	Minimum diameter	**Overhang** (ℓ/ØD)	**Shank dia.**		**Shank type** **S**: Steel, **C**: Carbide

Clamping system





Recommended cutting conditions

Workpiece			Recommended cutting speed			
			Min. machining dia. (ØDmin)			
			Ø8	Ø11	Ø14	Ø16
P	Carbon steel	**Cutting speed, vc** (m/min)	70~120	70~120	70~120	70~120
		Feed, fn (mm/rev)	0.01~0.04	0.01~0.05	0.02~0.05	0.02~0.06
	Alloy steel	**Cutting speed, vc** (m/min)	70~120	70~120	70~120	70~120
		Feed, fn (mm/rev)	0.01~0.02	0.01~0.04	0.02~0.04	0.02~0.05
K	Cast iron	**Cutting speed, vc** (m/min)	60~100	60~100	60~100	60~100
		Feed, fn (mm/rev)	0.01~0.05	0.01~0.05	0.02~0.05	0.02~0.05
N	Non-ferrous alloy	**Cutting speed, vc** (m/min)	100~180	100~180	100~180	100~180
		Feed, fn (mm/rev)	0.02~0.06	0.02~0.06	0.02~0.06	0.02~0.06

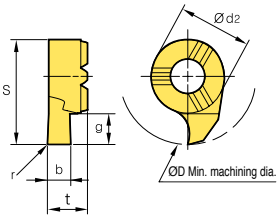
※ In case of chattering, reduce the cutting speed and feed

※ To find the optimal cutting conditions, advise to gradually increase from the lowest cutting condition of the above recommendation

※ In case of the unilateral grooving depth over 1 mm, work to the step feed rate

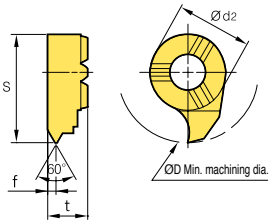
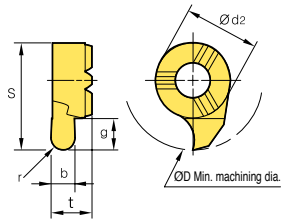
Applicable inserts

Insert

Type	Picture	Designation		Coated PC5300 R	Coated PC5300 L	Dimensions (mm) ØD	b	r	S	g	Ød2	t	Pitch	f	Configuration
Grooving		NFTG	08075R/L	●		8	0.75	-	7.75	1.3	5.9	3.85	-	-	
			08085R/L	●		8	0.85	-	7.75	1.3	5.9	3.85	-	-	
			08095R/L	●		8	0.95	-	7.75	1.3	5.9	3.85	-	-	
			08121R/L	●		8	1.21	-	7.75	1.3	5.9	3.85	-	-	
			08141R/L	●		8	1.41	-	7.75	1.3	5.9	3.85	-	-	
			08152R/L	●		8	1.52	-	7.75	1.3	5.9	3.85	-	-	
			08171R/L	●		8	1.71	-	7.75	1.3	5.9	3.85	-	-	
			08202R/L	●		8	2.02	-	7.75	1.3	5.9	3.85	-	-	
			11075R/L	●		11	0.75	-	10.7	1.8	8.0	4.90	-	-	
			11085R/L	●		11	0.85	-	10.7	1.8	8.0	4.90	-	-	
			11095R/L	●		11	0.95	-	10.7	1.8	8.0	4.90	-	-	
			11121R/L	●		11	1.21	-	10.7	2.6	8.0	4.90	-	-	
			11141R/L	●		11	1.41	-	10.7	2.6	8.0	4.90	-	-	
			11152 R/L	●		11	1.52	-	10.7	2.6	8.0	4.90	-	-	
			11171R/L	●		11	1.71	-	10.7	2.6	8.0	4.90	-	-	
			11202R/L	●		11	2.02	-	10.7	2.6	8.0	4.90	-	-	
			11202R/L-02	●		11	2.02	0.2	10.7	2.6	8.0	4.90	-	-	
			11252R/L	●		11	2.52	-	10.7	2.6	8.0	4.90	-	-	
			11302R/L	●		11	3.02	-	10.7	2.6	8.0	4.90	-	-	
			14075R/L	●		14	0.75	-	13.5	1.8	9.0	5.85	-	-	
			14085R/L	●		14	0.85	-	13.5	1.8	9.0	5.85	-	-	
			14095R/L	●		14	0.95	-	13.5	1.8	9.0	5.85	-	-	
			14121R/L	●		14	1.21	-	13.5	4.3	9.0	5.85	-	-	
			14141R/L	●		14	1.41	-	13.5	4.3	9.0	5.85	-	-	
			14152R/L	●		14	1.52	-	13.5	4.3	9.0	5.85	-	-	
			14171R/L	●		14	1.71	-	13.5	4.3	9.0	5.85	-	-	
			14202R/L	●		14	2.02	-	13.5	4.3	9.0	5.85	-	-	
			14252R/L	●		14	2.52	-	13.5	4.3	9.0	5.85	-	-	
			14302R/L	●		14	3.02	-	13.5	4.3	9.0	5.85	-	-	
			16075R/L	●		16	0.75	-	15.7	1.8	11.0	5.80	-	-	
			16085R/L	●		16	0.85		15.7	1.8	11.0	5.80	-	-	
			16095R/L	●		16	0.95	-	15.7	1.8	11.0	5.80	-	-	
			16121R/L	●		16	1.21	-	15.7	4.6	11.0	5.80	-	-	
			16141R/L	●		16	1.41	-	15.7	4.6	11.0	5.80	-	-	
			16171R/L	●		16	1.71	-	15.7	4.6	11.0	5.80	-	-	
			16202R/L	●		16	2.02	-	15.7	4.6	11.0	5.80	-	-	
			16252R/L	●		16	2.52	-	15.7	4.6	11.0	5.80	-	-	
			16302R/L	●		16	3.02	-	15.7	4.6	11.0	5.80	-	-	
			16352R/L	●		16	3.52	-	15.7	4.6	11.0	5.80	-	-	
			16402R/L	●		16	4.02	-	15.7	4.6	11.0	5.80	-	-	

●: Stock item

Insert

Type	Picture	Designation		Coated PC5300 R	Coated PC5300 L	Dimensions (mm) ØD	b	r	S	g	Ød2	t	Pitch	f	Configuration
Threading		NFTT	0805MR/L	●		8	-	-	7.75	-	6	3.85	0.5	1.0	
			0810MR/L	●		8	-	-	7.75	-	6	3.85	1.0	1.0	
			0815MR/L	●		8	-	-	7.75	-	6	3.85	1.5	1.2	
			1110MR/L	●		11	-	-	10.7	-	8	4.90	1.0	1.2	
			1115MR/L	●		11	-	-	10.7	-	8	4.90	1.5	1.2	
			1120MR/L	●		11	-	-	10.7	-	8	4.90	2.0	1.2	
			1125MR/L	●		11	-	-	10.7	-	8	4.90	2.5	1.2	
			1410MR/L	●		14	-	-	13.5	-	9	5.85	1.0	1.2	
			1415MR/L	●		14	-	-	13.5	-	9	5.85	1.5	1.2	
			1420MR/L	●		14	-	-	13.5	-	9	5.85	2.0	1.2	
			1425MR/L	●		14	-	-	13.5	-	9	5.85	2.5	1.2	
			1610MR/L	●		16	-	-	15.7	-	11	5.80	1.0	1.2	
			1615MR/L	●		16	-	-	15.7	-	11	5.80	1.5	1.2	
			1620MR/L	●		16	-	-	15.7	-	11	5.80	2.0	1.2	
			1625MR/L	●		16	-	-	15.7	-	11	5.80	2.5	1.2	
			1630MR/L	●		16	-	-	15.7	-	11	5.80	3.0	1.5	
			1635MR/L	●		16	-	-	15.7	-	11	5.80	3.5	1.6	
			1640MR/L	●		16	-	-	15.7	-	11	5.80	4.0	1.8	
Profiling		NFTF	08082R/L	●		8	0.82	0.41	7.75	1.3	5.9	3.85	-	-	
			08122R/L	●		8	1.22	0.61	7.75	1.3	5.9	3.85	-	-	
			08182R/L	●		8	1.82	0.91	7.75	1.3	5.9	3.85	-	-	
			11082R/L	●		11	0.82	0.41	10.7	2.6	8	4.90	-	-	
			11122R/L	●		11	1.22	0.61	10.7	2.6	8	4.90	-	-	
			11182R/L	●		11	1.82	0.91	10.7	2.6	8	4.90	-	-	
			11202R/L	●		11	2.02	1.01	10.7	2.6	8	4.90	-	-	
			11302R/L	●		11	3.02	1.51	10.7	2.6	8	4.90	-	-	
			14122R/L	●		14	1.22	0.61	13.5	4.3	9	5.85	-	-	
			14182R/L	●		14	1.82	0.91	13.5	4.3	9	5.85	-	-	
			14202R/L	●		14	2.02	1.01	13.5	4.3	9	5.85	-	-	
			14222R/L	●		14	2.22	1.11	13.5	4.3	9	5.85	-	-	
			14302R/L	●		14	3.02	1.51	13.5	4.3	9	5.85	-	-	
			16182R/L	●		16	1.82	0.91	15.7	4.6	11	5.80	-	-	
			16222R/L	●		16	2.22	1.11	15.7	4.6	11	5.80	-	-	
			16302R/L	●		16	3.02	1.51	15.7	4.6	11	5.80	-	-	
			16402R/L	●		16	4.02	2.01	15.7	4.6	11	5.80	-	-	

●: Stock item

Fine tools

Holders

NFTIH

- For NFTIH14~.
- R type insert

NFTF
NFTT
NFTG

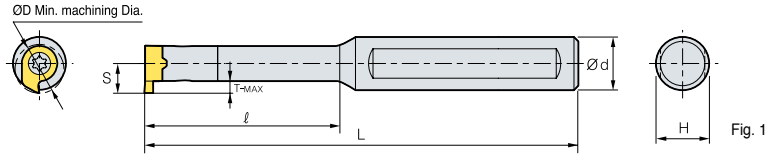


Fig. 1

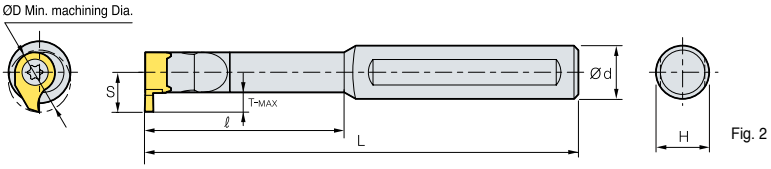


Fig. 2

(mm)

Designation		Dimensions (mm)							Insert **NFTG:** Grooving **NFTT:** Threading **NFTF:** Forming	Screw	Wrench	Fig.
		ØD	Ød	L	ℓ	T-MAX	H	S				
NFTIH	**08206C**	8	6	65	-	1.0	4	4.8	NFTG08□□□R/L NFTT08□□□R/L NFTF08□□□R/L	PTKA02508	TW08P	1
	08212C	8	12	70	16	1.0	10	4.8				
	08312C	8	12	80	24	1.0	10	4.8				
	08312S	8	12	80	24	1.0	10	4.8				
	08412C	8	12	90	32	1.0	10	4.8				
	08512C	8	12	100	40	1.0	10	4.8				
	11208C	11	8	80	-	2.3	7	6.7	NFTG11□□□R/L NFTT11□□□R/L NFTF11□□□R/L	PTKA03510	TW15P	2
	11212C	11	12	75	22	2.3	11	6.7				
	11312C	11	12	95	33	2.3	11	6.7				
	11312S	11	12	95	33	2.3	11	6.7				
	11412C	11	12	110	44	2.3	11	6.7				
	11512C	11	12	120	55	2.3	11	6.7				
	14012C	14	12	75	20	4.0	11	9.0	NFTG14□□□R/L NFTT14□□□R/L NFTF14□□□R/L	PTKA0412	TW15P	2
	14016C	14	16	75	20	4.0	15	9.0				
	14112C	14	12	100	34	4.0	11	9.0				
	14116C	14	16	100	34	4.0	15	9.0				
	14212C	14	12	110	45	4.0	11	9.0				
	14216C	14	16	110	45	4.0	15	9.0				
	14312C	14	12	130	64	4.0	11	9.0				
	14316C	14	16	130	64	4.0	15	9.0				
	16312C	16	12	130	48	4.3	11	10.2	NFTG16□□□R/L NFTT16□□□R/L NFTF16□□□R/L	PTKA0512	TW20P	2
	16312S	16	12	130	48	4.3	11	10.2				
	16412C	16	12	130	64	4.3	11	10.2				
	16512C	16	12	150	80	4.3	11	10.2				
	16316C	16	16	130	48	4.3	15	10.2				
	16416C	16	16	130	64	4.3	15	10.2				
	16516C	16	16	150	80	4.3	15	10.2				

ESD Plus

Stable tool life
→ Stable productivity

Longer tool life
→ Reduced tool costs

ESD Plus

Excellent chip evacuation
→ Increased productivity

Possible to machine various automobile components
→ Versatile for a wide range of materials

Code system

[Special type]

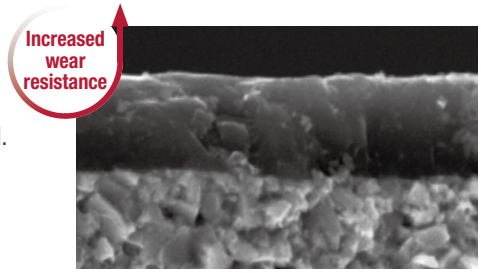
ESDP	040	-	5	P	-	100L	-	5S
Eco solid drill plus	Drill dia. (ØD) 040 = Ø4.0		Standard type Aspect ratio (L/D) 3D, 5D Special type Flute length 100: 100 mm	Machining area **P**: Carbon steel, alloy steel **M**: Stainless steel **K**: Cast iron **N**: Aluminum, copper alloy		Overall length 100L: 100 mm		Shank dia. 5S = Ø5

Features

New grade (PC325U)

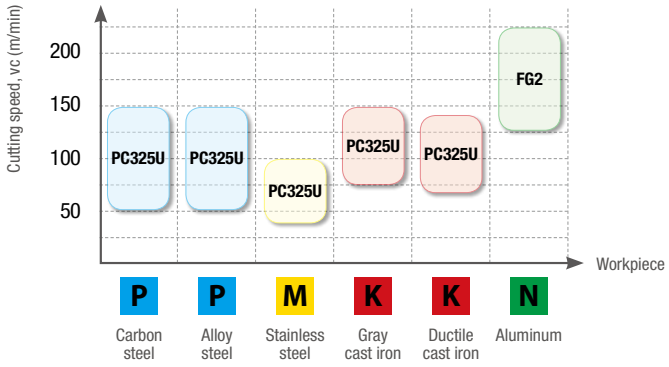
- Lubricative coating layer improves welding resistance at middle to high speed.
- Increase wear resistance in machining carbon steel

▶ Increased welding resistance and wear resistance with new PC325U grade applied.

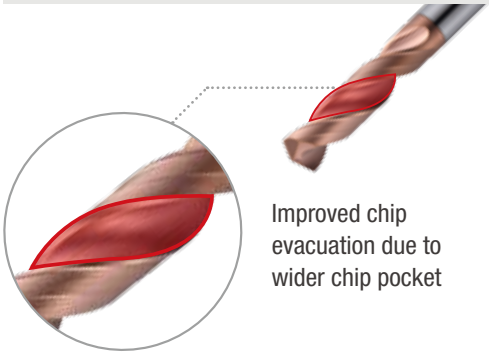


[PC325U]

Application area



Flute shape



Improved chip evacuation due to wider chip pocket

Recommended cutting conditions

Workpiece			Hardness (HB)	Grade	Cutting speed vc (m/min)	Depth of cut = 10D~25D Feed rate (mm/rev) Per drill dia. (mm)	
						Ø1.0~4.0	Ø4.1~6.0
P	Carbon steel	Low carbon steel	80~120	PC325U	72 (64~120)	0.08~0.12	0.13~0.19
		High carbon steel	Over 250	PC325U	40 (32~64)	0.06~0.16	0.06~0.16
	Alloy steel	Low alloy steel	140~260	PC325U	72 (64~120)	0.08~0.12	0.13~0.19
		Hardened low alloy steel	200~400	PC325U	48 (40~80)	0.08~0.12	0.13~0.19
		High alloy steel	50~260	PC325U	40 (32~64)	0.06~0.16	0.06~0.16
		Hardened high alloy steel	Over 250	PC325U	40 (32~64)	0.06~0.16	0.06~0.16
M	Stainless steel	Austenite series	135~275	PC325U	36 (20~64)	0.04~0.16	0.04~0.16
		Ferrite series Martensite series	135~275	PC325U	40 (24~64)	0.04~0.16	0.04~0.16
K	Cast iron	Gray cast iron	150~230	PC325U	80 (64~120)	0.08~0.12	0.13~0.19
		Ductile cast iron	160~260	PC325U	72 (56~112)	0.08~0.12	0.13~0.19
N	Aluminum	Aluminum alloy	30~150	FG2	120 (100~176)	0.19~0.30	0.30~0.42
	Copper alloy	Copper alloy	150~160	FG2	120 (100~176)	0.08~0.12	0.13~0.19

• Cutting conditions above are for the case of less than 5D depth of cut and external coolant system applied.

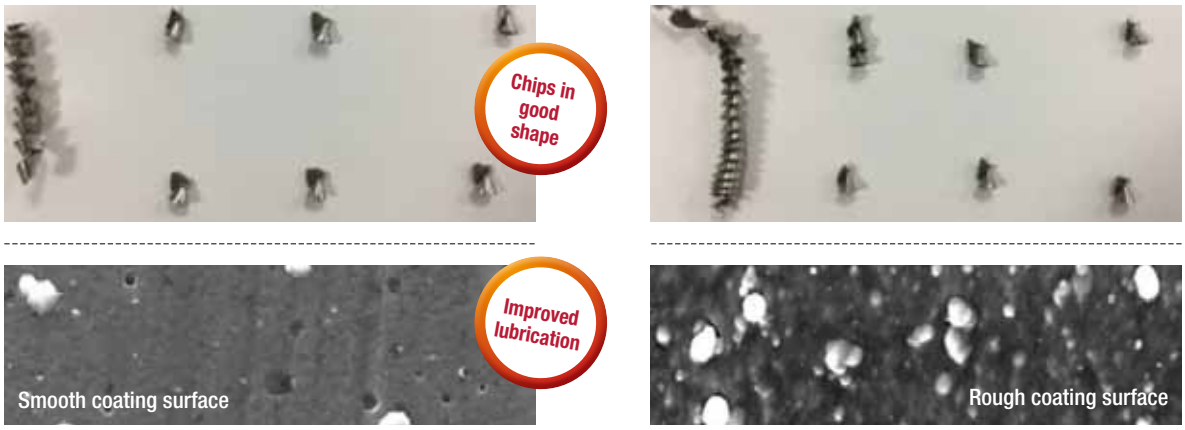
ESD Plus cutting performance

Chip control

• **Workpiece:** 42CrMo4 • **Tools:** ESDP060-5P

Cutting conditions • **vc** = 40 m/min • **fn** = 0.1 mm/rev • **ap** = 30 mm, wet

ESD Plus	Competitor



[ESD Plus] [Competitor]

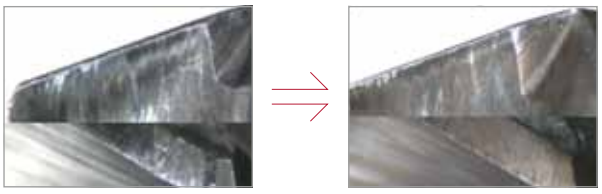
▶ PC325U has a coating surface more lubricated compared to competitor's rough surface.

- Excellent welding resistance and lower cutting load
- Reduced frictional resistance at cutting edges and on the flute

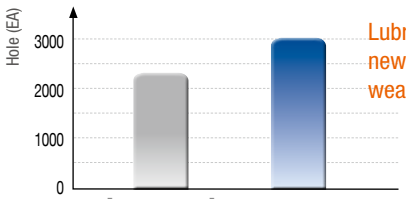
Performance evaluation

Comparison of wear

• **Workpiece:** 42CrMo4 • **Tools:** ESDP060-5P Cutting conditions • **vc** = 95 m/min • **fn** = 0.12 mm/rev • **ap** = 20 mm, External coolant



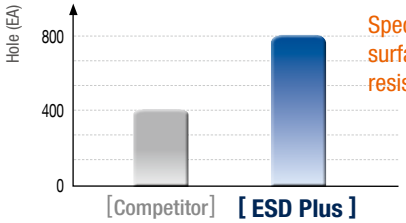
[Competitor] [ESD Plus]



Lubricative coating layer of the new grade PC325U maximizes wear resistance.

Application example

• **Workpiece:** C45 • **Tools:** ESDP090-5P Cutting conditions • **vc** = 50 m/min • **fn** = 0.08 mm/rev • **ap** = 23.5 mm, External coolant

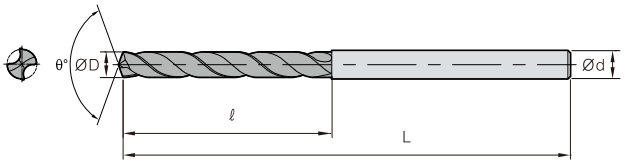


Special treatment on coating surface minimizes frictional resistance.

ESD Plus

Holders

ESDP - 5P



Terminology	P	M	K	N
Grade	PC325U			FG2
Tolerance (Drill dia.)	h7			
Tolerance (Shank dia.)	h6			
Point angle (θ°)	140°			135°
Twist angle	30°			
Thinning	X type			
Coolant	External			

P Steel M Stainless steel K Cast iron N Non-ferrous metal

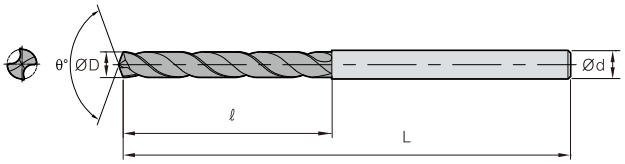
(mm)

Designation		Coated	Uncoated	Dimensions (mm)			
		PC325U	FG2	ØD	Ød	L	ℓ
ESDP	010-5P	●		1.00	3	8	45
	0105-5P	●		1.05	3	8	45
	011-5P	●		1.10	3	9	45
	0115-5P	●		1.15	3	9	45
	012-5P	●		1.20	3	10	45
	0125-5P	●		1.25	3	10	45
	013-5P	●		1.30	3	10	45
	0135-5P	●		1.35	3	10	45
	014-5P	●		1.40	3	11	45
	0145-5P	●		1.45	3	11	45
	015-5P	●		1.50	3	11	45
	0155-5P	●		1.55	3	11	45
	016-5P	●		1.60	3	12	45
	0165-5P	●		1.65	3	12	45
	017-5P	●		1.70	3	12	45
	0175-5P	●		1.75	3	12	45
	018-5P	●		1.80	3	13	45
	0185-5P	●		1.85	3	13	45
	019-5P	●		1.90	3	14	45
	0195-5P	●		1.95	3	14	45
	020-5P	●		2.00	3	18	50
	0205-5P	●		2.05	3	18	50
	021-5P	●		2.10	3	18	50
	0215-5P	●		2.15	3	18	50
	022-5P	●		2.20	3	18	50
	0225-5P	●		2.25	3	18	50
	023-5P	●		2.30	3	18	50
	0235-5P	●		2.35	3	18	50
	024-5P	●		2.40	3	18	50
	0245-5P	●		2.45	3	18	50
	025-5P	●		2.50	3	18	50
	0255-5P	●		2.55	3	18	50
	026-5P	●		2.60	3	18	50
	0265-5P	●		2.65	3	18	50

Designation		Coated	Uncoated	Dimensions (mm)			
		PC325U	FG2	ØD	Ød	L	ℓ
ESDP	027-5P	●		2.70	3	18	50
	0275-5P	●		2.75	3	18	50
	028-5P	●		2.80	3	18	50
	0285-5P	●		2.85	3	18	50
	029-5P	●		2.90	3	18	50
	0295-5P	●		2.95	3	18	50
	030-5P	●		3.00	3	20	55
	0305-5P	●		3.05	4	20	55
	031-5P	●		3.10	4	20	55
	0315-5P	●		3.15	4	20	55
	032-5P	●		3.20	4	20	55
	0325-5P	●		3.25	4	20	55
	033-5P	●		3.30	4	20	55
	0335-5P	●		3.35	4	20	55
	034-5P	●		3.40	4	20	55
	0345-5P	●		3.45	4	20	55
	035-5P	●		3.50	4	20	55
	0355-5P	●		3.55	4	20	55
	036-5P	●		3.60	4	25	55
	0365-5P	●		3.65	4	25	55
	037-5P	●		3.70	4	25	55
	0375-5P	●		3.75	4	25	55
	038-5P	●		3.80	4	25	55
	0385-5P	●		3.85	4	25	55
	039-5P	●		3.90	4	25	55
	0395-5P	●		3.95	4	25	55
	040-5P	●		4.00	4	25	55
	0405-5P	●		4.05	5	25	55
	041-5P	●		4.10	5	25	55
	0415-5P	●		4.15	5	33	55
	042-5P	●		4.20	5	33	63
	0425-5P	●		4.25	5	33	63
	043-5P	●		4.30	5	33	63
	0435-5P	●		4.35	5	33	63

Holders

ESDP - 5P



Terminology	P	M	K	N
Grade	PC325U			FG2
Tolerance (Drill dia.)	h7			
Tolerance (Shank dia.)	h6			
Point angle (θ°)	140°			135°
Twist angle	30°			
Thinning	X type			
Coolant	External			

P Steel M Stainless steel K Cast iron N Non-ferrous metal

(mm)

Designation		Coated	Uncoated	Dimensions (mm)			
		PC325U	FG2	ØD	Ød	L	ℓ
ESDP	044-5P	●		4.40	5	33	63
	0445-5P	●		4.45	5	33	63
	045-5P	●		4.50	5	33	63
	0455-5P	●		4.55	5	33	63
	046-5P	●		4.60	5	33	63
	0465-5P	●		4.65	5	33	63
	047-5P	●		4.70	5	33	63
	0475-5P	●		4.75	5	33	63
	048-5P	●		4.80	5	33	63
	0485-5P	●		4.85	5	33	63
	049-5P	●		4.90	5	33	63
	0495-5P	●		4.95	5	33	63

Designation		Coated	Uncoated	Dimensions (mm)			
		PC325U	FG2	ØD	Ød	L	ℓ
ESDP	050-5P	●		5.00	5	33	63
	051-5P	●		5.10	6	33	63
	052-5P	●		5.20	6	36	66
	053-5P	●		5.30	6	36	66
	054-5P	●		5.40	6	36	66
	055-5P	●		5.50	6	36	66
	056-5P	●		5.60	6	36	66
	057-5P	●		5.70	6	36	66
	058-5P	●		5.80	6	36	66
	059-5P	●		5.90	6	36	66
	060-5P	●		6.00	6	36	66

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