

2019

CUTTING TOOLS

NEW PRODUCTS



www.youtube.com/NTKCUTTINGTOOLS

www.ntk-cuttingtools.com



Guidelines for Catalog

- This information lists products as of September 2018.
- Please note that the spec in this catalog may be changed without notice due to continuous research & development and product improvement.
- Detailed description of the product is omitted from this catalog due to space restrictions.
If you need the detailed information, please contact our sales representative or the dealers.
- Stock Status Symbols
 - : Standard stock available for left- and right-handed products
 - R : Stock available only in Right-Hand
 - L : Stock available only in Left-Hand
 - ★ : Standard stock (specific)
 - ◎ : Delivery = about 3 weeks
 - : Deprecated items (Please check the stock status with NTK)
 - No mark : No stocked
- The products in this catalog is based on a sales in Japan.

● Standard

Holder type		Package quantity	Notes
Toolholder		1 pc/case	
Drill holder		1 pc/case	
Milling cutter		1 pc/case	
Parts type		Package quantity	Notes
Screw		10 pcs/case	Clamp screw • Clamp bolt • Double screw • Button screw • Setting screw • Fixing screw • Shim screw • Balancing screw • Positioning screw • Setting screw • Plug screw
Spring		10 pcs/case	Spring
Shim sheet		10 pcs/case	Shim sheet
Clamp		10 pcs/case	
Snap ring		10 pcs/case	
Spring pin		10 pcs/case	
Lever		5 pcs/case	
Washer		10 pcs/case	
Joint		1 pcs/case	
Coupling		1 pcs/case	
Coolant hose		1 pcs/bag	
Wrench		5 pcs/case	Package quantity of Torque wrench is 1pc/case
Handle • Bit • Screwdriver		1 pc/case	
Cutter parts	Clamp • Wedge • Cartridge • Thrust pad • Clamp bolt	1 pcs/case	
	Clamp bolt screw	4 pcs/case	
Insert type		Package quantity	Notes
CBN inserts		1 pc/case	B16 • B22 • B23 • B30 • B36 • B40 • B52 • B5K • B6K
PCD inserts		1 pc/case	PD1 • PD2
Cut off inserts		5 pcs/case	CTPW type
STICK DUO SHAPER DUO		1 pc/case	SHFS type • SHFB type • SBFS type • SBFB type • SBG type • SFG type • SBT type • SSP type
Other than above inserts		10 pcs/case	
Drill insert Y ~ 2 series		2 pcs/case	Drill insert Y ~ 2 series
Drill insert 3 series ~		1 pc/case	Drill insert 3 series ~

*Packaging may vary depending upon product size. For more information, please contact your nearest dealer or sales office.

- ◆ New Era in Aerospace Machining
BIDEMICS **2**

- ◆ New SiALON Grade for Machining Heat Resistant Super Alloys
SX3 **24**

- ◆ Solid Ceramic End Mill
CERAMATIC Lineup Expansion **28**

- ◆ PVD coated carbide grade for stainless steels
Super Tough Coat "ST4" **31**

- ◆ Solid Carbide End-mill
S-MILL Line up Expansion **42**

- ◆ Unique swiss tooling / Front turning insert for large DOC
The Front Max **46**

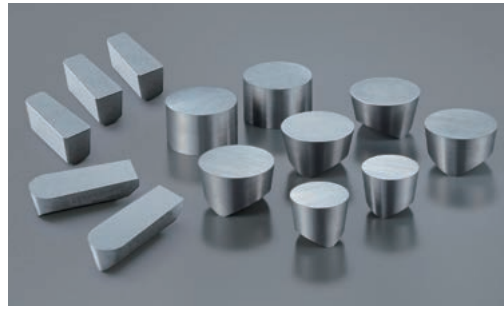
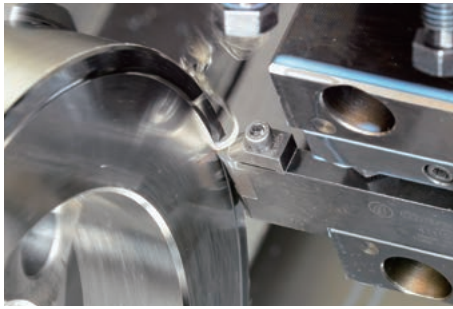
- ◆ Internal coolant type tool holders
SPLASH Series Lineup expansion **51**

NEW

New Era in Aerospace Machining **BIDEMICS**

New Composite Material for HRSA Machining

WATCH ON
YouTube



JX1 / JX3 NEW

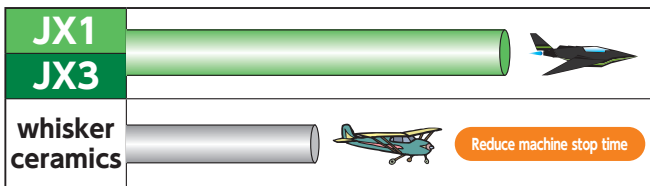
Features

- Newly added [JX3] provides toughness to BIDEMICS family
- Much longer tool life at Whisker ceramic's speed range
- Superior surface finish vs. Whisker ceramics
- Works well on wide range of High Temperature Alloys

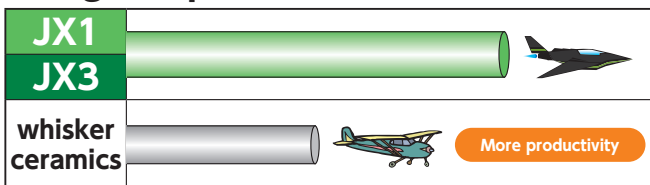
Productivity

vs. Whisker ceramics

① Improve tool life at same cutting speed



② Higher speed



JP2

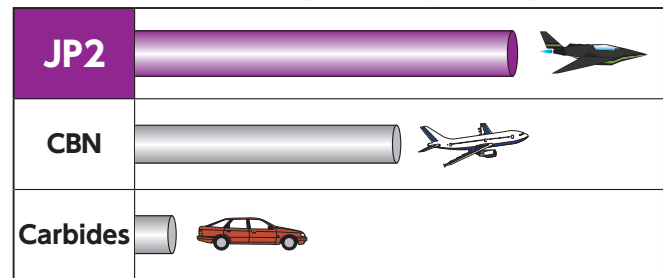
Features

- Finishing speed up to $V_c=520\text{m/min}$ capability
- Better wear and notch resistance than CBNs
- Superior surface finish to CBN or Carbides

Productivity

vs. Carbides

① 10 to 15 times speed capability



Application : JX1 & JX3

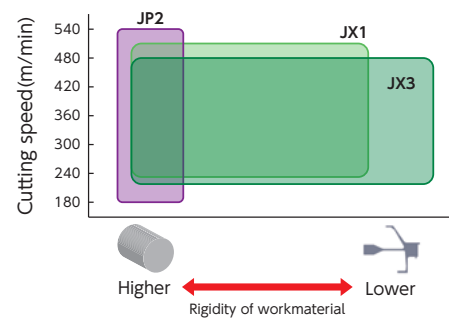
JX1

- Higher speed, more productivity than ceramics.
- Suitable for turning in high rigid situation (External/ endface tuening) Turning in using more toughness insert like RGN type
- Offering excellent notch wear resistance

JX3

- Turning at the corner part, Grooving.
- Chipping occurred when use JX1 grade
- Turning in low rigidity situation

Grade




Grade	Workmaterial	Tooling	Applcations	Cutting speed (m/min)	Feed (mm/rev)	D.O.C (mm)	DRY	WET
JX1 JX3	Heat resistant alloy	Turning	Rough no scale	180- 480	0.15-0.30	1.00-2.50		●
			Semi-finish	180- 480	0.10-0.25	0.50-2.00		●
JP2	Heat resistant alloy	Turning	Finish	180- 520	0.10-0.25	0.20-1.00		●

1 Longer tool life

- Higher hardness, superior thermal conductivity.
- Improved strength than whisker ceramics
- Significantly longer tool life when applied at whisker ceramics cutting condition

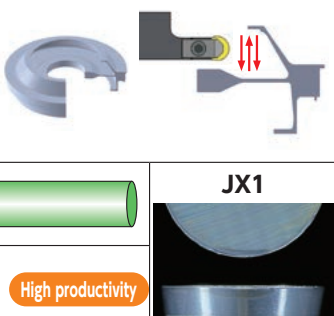
Turbine shaft(Inconel 718 with no scale)		
	Competitor's coated whisker ceramic	JX1
Insert shape	RNGN120700	←
Cutting speed (m/min)	240	←
Feed (mm/rev)	0.2	←
D.O.C (mm)	2.0	←
	WET	←
NTK : JX1	10 min	
Competitor's whisker ceramic	3 min	Longer tool life



2 Higher speeds, More Productivity

- 2 times higher speed than whisker ceramics
- Increasing productivity saves additional equipment

Turbine shaft(Inconel 718 rough with scale)		
	Competitor's coated whisker ceramic	JX1
Insert shape	RPGX120700	←
Cutting speed (m/min)	200	400
Feed (mm/rev)	0.15	←
D.O.C (mm)	2.0	←
	WET	←
NTK : JX1	120 cc/min	
Competitor's whisker ceramic	60 cc/min	High productivity



JX1

Whisker ceramic



Chip break easily at higher cutting speed, typically continuous chips are occurred in HRSA turning.

3 Works well on wide range of High Temperature Alloys

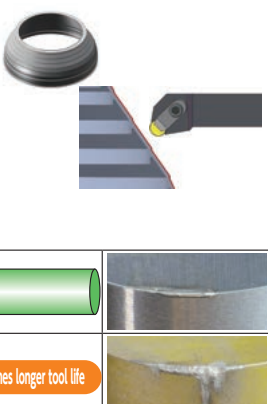
- Inconel 718, 718 Plus, 625
- Rene 41, 88, 104
- Waspaloy

etc.

4 Superior surface finish

- Outstanding wear resistance and nptching resistance results in superior surface finish

Turbine case(Inconel718Plus)		
	Competitor's coated whisker ceramic	JX1
Insert shape	RNGN120700	←
Cutting speed (m/min)	240	←
Feed (mm/rev)	0.25	←
D.O.C (mm)	0.5	←
	WET	←
NTK : JX1	3pass	
Competitor's coated whisker ceramic	1pass	3 times longer tool life



	JP2	CBN	Carbide
Machined surface			
Roughness			
	Ra 0.64 μm	1.18 μm	2.75 μm
	Rz 3.36 μm	5.56 μm	9.64 μm
Cutting speed	240 m/min	←	35 m/min
Feed	0.15 mm/rev	←	←
Cycle time	3.3 分	←	14.7 min
Removed chip	48 cc	←	←

Maching HRSA Materials with BIDE MICS and Ceramics

JX1 / JX3 NEW

BIDE MICS- Game Changer



■ Features

- Added toughness grade [JX3]
- Much longer tool life , higher cutting speed, superior surface finish vs. whisker ceramics
- Works well on wide range of Heat resistant alloys

■ Work Materials

- Inconel 718, 718 Plus
- Rene
- MAR-M247

■ Applications

- Semi-finishing
- Profiling

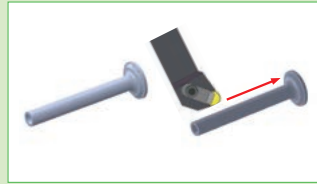
■ Profiling Inconel718



Competitor's whisker ceramics
Tool life : 3min.



JX1
Turbine shaft



Turbine shaft
RNGN120700, $v_c = 240\text{m/min}$,
 $f = 0.2\text{mm/rev}$, $a_p = 2.0\text{mm}$,
WET, Inconel 718(no scale)

SX5

SiALON ceramics ✖ Not stocked

■ Features

- Best grade for scale and interruptions
- Best grade for machining high-cobalt alloys

■ Work Materials

- Waspaloy
- Inconel 718Plus
- Udimet 720
- Rene 41

■ Applications

- Scale and interruptions



SX9

SiALON grade



■ Features

- Extreme toughness makes higher feed and heavier DOC machining possible
- Best grade for machining Inconel 718 with scale

■ Work Materials

- Inconel 718
- Inconel 713
- Inconel 706

■ Applications

- Rough with scale
- Milling

■ Features

- Best balance of toughness and hardness

■ Work Materials

- Inconel 718
- Inconel 718 Plus
- Inconel 625
- Rene
- Hastelloy
- Waspaloy

■ Applications

- Rough turning with scale
- Semi-finishing Milling

SX3 NEW

SiALON grade

WA5 / WA1 whisker ceramics



■ Features

- Better flank wear resistance compared to SiAlON ceramics
- Better notching wear resistance compared to competitor's whisker ceramics

■ Work Materials

- Inconel 718
- Inconel 625

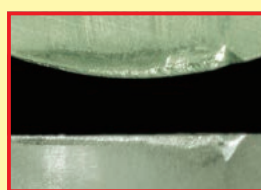
■ Applications

- Semi-finishing
- Profiling
- Grooving

■ Profiling Inconel718



Competitor's whisker ceramics

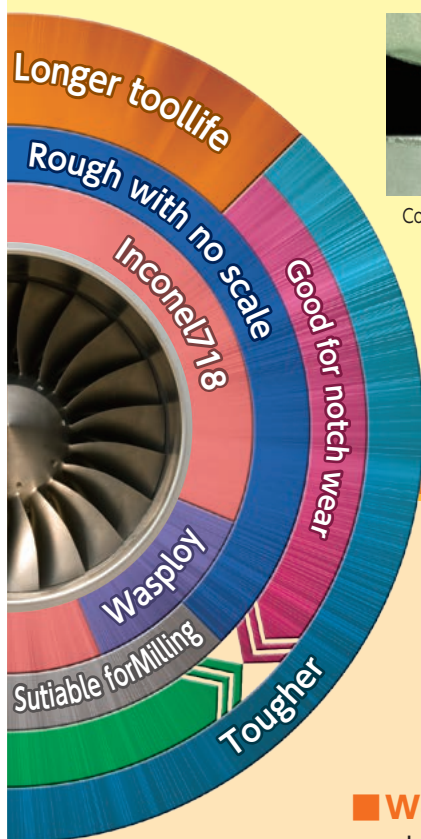


WA1



Turbine case

Machining time 5min.
RPGX120700, $v_c=240\text{m/min}$, $f=0.15\text{mm/rev}$, $a_p=1.0\text{mm}$, Wet Inconel718(no scale)



SX7 SiAlON ceramics



■ Features

- Can run at same cutting condition as whisker ceramics
- Best grade for high-speed milling, good for Waspaloy, Inconel.

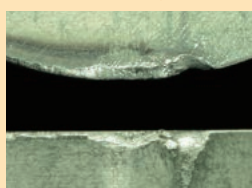
■ Work Materials

- Inconel 718
- Inconel 625
- Waspaloy
- Udimit720

■ Applications

- Semi-finishing
- Profiling
- Milling
- Grooving

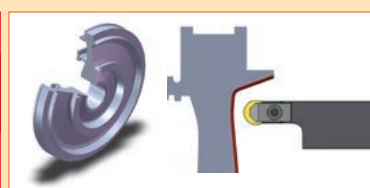
■ Profiling Inconel718



Competitor's whisker ceramics



SX7



Turbine Disc

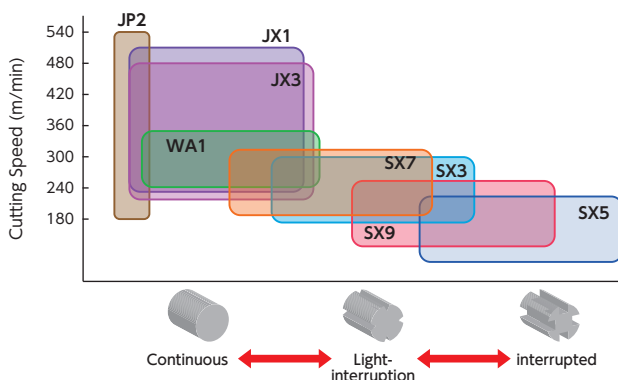
Machining time 4.5min.
RCGX120700, $v_c=240\text{m/min}$, $f=0.15\text{mm/rev}$, $a_p=1.0\text{mm}$, Wet Inconel718(no scale)

Guidelines for Machining HRSA Materials

Insert Grade

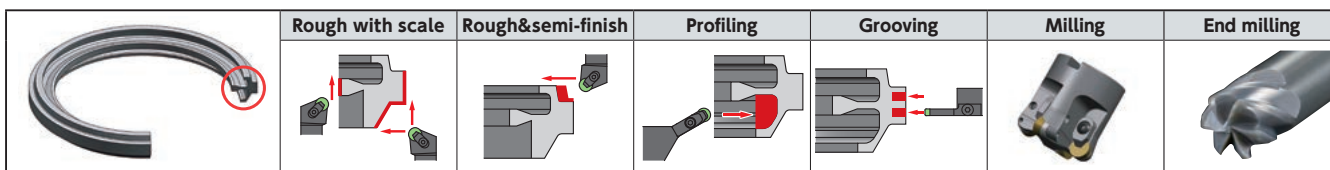
Category	Grade	Attributes	Applications						
			Scale	No scale	Profi ling	Finishing	Grooving	Grooving	End milling
BIDEMICS	JX1	Special grade with higher speed and longer tool life potential		●	●	●	●		
	JP2	Special grade for finish turning				●			
	JX3	Added toughness in BIDEMICS		●	●	●	●		
Whisker	WA1	General versatile grade for turning		●	●		●		
SIALON	SX3	Best balance of toughness and hardness	●	●	●		●	●	
	SX5	Best grade for Waspaloy with scale	●				●		
	SX7	Versatile grade for turning and milling	●	●	●		●	●	
	SX9	Best grade for scale of Inco718	●	●	●			●	●

● 1st Choice ● 2nd Choice







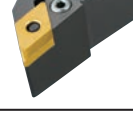










	Grade	Rough with Scale	Rough	Semi-Finishing	Finishing
BIDEMICS	JP2			■	■
	JX1		■	■	■
	JX3		■	■	■
Whisker	WA1		■	■	■
SIALON	SX7		■	■	■
	SX3		■	■	■
	SX9		■	■	■
	SX5		■	■	■

Applications



Applications

Application	Grade	Work material	Cutting speed (m/min)					Feed (mm/rev)					Depth of cut (mm)					Coolant
			180	240	300	360	420	480	0.1	0.2	0.3	0.4	0.5	0.5	1.0	1.5	2.0	
Rough with Scale 	SX5	Waspaloy	200(180-240)					0.3(0.2-0.35)					2.0(1.0-5.0)					WET 
	SX9	Inco718	200(180-240)					0.3(0.2-0.35)					2.0(1.0-5.0)					
	SX3	Overall	240(180-270)					0.2(0.1-0.22)					2.0(1.0-5.0)					
Rough no Scale 	JX1 JX3	Overall	210-390					0.1(0.12-0.27)					1.7(1.0-2.5)					WET 
	SX9 SX3 SX7	Overall	210(180-270)					0.2(0.15-0.3)					2.0(1.0-0.2)					
	WA1	Overall	240(180-300)					0.2(0.12-0.25)					1.7(1.0-2.5)					
Profiling & Semi-Finish 	JX1 JX3	Overall	210-450					0.2(0.1-0.25)					1.5(1.0-2.0)					WET 
	SX3 SX7	Overall	240(180-270)					0.2(0.12-0.25)					1.5(1.0-2.0)					
	WA1	Overall	240(180-330)					0.2(0.1-0.25)					1.5(1.0-2.0)					
Finishing 	JP2	Overall	210-480					0.1(0.05-0.17)					0.2(0.12-0.76)					WET 
Grooving 	JX1 JX3	Overall	360(180-480)					0.07(0.05-0.1)										WET 
	SX5	Waspaloy	210(180-240)					0.15(0.07-0.17)					When using SX7/SX3/SX5, increase feed rates 100% vs. Whisker Ceramics					
	SX3 SX7	Overall	230(180-270)					1.1(0.07-0.15)										
	WA1	Overall	240(180-330)					0.07(0.05-0.1)										

Application	Grade	Work material	Cutting speed (m/min)					Feed (mm/t)					Depth of cut (mm)					Coolant
			450	600	750	900	1000	1200	0.05	0.07	1.0	0.12	0.15	0.5	1.0	1.5	2.0	
Milling 	SX3 SX7	Overall	810(600-1200)					0.1(0.07-0.12)					1.7(1.0-2.5)					DRY 
	SX9	Overall	750(450-1000)					0.12(0.1-0.15)					2.0(1.0-2.5)					
End milling 	SX9	Overall	600(300-1000)					0.02-0.03										DRY 

Insert Item List

● : 1st Choice ● : 2nd Choice

Steel	P								
Stainless Steel	M								
Cast Iron	K				●	●	●	●	●
Non-Ferrous Material	N								
Heat Resistant Alloy	S	●	●	●	●	●	●	●	●
Hardened Material	H							●	●

RCGX [CRDCN Insert]	P/N	Dimension(mm)		Stock							
		IC	T	BIDEMICS		SiAlON ceramics			Whisker ceramics		
				JX1	JX3	SX7	SX3	SX9	WA1	WA5	
	RCGX 060400 T00520	6.35	4.76							●	●
	060700 T00520	6.35	7.94							●	
	090700 E004	9.525	7.94	●	●					●	
	090700 T00520	9.525	7.94				●		●	●	
	090700 T01020	9.525	7.94							●	
	090700 T00820	9.525	7.94	●	●					●	●
	0908 TNB	9.525	7.86						●	●	
	120700 E004	9.525	7.94	●	●					●	
	120700 T00520	12.70	7.94				●		●	●	
	120700 T00820	12.70	7.94	●	●					●	●
	120700 T01020	12.70	7.94							●	
	120700 Z01520	12.70	7.94							●	
	1208 TNB	12.70	7.86						●		

RPGX [CRDCN Insert]	P/N	Dimension(mm)		Stock							
		IC	T	BIDEMICS		SiAlON ceramics			Whisker ceramics		
				JX1	JX3	SX7	SX3	SX9	WA1	WA5	
	RPGX 060400 T00520	6.35	4.76							●	
	090700 E004	6.35	7.94	●	●					●	
	090700 T00520	9.525	7.94				●		●	●	
	090700 T00820	9.525	7.94	●	●	●				●	●
	0908 TNB	9.525	7.86						●	●	
	120700 E004	9.525	7.94	●	●					●	
	120700 T00520	12.70	7.94				●		●	●	
	120700 T01020	12.70	7.94							●	
	120700 T00820	12.70	7.94	●	●	●				●	●
	1208 TNB	12.70	7.86						●		

● Toolholder → F33, L4 · L14-15 2019-2020 GeneralCatalogue, 14-15

RCGY [CRXC Insert]	P/N	Dimension(mm)		Stock							
		IC	T	BIDEMICS		SiAlON ceramics			Whisker ceramics		
				JX1	JX3	SX7	SX3	SX9	WA1	WA5	
	RCGY 090603 TNB	6.35	4.76							●	
	120603 TNB	6.35	7.94							●	

● Toolholder → F33, L4 · L14-15 2019-2020 GeneralCatalogue

RNGN	P/N	Dimension(mm)		Stock							
		IC	T	BIDEMICS		SiAlON ceramics			Whisker ceramics		
				JX1	JX3	SX7	SX3	SX9	WA1	WA5	
	RNGN 120400 T00520	12.70	4.76							●	
	120400 T00820	12.70	4.76							●	●
	120400 T00525	12.70	4.76						●	●	
	120400 T01020	12.70	4.76						●	●	
	120400 T02025	12.70	4.76						●	●	
	120700 E002	12.70	7.94						●		
	120700 E004	12.70	7.94	●	●	●	●			●	
	120700 T00520	12.70	7.94						●	●	
	120700 T00525	12.70	7.94						●	●	
	120700 T00820	12.70	7.94	●	●	●				●	●
	120700 T01020	12.70	7.94							●	
	120700 Z01520	12.70	7.94							●	
	150700 T00520	15.875	7.94						●	●	
	150700 T00525	15.875	7.94						●	●	
	150700 T00820	15.875	7.94							●	●
	190700 T00520	19.05	7.94						●	●	
	190700 T00525	19.05	7.94						●	●	
	190700 T00820	19.05	7.94							●	●
190700 T01020	19.05	7.94							●		
250700 T00520	25.4	7.94						●	●		
250700 T00820	25.4	7.94							●	●	

● Toolholder → F18, O34 2019-2020 GeneralCatalogue

● : 1st Choice ● : 2nd Choice

RPGN	P/N	Dimension(mm)		Stock								
		IC	T	BIDEMICS			SiAlON ceramics			Whisker ceramics		
				JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5	
	RPGN 060200 T00520	6.35	2.38								●	
	090300 T00520	9.525	3.18								●	
	120400 E004	12.70	4.76				●					
	120400 EX0004	12.70	4.76							●		
	120400 T00520	12.70	4.76								●	
	120400 T00525	12.70	4.76								●	
	120400 T00820	12.70	4.76				●					
	120400 T01020	12.70	4.76								●	●

● Toolholder → O34-35 2019-2020 GeneralCatalogue

VGW	P/N	Dimension(mm)				Stock							
		W	r	T	L	BIDEMICS			SiAlON ceramics			Whisker ceramics	
						JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5
	VGW 4125-1 E004	3.18	0.4	6.35	12.7	●	●						
	4125-2 E004	3.18	0.8	6.35	12.7	●	●						
	4125-2 EX0001	3.18	0.8	6.35	12.7							●	●
	4156-1 E004	3.96	0.4	6.35	12.7	●	●						
	4156-2 E004	3.96	0.8	6.35	12.7	●	●						
	4156-2 EX0001	3.96	0.8	6.35	12.7							●	●
	4187-1 E004	4.75	0.4	6.35	12.7	●	●						
	4187-2 E004	4.75	0.8	6.35	12.7	●	●						
	4187-2 EX0001	4.75	0.8	6.35	12.7							●	●
	6250-1 E004	6.35	0.4	6.35	19.05	●	●						
6250-2 E004	6.35	0.8	6.35	19.05	●	●							
6250-2 EX0001	6.35	0.8	6.35	19.05							●	●	
6250-3 E004	6.35	1.2	6.35	19.05	●	●							
8375-2 EX0001	9.525	0.8	8.56	25.4							●	●	
	VGW 4125-R E004	3.18	フルR	6.35	12.7	●	●						
	4125-R EX0001	3.18	フルR	6.35	12.7						●	●	
	4156-R E004	3.96	フルR	6.35	12.7	●	●						
	4156-R EX0001	3.96	フルR	6.35	12.7						●	●	
	4187-R E004	4.75	フルR	6.35	12.7	●	●						
	4187-R EX0001	4.75	フルR	6.35	12.7						●	●	
	6250-R EX0001	6.35	フルR	6.35	19.05						●	●	
	8375-R EX0001	9.525	フルR	8.56	25.4						●	●	

● Toolholder → L12-13 2019-2020 GeneralCatalogue, 12-13

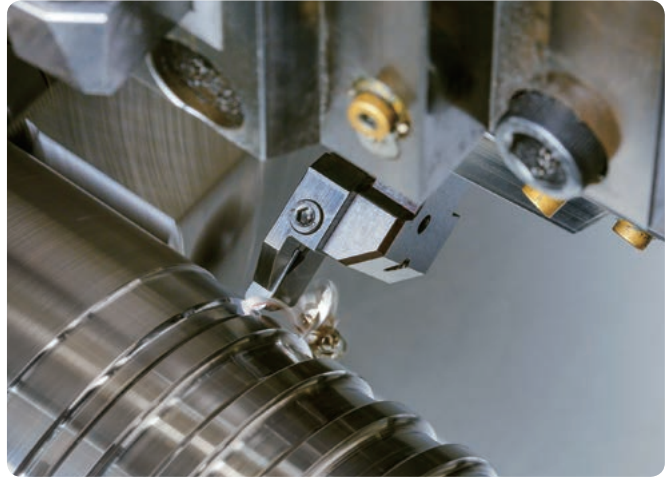
BIDEMICS : JP2	P/N	Dimension (mm)		Corner radius	Edge prep.	Stock							
		IC	T			BIDEMICS			SiAlON ceramics			Whisker ceramics	
						JX1	JX3	JP2	SX7	SX3	SX9	WA1	WA5
	CNGA 120404 BQ	12.70	4.76	0.4	T00520			●					
	120408 BQ	12.70	4.76	0.8	T00520			●					
	120412 BQ	12.70	4.76	1.2	T00520			●					
	DNGA 150404 BQ	12.70	4.76	0.4	T00520			●					
	150408 BQ	12.70	4.76	0.8	T00520			●					
	150412 BQ	12.70	4.76	1.2	T00520			●					
	VNGA 160404 BQ	9.525	4.76	0.4	T00520			●					
	160408 BQ	9.525	4.76	0.8	T00520			●					
	160412 BQ	9.525	4.76	1.2	T00520			●					

※ NOTE : JP2 : 1pc/Case

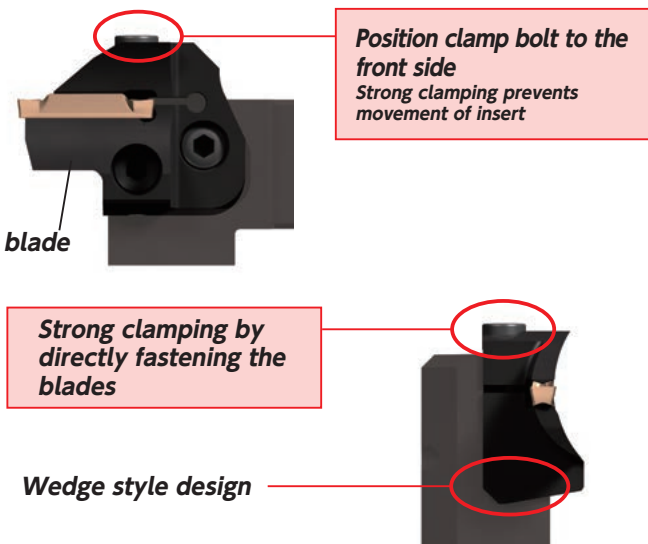
● Toolholder → F11-13・15-17・31, G42-43・K36-37, 2019-2020 GeneralCatalogue, 12-13

New Modular Tooling !

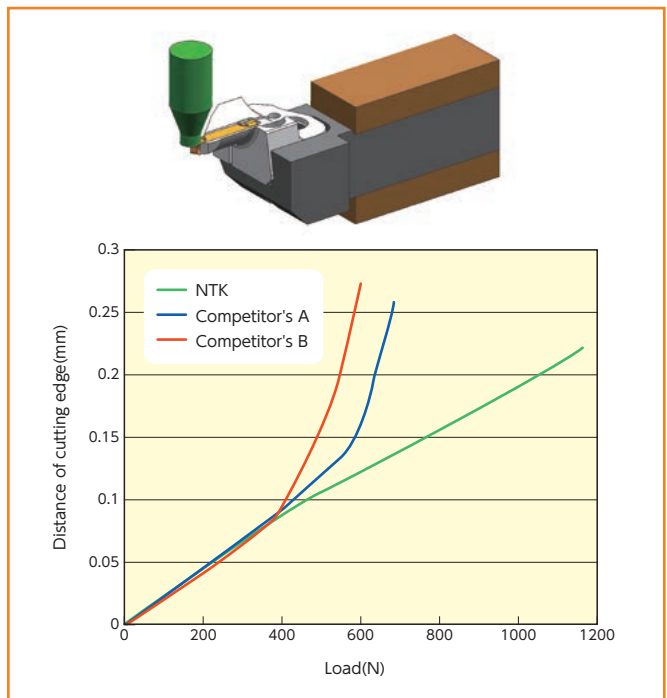
Available in 3 different styles



Most rigid blade type system



Tool rigidity comparison



→14-15



→12-13

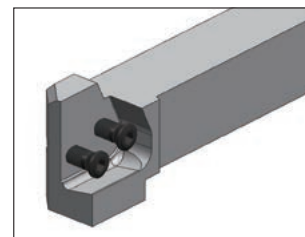
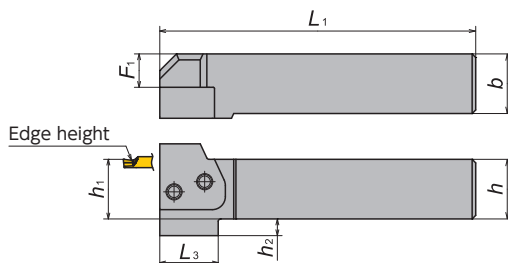


→ H40, 2019-2020 General Catalogue

Toolholder for blade

Straight style=0°

GTWP-H

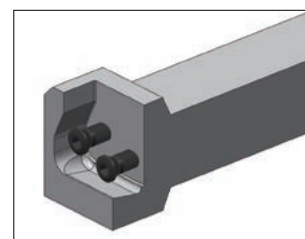
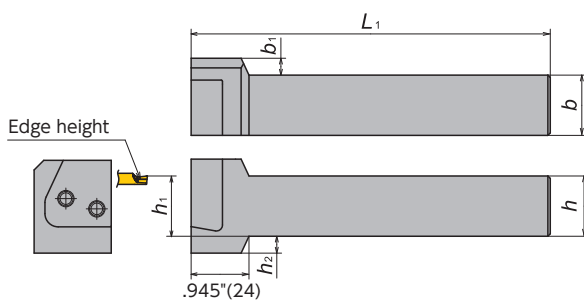


Right-Hand style shown

Toolholder	Stock		Dimension (mm)							Parts	
	R	L	h	b	h_1	L_1	F_1	h_2	L_3	Screw	Wrench
GTWP[®]/ 2020-H	●	●	20.0	20.0	20.0	107.5	9	8	28.5	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	132.5	14	7	24.5	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	152.5	21	—	—	FSI28-6.0×18	LW-4

L-style=90°

GKWP-H



Right-Hand style shown
* Use oppsoite hand blade

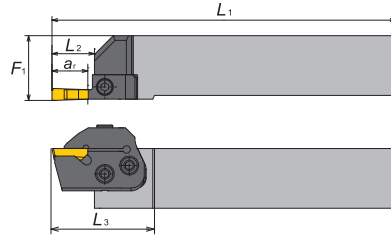
Toolholder	Stock		Dimension (mm)						Parts	
	R	L	h	b	h_1	L_1	b_1	h_2	Screw	Wrench
GKWP[®]/ 2020-H	●	●	20.0	20.0	20.0	124	12	8	FSI28-6.0×18	LW-4
2525-H	●	●	25.0	25.0	25.0	149	7	7	FSI28-6.0×18	LW-4
3232-H	●	●	32.0	32.0	32.0	169	—	—	FSI28-6.0×18	LW-4

Blade for external grooving

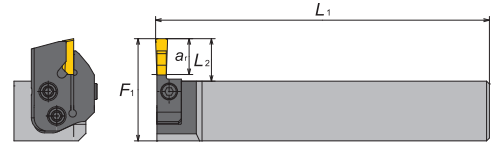
VGW

Toolholder

For GTWP



For GKWP



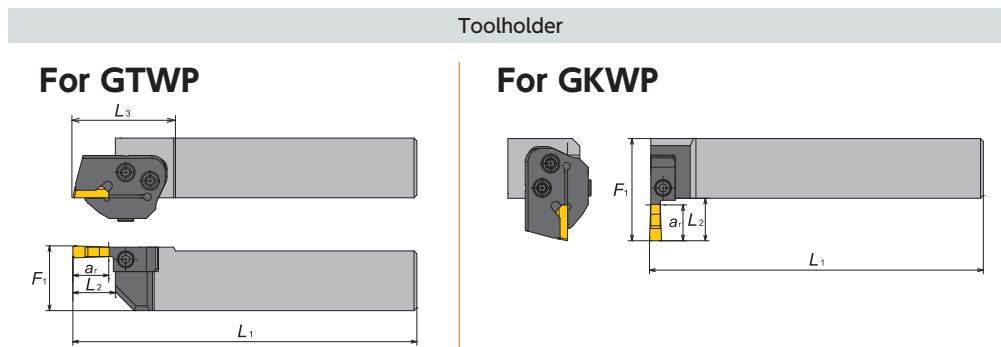
Right hand

Hand	Blade number	Stock	Insert	Dimension (mm)		Holder	Insert	Dimension (mm)						
				a_r	L_2			GTWPR-H			GKWPL-H			
								L_1	L_3	F_1	L_1	F_1		
Right	GBVR-VGW4-3T09	●	VGW4125 VGW4156	9.5	11.2	GTWPR2020-H	VGW4125	118.6	39.6	22.3	124.2	31.1		
						GKWPL2020-H	VGW4156			22.6	124.6			
						GTWPR2525-H	VGW4125			143.6	35.6		27.2	149.3
						GKWPL2525-H	VGW4156						27.6	149.6
	GTWPR3232-H	VGW4125	163.6	—	34.2	169.2	43.1							
	GKWPL3232-H	VGW4156			34.6	169.6								
	GBVR-VGW4-4T14	●	VGW4156 VGW4187	14.2	17.5	GTWPR2020-H	VGW4156	124.9	45.9	22.3	124.3	37.4		
						GKWPL2020-H	VGW4187			22.7	124.7			
						GTWPR2525-H	VGW4156			150.0	42.0		27.3	149.3
						GKWPL2525-H	VGW4187						27.7	149.7
	GTWPR3232-H	VGW4156	170.0	—	34.3	169.3	49.5							
	GKWPL3232-H	VGW4187			34.7	169.7								
	GBVR-VGW6-6T14	●	VGW6218 VGW6250	14.2	17.5	GTWPR2020-H	VGW6218	124.9	45.9	22.7	124.7	37.4		
						GKWPL2020-H	VGW6250			23.1	125.1			
						GTWPR2525-H	VGW6218			150.0	42.0		27.7	149.7
						GKWPL2525-H	VGW6250						28.1	150.1
	GTWPR3232-H	VGW6218	170.0	—	34.7	169.7	49.5							
	GKWPL3232-H	VGW6250			35.1	170.1								
	GBVR-VGW6-6T19	●	VGW6250 VGW6281	19.0	22.6	GTWPR2020-H	VGW6250	130.0	51.0	22.6	124.6	42.5		
						GKWPL2020-H	VGW6281			23.0	125.0			
						GTWPR2525-H	VGW6250			155.0	47.0		27.6	149.6
						GKWPL2525-H	VGW6281						28.0	150.0
	GTWPR3232-H	VGW6250	175.0	—	34.6	169.6	54.5							
	GKWPL3232-H	VGW6281			35.0	170.0								
GBVR-VGW8-8T19	●	VGW8312 VGW8344	19.0	27.6	GTWPR2020-H	VGW8312	135.1	56.1	23.5	125.5	47.6			
					GKWPL2020-H	VGW8344			23.9	125.9				
					GTWPR2525-H	VGW8312			160.1	52.1		28.4	150.5	
					GKWPL2525-H	VGW8344						28.9	150.9	
GTWPR3232-H	VGW8312	180.1	—	35.5	170.5	59.6								
GKWPL3232-H	VGW8344			35.9	170.9									
GBVR-VGW8-8T28	●	VGW8344 VGW8375	28.5	30.2	GTWPR2020-H	VGW8344	137.6	58.6	23.3	125.3	50.1			
					GKWPL2020-H	VGW8375			23.7	125.7				
					GTWPR2525-H	VGW8344			162.7	54.7		28.3	150.3	
					GKWPL2525-H	VGW8375						28.7	150.7	
GTWPR3232-H	VGW8344	182.7	—	35.3	170.3	62.2								
GKWPL3232-H	VGW8375			35.7	170.7									

Insert → 9

Blade for external grooving

VGW



Left hand

Hand	Blade number	Stock	Insert	Dimension (mm)		Holder	Insert	Dimension (mm)									
				ar	L ₂			GTWPL-H			GKWPR-H						
								L ₁	L ₃	F ₁	L ₁	F ₁					
Left	GBVL-VGW4-3T09	●	VGW4125 VGW4156	9.5	11.2	GTWPL2020-H	VGW4125	118.6	39.6	22.3	124.2	31.1					
						GKWPR2020-H	VGW4156						143.6	35.6	27.2	149.3	36.1
						GTWPL2525-H	VGW4125										
						GKWPR2525-H	VGW4156										
						GTWPL3232-H	VGW4125										
	GKWPR3232-H	VGW4156	34.6	169.6													
	GBVL-VGW4-4T14	●			VGW4156 VGW4187	14.2	17.5	GTWPL2020-H	VGW4156	124.9	45.9	22.3	124.3	37.4			
			GKWPR2020-H	VGW4187				150.0	42.0						27.3	149.3	42.4
			GTWPL2525-H	VGW4156													
			GKWPR2525-H	VGW4187													
			GTWPL3232-H	VGW4156													
	GKWPR3232-H	VGW4187	34.7	169.7													
	GBVL-VGW6-6T14	●			VGW6218 VGW6250	14.2	17.5	GTWPL2020-H	VGW6218	124.9	45.9	22.7	124.7	37.4			
			GKWPR2020-H	VGW6250				150.0	42.0						27.7	149.7	42.4
			GTWPL2525-H	VGW6218													
			GKWPR2525-H	VGW6250													
			GTWPL3232-H	VGW6218													
	GKWPR3232-H	VGW6250	35.1	170.1													
	GBVL-VGW6-6T19	●			VGW6250 VGW6281	19.0	22.6	GTWPL2020-H	VGW6250	130.0	51.0	22.6	124.6	42.5			
			GKWPR2020-H	VGW6281				155.0	47.0						27.6	149.6	47.5
GTWPL2525-H			VGW6250														
GKWPR2525-H			VGW6281														
GTWPL3232-H			VGW6250	175.0													
GKWPR3232-H	VGW6281	35.0	170.0														
GBVL-VGW8-8T19	●			VGW8312 VGW8344	19.0	27.6	GTWPL2020-H	VGW8312	135.1	56.1	23.5	125.5	47.6				
		GKWPR2020-H	VGW8344				160.1	52.1						28.4	150.5	52.6	
		GTWPL2525-H	VGW8312														
		GKWPR2525-H	VGW8344														
		GTWPL3232-H	VGW8312														180.1
GKWPR3232-H	VGW8344	35.9	170.9														
GBVL-VGW8-8T28	●			VGW8344 VGW8375	28.5	30.2	GTWPL2020-H	VGW8344	137.6	58.6	23.3	125.3	50.1				
		GKWPR2020-H	VGW8375				162.7	54.7						28.3	150.3	55.1	
		GTWPL2525-H	VGW8344														
		GKWPR2525-H	VGW8375														
		GTWPL3232-H	VGW8344														182.7
GKWPR3232-H	VGW8375	35.7	170.7														

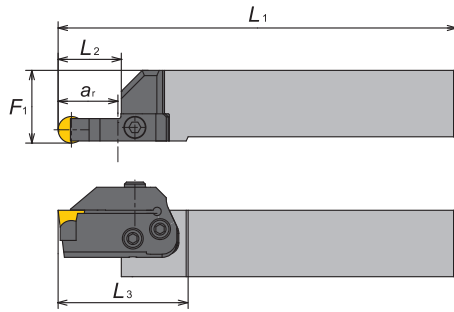
● Insert → 9

Blade for external grooving(RCGX/RPGX insert)

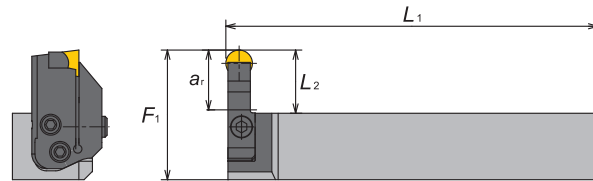
GBR

Toolholder

For GTWP-H



For GKWP-H



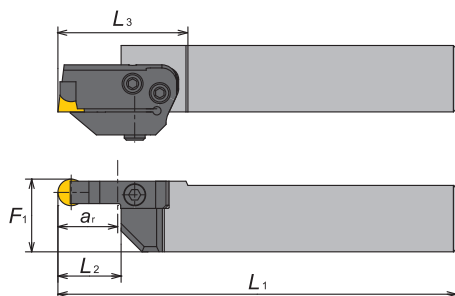
Right hand

Hand	Blade number	Stock	Insert	Dimension (mm)		Holder	Dimension (mm)				
				ar	L ₂		GTWPR-H			GKWPL-H	
							L ₁	L ₃	F ₁	L ₁	F ₁
Right	GBRR-R23-19	●	RCGX0604 RPGX0604	19.0	22.5	GTWPR2020-H	130.0	51.0	23.0	124.9	42.5
						GKWPL2020-H					
						GTWPR2525-H	155.0	47.0	27.9	150.0	47.5
						GKWPL2525-H					
						GTWPR3232-H	175.0	—	35.0	170.0	54.5
						GKWPL3232-H					
	GBRR-R35-25	●	RCGX0907 RPGX0907 RCGX0908	25.4	27.6	GTWPR2020-H	135.1	56.1	23.0	124.9	47.6
						GKWPL2020-H					
						GTWPR2525-H	160.1	52.1	27.9	150.0	52.6
						GKWPL2525-H					
						GTWPR3232-H	180.1	—	35.0	170.0	59.6
						GKWPL3232-H					
GBRR-R45-28	●	RCGX1207 RPGX1207 RCGX1208	28.5	30.2	GTWPR2020-H	137.6	58.6	23.0	124.9	50.1	
					GKWPL2020-H						
					GTWPR2525-H	162.7	54.7	27.9	150.0	55.1	
					GKWPL2525-H						
					GTWPR3232-H	182.7	—	35.0	170.0	62.2	
					GKWPL3232-H						

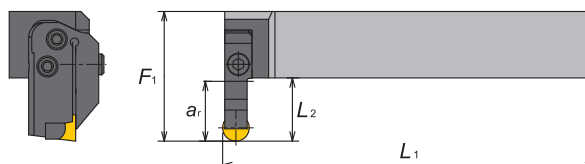
● Insert → 8

Toolholder

For GTWP-H



For GKWP-H



● Left hand

Hand	Blade number	Stock	Insert	Dimension (mm)		Holder	Dimension (mm)				
				ar	L ₂		GTWPL-H			GKWPL-H	
							L ₁	L ₃	F ₁	L ₁	F ₁
Left	GBRL-R23-19	●	RCGX0604 RPGX0604	19.0	22.5	GTWPL2020-H	130.0	51.0	23.0	124.9	42.5
						GKWPR2020-H					
						GTWPL2525-H	155.0	47.0	27.9	150.0	47.5
						GKWPR2525-H					
						GTWPL3232-H	175.0	—	35.0	170.0	54.5
						GKWPR3232-H					
	GBRL-R35-25	●	RCGX0907 RPGX0907 RCGX0908	25.4	27.6	GTWPL2020-H	135.1	56.1	23.0	124.9	47.6
						GKWPR2020-H					
						GTWPL2525-H	160.1	52.1	27.9	150.0	52.6
						GKWPR2525-H					
						GTWPL3232-H	180.1	—	35.0	170.0	59.6
						GKWPR3232-H					
GBRL-R45-28	●	RCGX1207 RPGX1207 RCGX1208	28.5	30.2	GTWPL2020-H	137.6	58.6	23.0	124.9	50.1	
					GKWPR2020-H						
					GTWPL2525-H	162.7	54.7	27.9	150.0	55.1	
					GKWPR2525-H						
					GTWPL3232-H	182.7	—	35.0	170.0	62.2	
					GKWPR3232-H						

● Insert → 8

Case study

● BIDE MICS

JX1 4 times longer tool life

Turbin disc (Rene104 rough/semi-finish)
RNGN120700T00820,
 $v_c=210\text{m/min}$, $f=0.18\text{mm/rev}$, $a_p=1.00\text{mm}$, Wet

	Rene104	Competitor's whisker ceramic	JX1
Cutting speed (m/min)	210	210	←
Tool life (pass)	1	1	4

- Rene 104 is a difficult material to cut.
- JX1 cut 4 times longer tool life than whisker ceramics.

JX1 1.7 times higher speed

Turbin disc (Inconel718 rough/semi-finish)
RPGX120700T00820,
 $v_c=210\text{m/min}$, $f=0.16\text{mm/rev}$, $a_p \sim 1.50\text{mm}$, Wet

	Competitor's whisker ceramic	JX1
Cutting speed (m/min)	210	350
Chip removal (cc/min)	50	84
Cycle time (min)	15	9

- JX1 cut 1.7 times faster than Competitor's Whisker and kept good edge.
- Reducing cycle time dramatically.

JX3

Turbin disc (Inconel718)

Grade	Competitor's whisker ceramic	JX3
Insert Shape	RPGX120700	←
Cutting speed (m/min)	210	350
Feed (mm/rev)	0.15	←
D.O.C (mm)	1.5	←
	WET	←

NTK : JX3 82 cc/min

Competitor's whisker ceramic 48 cc/min

JX3

Turbin disc (Inconel718)

Grade	Competitor's whisker ceramic	JX3
Insert Shape	RPGX120700	←
Cutting speed (m/min)	210	360
Feed (mm/rev)	0.15	←
D.O.C (mm)	1.8	←
	WET	←

NTK : JX3 100 cc/min

Competitor's whisker ceramic 60 cc/min

JP2 12 times higher productivity

Turbine disc (Inconel718 finishing)
CNGA120408,
 $v_c=240\text{m/min}$, $f=0.08\text{mm/rev}$, $a_p=0.25\text{mm}$, Wet

	Inco718	Competitor's coated carbide	JP2
Cutting speed (m/min)	20	20	←
Chip removal per minutes (cc/min)	0.4	0.4	4.8
Tool life (pass)	1	1	1

- JP2 cut 12 times faster than carbide insert, reducing cycle time dramatically

JP2 4 times higher productivity

Turbine disc (Inconel718 no scale, semi-finishing)
CNGA120408,
 $v_c=180\text{m/min}$, $f=0.10\text{mm/rev}$, $a_p=0.4\text{mm}$, Wet

	Inco718	Competitor's coated carbide	JP2
Cutting speed (m/min)	45	45	180
Chip removal per minutes (cc/min)	1.8	1.8	7.2
Tool life (pass)	1	1	4

- JP2 cut 4 times faster than carbide insert, reducing cycle time dramatically

● SiAlON ceramics

Turning(semi-finishing) : Turbine disc ● Inconel718

	current tool	NTK
Grade	Whisker ceramic	SX7
Insert Shape	RPGX120700	←
Cutting speed (m/min)	240	←
Feed (mm/rev)	0.15	←
D.O.C (mm)	1.50	←
Coolant	WET	←
Tool life (min)	7.0	←

Competitor's whisker ceramic **SX7**

● Whisker ceramics

Turbine disc
Inconel718

	External turning	Grooving	Ramping
	WA1	WA1	WA1
Cutting speed (m/min)	300	300	300
Feed (mm/rev)	0.15	0.1	0.06
D.O.C (mm)	3 - 4	-	2 - 3
Coolant	WET	WET	WET
Tool life (min)	20	20	20

Whisker ceramics WA1 achieved stable machining.

Guideline for grooving HRSA materials

BIDEMICS / Ceramic grooving inserts provide high speed capability to your process. Whisker ceramic is the most versatile option in this category. NTK also offers BIDEMICS and SiAlON grades for more productivity and stability.

	JX1	JX3	SX3	SX7	SX5	WA1/WA5
Speed		●		●	●	●
Feed			●	●	●	
Versatility	●			●		●
Toughness				●	●	
	Can run at up to 1500 SFM. Double the speed of whisker		Double the feed of whisker		Best for Scale and interruption	Versatile grade

● : 1st choice ● : 2nd choice

Application	Grade	Work material	Cutting speed (m/min)						Feed (mm/rev)					Depth of cut (mm)					Coolant	
			180	240	300	360	420	480	0.1	0.2	0.3	0.4	0.5	0.5	1.0	1.5	2.0	2.5		
	JX1 JX3	Overall	360(180-480)						0.07(0.05-0.1)										WET 	
	SX5	Waspaloy	210(180-240)						0.15(0.07-0.17)											
	SX3 SX7	Overall	230(180-270)						1.1(0.07-0.15)											
	WA1	Overall	240(180-330)						0.07(0.05-0.1)											
				<div style="border: 1px solid orange; padding: 5px; display: inline-block;"> When using SX7/SX5, increase feed rates 100% vs. Whisker Ceramics </div>																

When applying JX1 / JX3, increase speed to over **1000 SFM**
 When applying SX3 / SX7 / SX5, increase feed rates **100%** vs. Whisker Ceramics

Application Information

$\ge 45^\circ$
Work Hardening Layer

When machining a grooved area with multiple passes, the insert radius engages a potentially work hardened area during the last remaining plunge. This programming procedure sets up the potential of corner radius chipping or notching.

Change to

45°

The grooving insert is plunged down both outside walls thus maintaining a good finish. The remaining material can be removed by using a stronger insert shape such as a RCGX style.

Keys to successful machining of HRSA Materials

1) Use strong insert shapes

Maximize geometry for strength productivity



2) Use largest nose radius

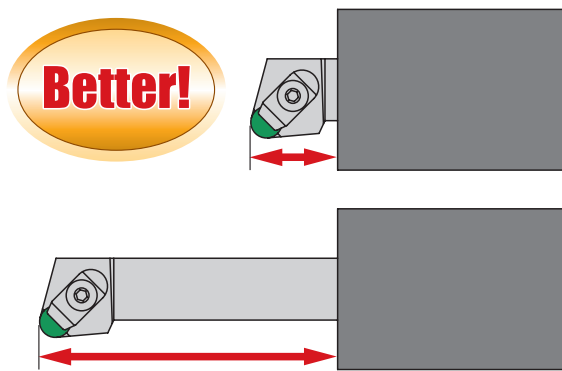
Maximize insert nose radius for strength and longer tool life

Take into account that the larger the nose radius the greater the tool pressure

Typical application machining heat resistant alloys use a RNGN1207 insert for roughing and CNGA1204 style for finishing

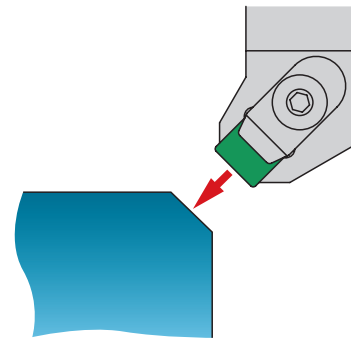
3) Minimize overhang

Too much overhang may cause chatter or insert breakage



4) Pre-chamfering

Pre-chamfering the part reduces the potential for insert chipping or breaking upon the entry or exit point of work material



5) No dwelling

Inserts wear out when rubbing the part instead of cutting

6) Coolant

- Turning : WET condition should be used.
 ※DRY condition may be best in a high interruption is encountered
- Milling : DRY condition should be used.

7) Edge preparations

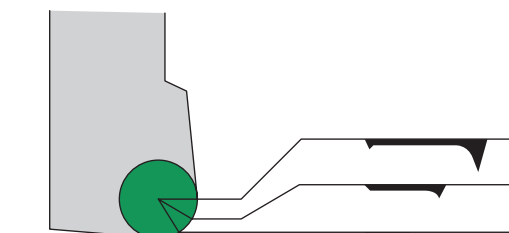
Typical HRSA machining requires the insert cutting edge to be sharp. Using a slight T-land or honed edge is also effective to reduce notching, flaking and built up edge

Keys to successful machining with ceramics, BIDEMICS insert

1) Depth of Cut

Depth of Cut Notching

This mode of insert failure is typical when machining heat resistant alloys. It must be controlled to prevent a catastrophic failure of the insert's cutting edge. The following information should help to minimize this problem.



Depth of Cut

Prime consideration should be given to the effect of depth of cut upon insert tool life. There is a direct relationship between the insert radius size and the maximum depth of cut which should be taken. See the chart below for recommendations.

Recommended Depth of Cut Range (mm)

Round insert	Maximum DOC	*Insert radius	Maximum DOC
φ 6.35	1.5mm...Less	0.8	0.2
φ 9.525	2.3mm...Less	1.2	0.3
φ 12.7	3.2mm...Less	1.6	0.4
φ 25.4	6.4mm...Less	2.4	0.6

*OPTIMUM DOC. IS 5-15% OF THE INSERT DIAMETER *BASED ON 0° LEAD ANGLE

2) Lead Angle

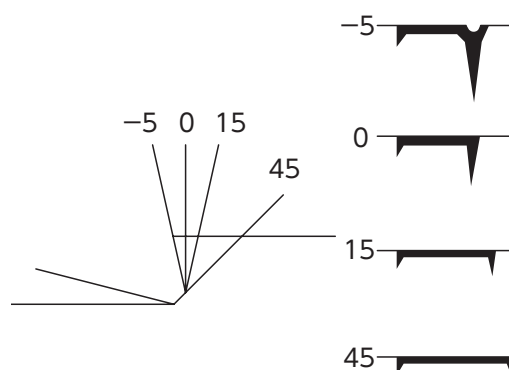
Lead Angles

When cutting heat resistant alloys consideration should be given to using the largest lead angle possible. When using large lead angles, the cutting forces are spread over a larger surface area of the insert. This will also improve tool life and surface finish while reducing notching. As the lead angle increases the chip will flow more easily.

- Typical insert wear pattern showing the effect of various lead angle changes and the resulting increase of depth of cut notching

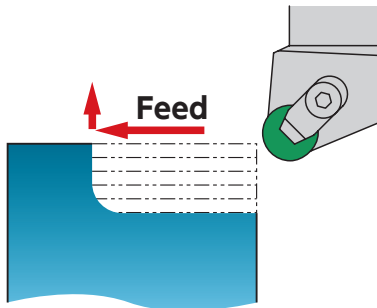
Feeds

Utilize the superior strength characteristic of SX7, SX3, SX9, SX5 SiAlON ceramics. If excessive wear is encountered while machining heat resistant alloys, increase the feed rate thus minimizing the cutting time.



3) Roughing

Same Depth of Cut

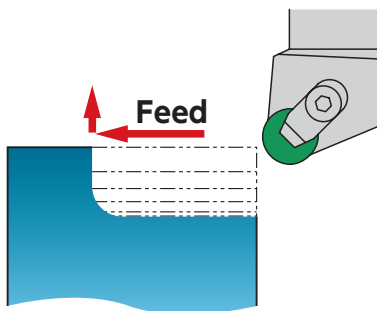


Note)

Notch wear on the insert cutting edge as shown in is the result of multiple passes being taken at the same depth of cut. This type of wear will minimize tool life.

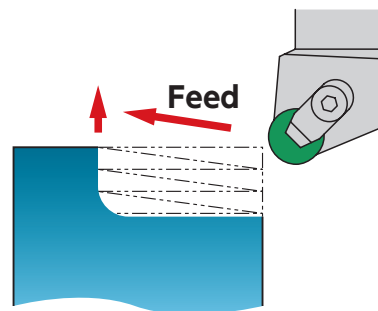
The following programming examples will help to minimize this mode of failure.

Varying Depth of Cut



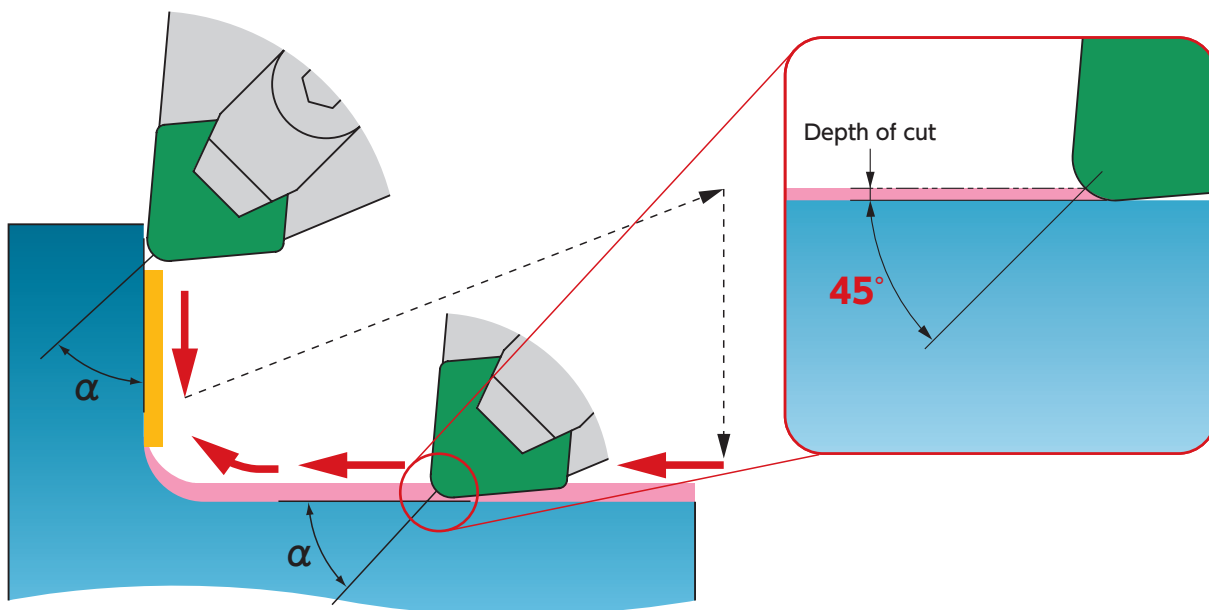
Note) Another programming change that may help to reduce notching is by varying the depth of cut. Again, the same principle applies, notching takes place at various points on the cutting edge rather than concentrated at one point.

Ramping

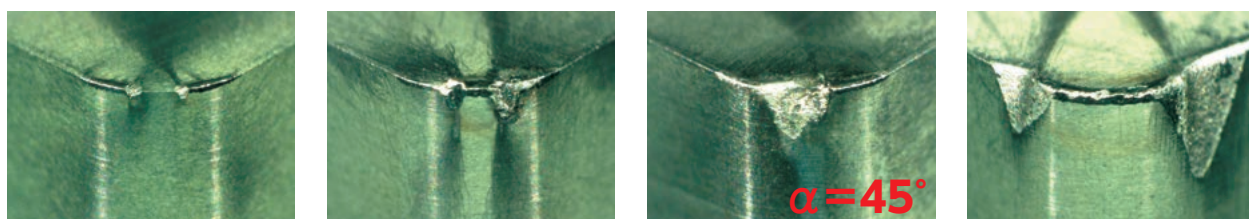


Note) Programming " Ramping " cuts in the same cutting direction is one of the best procedures to use to minimize notching. By varying the DOC, wear is distributed over the entire cutting edge not on one point.

4) Roughing



Depth of cut



Better

Note) The correct procedure is to take more material off during the previous roughing application. Then remove the amount of stock suitable for the nose radius of the insert by staying **below the 45° mark of the corner radius.** This will minimize notching and allow a cut from both directions.

$\alpha=45^\circ$

Insert radius		DOC	
(mm)	(Inch)	(mm)	(Inch)
0.4	0.0157	0.12	0.0047
0.8	0.0315	0.23	0.0091
1.2	0.0472	0.35	0.0138
1.6	0.0630	0.47	0.0185
2.0	0.0787	0.59	0.0232
2.4	0.0945	0.70	0.0276
3.2	0.1260	0.94	0.0370

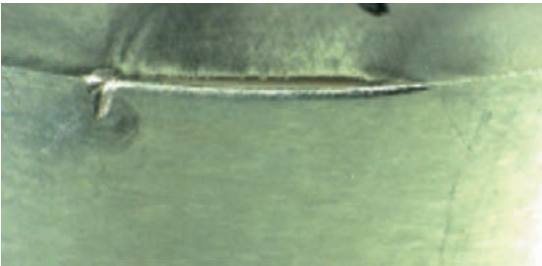
Cutting Conditions & Parameters Adjustment

● Whisker ceramics(WA1/WA5), BIDEMICS(JX1/JX3/JP2)

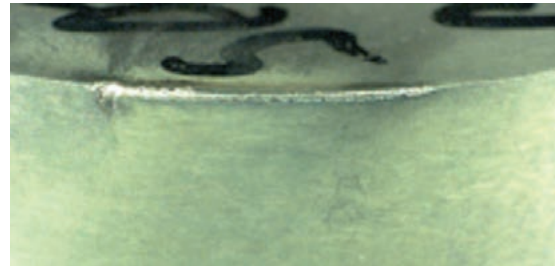
Cutting speed

Increasing cutting speed reduce nothing wear

100m/min



500m/min



● SiALON ceramics(SX7/SX3/SX9/SX5)

1) Cutting speed

Decreasing cutting speed increase the wear resistance

400m/min



100m/min



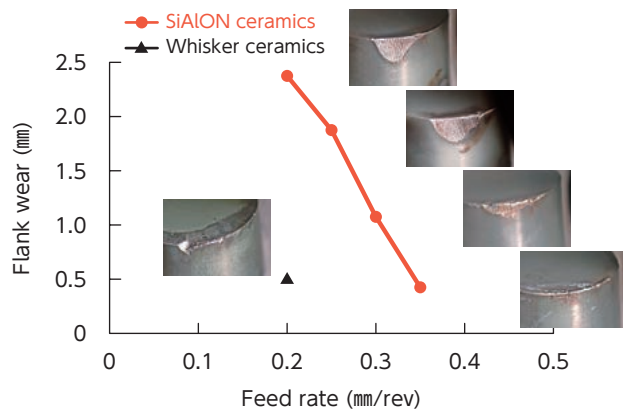
2) Feed rate

In some cases, in order to increase the wear resistance of **SiALON ceramics**, the feed must be increased. By increasing the feed and utilizing the toughness of **SiALON ceramics**, the inserts are off the part sooner causing less wear. Increasing the feed also decreases cycle time and improves productivity and profitability.

Note : Speed and feed rates shown are recorded test data and should not be thought of as recommended cutting conditions.

Note : Be careful to reduce the feed rate by 25%, when going into a corner.

Feed rate increased decreases wear amount



Cutting condition

Work material : Inco718
Insert shape : RGN120700

Cutting Speed : 250m/min
Depth of Cut : 2.0mm
WET

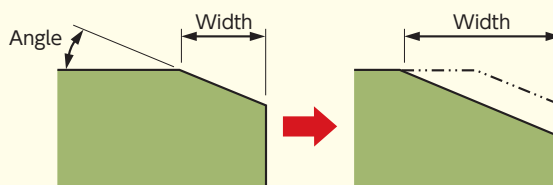
Troubleshooting

Flaking



Measures

- Decrease feed rate
- Use slightly larger T-land on the edge preparation

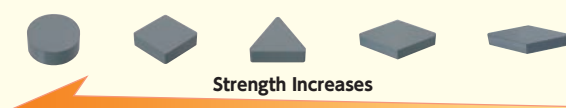


Breakage



Measures

- Increase cutting speed and feed rate
- Use strong insert shapes



It takes time to set the suitable cutting condition if work material hardness is unknown. Generally decreasing cutting speed is effective when machining harder work material.

Eliminate chatter

Chatter problem is often caused by too much cutting pressure when machining heat resistant alloys especially in profiling or grooving. A non-rigid machine may cause excessive insert wear or insert breakage.

- Increase speeds and decrease feeds
- Use harder grade with higher speed
- Use smaller I.C round insert, or smaller nose radius
- Reduce insert nose radius
- Use positive insert
- Reduce lead angle
- Reduce edge preparation or use sharp edge
- Minimize overhang
- Try a heavy metal boring bar

NEW

New SiAlON Grade for Machining Heat Resistant Super Alloys

SX3

NTK's versatile SX3 grade has been developed to achieve a SiAlON material composition with the ideal blend of excellent wear resistance and toughness to successfully machine a wide variety of heat resistant super alloys (HRSA)

**Machined surface · semi-finishing
heat resistant alloys
(Wear resistance of SX7)**

**Forged surface heat resistant alloy
(Toughness of SX9 / SX5)**



Features

- **Consistent in excellent wear resistance and toughness.**
Able to machine heat resistance alloy widely: Rough turning with scale ~ semi-finish turning.
- **Able to machine even the newest generation of HRSA work materials (like Rene's) as well as today's most common HRSA materials; such as Inconel 718.**
- **Able to machine milling with high efficiency.**

Stock list

Code	Std. Edge preparation	
T00520	Chamfer	0.05mm × 20°
E004	Round honing	R0.04

※Please order 10 each.

Shape	Part number		Dimensions (mm)		SiALON ceramic	
	ISO	Inch	I.C.	Thickness	SX3	Stock
	RNGN120400T00520	RNG43T0220	12.7	4.76	5997929	●
	RNGN120700T00520	RNG45T0220	12.7	7.94	5997945	●
	RNGN120700E004	RNG45E02	12.7	7.94	5997952	●
	RCGX090700T00520	RCGX35T0220	9.525	7.94	5998042	●
	RCGX120700T00520	RCGX45T0220	12.7	7.94	5998059	●
	RPGX090700T00520	RPGX35T0220	9.525	7.94	5998075	●
	RPGX120700T00520	RPGX45T0220	12.7	7.94	5998083	●

Recommended machined parts



Recommended work-materials

Inconel 718 Hastelloy
Waspaloy Rene(Rene65, Rene88, Rene130 etc..)

Case study

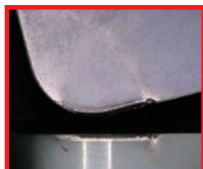
Work material : Rene130 Rough turning (eliminating scale)

	Conventional	NTK
Grade	SiALON Ceramic	SX3
Shape	SNGN190724	←
Cutting speed (m/min)	115	←
Feed (mm/rev)	0.15	←
Coolant	WET	←
Tool life (min)	10.0	←

Competitor's SiALON Ceramic



SX3



In turning rough surface, compared to competitor's SiAlon, SX3 had no fracture and good condition.

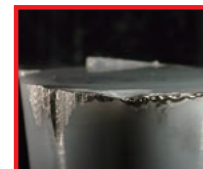
Work material : Rene130 Semi finish turning (machined surface)

	Conventional	NTK
Grade	SiALON Ceramic	SX3
Shape	RCGX120700	←
Cutting speed (m/min)	100	←
Feed (mm/rev)	0.25	←
Coolant	WET	←
Tool life (min)	10.0	←

Competitor's SiALON Ceramic










SX3



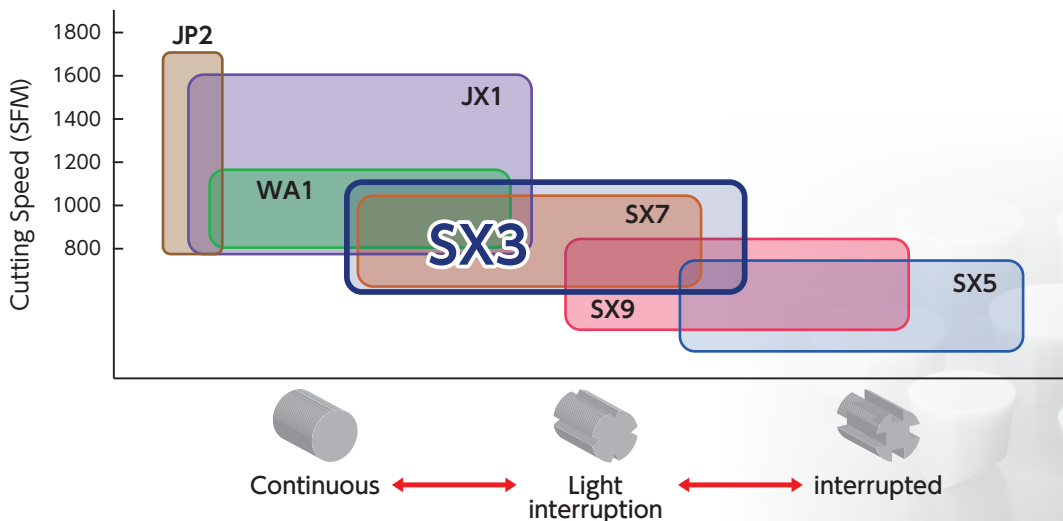
Competitor's SiAlon fractured frequently, however SX3 and SX9 had good edge damage.






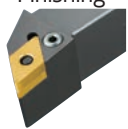



Insert Grade Application Chart



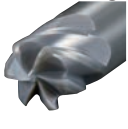

Category	Grade	Applications	Scale	No scale	Profiling	Finishing	Grooving	Milling	End milling
									
SiAlON	SX3	Versatile general grade for turning Best grade for milling	●	●	●			●	
	SX5	Best grade for Waspaloy with scale	●				●		
	SX7	Versatile general grade for turning Best grade for milling	●	●	●		●	●	
	SX9	Best grade for Inco718 with scale	●					●	●
BIDEMICS	JX1 JX3	Special grade with higher speed and longer tool life potential		●	●		●		
	JP2	Special grade for finish turning				●			
Whisker	WA1 WA5	Versatile general grade for turning		●	●		●		

● 1st Choice ● 2nd Choice

Grade Map



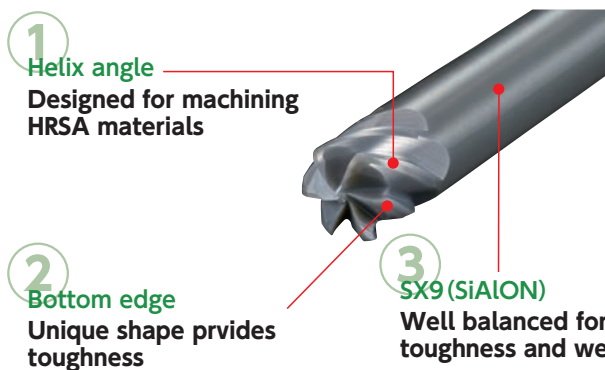
Application	Grade	Work material	Cutting speed					Feed					Depth of cut					Coolant
			180	240	300	360	420	480	0.10	0.20	0.30	0.40	0.50	0.5	1.0	1.5	2.0	
Rough with Scale 	SX3	Overall	240 (180-270) m/min					0.25 (0.15-0.30) mm/rev					2.0 (1.0-5.0) mm					WET 
	SX5	Waspaloy	195 (180-240) m/min					0.30 (0.20-0.35) mm/rev					2.0 (1.0-5.0) mm					
	SX9	Inco718	195 (180-240) m/min					0.30 (0.20-0.35) mm/rev					2.0 (1.0-5.0) mm					
	SX7	Overall	240 (180-270) m/min					0.20 (0.10-0.23) mm/rev					2.0 (1.0-5.0) mm					
Rough no Scale 	SX3	Overall	210 (180-270) m/min					0.25 (0.15-0.35) mm/rev					2.0 (1.0-2.5) mm					WET 
	JX1 JX3	Overall	210-390 (180-480) m/min					0.20 (0.13-0.28) mm/rev					1.8 (1.0-2.5) mm					
	SX7	Waspaloy	210 (180-270) m/min					0.23 (0.15-0.30) mm/rev					2.0 (1.0-2.5) mm					
	WA1 WA5	Inco718	240 (180-300) m/min					0.20 (0.13-0.25) mm/rev					1.8 (1.0-2.5) mm					
Profiling & Semi-Finish 	SX3	Overall	240 (180-270) m/min					0.23 (0.15-0.30) mm/rev					1.5 (1.0-2.0) mm					WET 
	JX1 JX3	Overall	210-450 (180-480) m/min					0.20 (0.10-0.25) mm/rev					1.5 (1.0-2.0) mm					
	SX7	Waspaloy	240 (180-270) m/min					0.20 (0.13-0.25) mm/rev					1.5 (1.0-2.0) mm					
	WA1 WA5	Inco718	240 (180-330) m/min					0.20 (0.10-0.25) mm/rev					1.5 (1.0-2.0) mm					
Finishing 	JP2	Overall	210-480 (180-510) m/min					0.18 (0.10-0.25) mm/rev					0.75 (0.25-1.0) mm					WET 
Grooving 	SX5	Waspaloy	210 (180-240) m/min					0.15 (0.08-0.18) mm/rev					<div style="background-color: orange; padding: 5px; border: 1px solid black;"> Double the feed rate for SX7/SX5 (vs. whisker) </div>					WET 
	SX7	Inco718	225 (180-270) m/min					0.11 (0.08-0.15) mm/rev										
	WA1 WA5	Overall	240 (180-330) m/min					0.08 (0.05-0.10) mm/rev										

Application	Grade	Work material	Cutting speed					Feed					Depth of cut					Coolant
			450	600	750	900	1050	1200	0.05	0.075	0.10	0.125	0.15	0.5	1.0	1.5	2.0	
Milling 	SX3	Overall	810 (600-1200) m/min					0.12 (0.08-0.15) mm/rev					1.75 (1.0-2.5) mm					DRY 
	SX7	Overall	810 (600-1200) m/min					0.10 (0.08-0.13) mm/rev					1.75 (1.0-2.5) mm					
	SX9	Overall	750 (450-1050) m/min					0.13 (0.10-0.15) mm/rev					2.0 (1.0-2.5) mm					
End milling 	SX9	Overall	610 (300-1000) m/min					0.02-0.03 mm/rev										DRY 

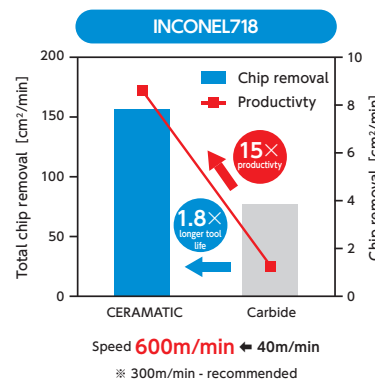
CERAMATIC Lineup Expansion



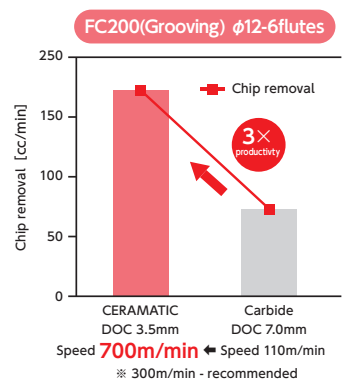
- Extremely high speed machining for HRSA materials with our durable SiAlON grade "SX9"
- More than 10 times higher productivity than a carbide endmill
- Suitable for machining Aero parts, machine tools parts, compressor parts.



[HRSA]



[Cast iron]



WATCH ON
YouTube

Sharp corner edge (for HRSA materials)

Tolerance: mm

$\phi D_c / \phi D_s$	e8	h6
8, 10, 3/8"	-0.024/-0.047	+0/-0.009
12, 1/2"	-0.032/-0.059	+0/-0.011

Material group

P	M	K	N	S	H
				◎	

4 flutes No center cutting edge

4-flute Registance in high load process

6 flutes No center cutting edge

6-flute Superior in toughness

Flute	Item Number	Grade	ϕD_c		ϕD_s		ϕD_2		R_e		$A_p \text{ max}$		L_1		L_2	
		SX9	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)
4	RCEM 080H4R100S	●	8.0	—	8.0	—	7.6	—	1.0	—	6.0	—	60	—	16	—
	100H4R125S	●	10.0	—	10.0	—	9.6	—	1.25	—	7.5	—	65	—	20	—
	120H4R150S	●	12.0	—	12.0	—	11.6	—	1.5	—	9.0	—	70	—	24	—
	RCEI 375H4R047S	●	9.525	3/8	9.525	3/8	9.125	.359	1.19	.047	7.14	9/32	63.5	2.5	19.05	—
	500H4R068S	●	12.7	1/2	12.7	1/2	12.3	.484	1.73	.068	9.525	3/8	69.9	2.75	25.4	—
6	RCEM 080J6R100S	●	8.0	—	8.0	—	—	—	1.0	—	6	—	60	—	—	—
	100J6R125S	●	10.0	—	10.0	—	—	—	1.25	—	7.5	—	65	—	—	—
	120J6R150S	●	12.0	—	12.0	—	—	—	1.5	—	9	—	70	—	—	—
	RCEI 375J6R047S	●	9.525	3/8	9.525	3/8	—	—	1.19	.047	7.14	9/32	63.5	2.5	—	—
	500J6R068S	●	12.7	1/2	12.7	1/2	—	—	1.73	.068	9.525	3/8	69.9	2.75	—	—

● : Stock

◎ : 1st choice

Recommend Cutting Conditions for HRSA material

Application	Flute	ϕD_c	Depth of cut a_p (mm)	Width of cut a_e (mm)	Feed (mm/t)	Cutting speed (m/min)			Coolant
						300	600	1000	
Side Milling 	4/6/8	8	≤ 4.0	≤ 0.8	0.03				DRY
		10, 3/8"	≤ 5.0	≤ 1.0	0.03				✗
		12, 1/2"	≤ 6.0	≤ 1.2	0.03				✗
		16, 5/8"	≤ 8.0	≤ 1.6	0.03				✗
		20, 3/4"	≤ 10.0	≤ 2.0	0.03				✗
Slotting 	4	8	≤ 2.0	—	0.03				DRY
		10, 3/8"	≤ 2.5	—	0.03				✗
		12, 1/2"	≤ 3.0	—	0.03				✗
		16, 5/8"	≤ 4.0	—	0.03				✗
	6/8	8	≤ 1.2	—	0.03				DRY
		10, 3/8"	≤ 1.5	—	0.03				✗
		12, 1/2"	≤ 1.8	—	0.03				✗
		16, 5/8"	≤ 2.4	—	0.03				✗
		20, 3/4"	≤ 2.9	—	0.03				✗

For Maximum Productivity

- A continuous cut is recommended. An interrupted cut may cause chipping or breakage.
- Continue to machine even if you see BUE, removing BUE may cause chipping or breakage to the edge.
- A Minimum speed of 300m/min is required. (Don't run at lower speed)
- A 1.5 degree ramping angle is recommended. Run at 50% lower feed rate when ramping cut.

Tough corner edge (for cast iron)

Tolerance: mm

$\phi D_c / \phi D_s$	e8	h6
8, 10, 3/8"	-0.024/-0.047	+0/-0.009
12, 16, 1/2", 5/8"	-0.032/-0.059	+0/-0.011
20, 3/4"	-0.040/-0.073	+0/-0.013

Material group

P	M	K	N	S	H
		⊙		○	

4 flutes No center cutting edge

4-flute Resistance in high load process

6 • 8 flutes No center cutting edge

6-flute 8-flute Superior in toughness

Flute	Item Number	Grade	ϕD_c		ϕD_s		ϕD_2		R_ϵ		$A_p \text{ max}$		L_1		L_2	
		SX9	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)	(mm)	(Inch)
4	NEW RCSM 120H4R150S	●	12.0	—	12.0	—	11.6	—	1.5	—	9.0	—	70	—	24	—
	NEW 160H4R200S	●	16.0	—	16.0	—	15.5	—	2.0	—	12.0	—	75	—	32	—
	NEW RCSI 500H4R068S	●	12.7	1/2	12.7	1/2	12.3	.484	1.73	.068	9.525	3/8	69.85	2.75	25.4	1
	NEW 625H4R078S	●	15.875	5/8	15.875	5/8	15.375	.609	1.98	.078	11.91	.469	76.2	3	31.75	1.25
6	NEW RCSM 120J6R150S	●	12.0	—	12.0	—	—	—	1.5	—	9.0	—	70	—	—	—
	NEW 160J6R200S	●	16.0	—	16.0	—	—	—	2.0	—	12.0	—	75	—	—	—
	NEW RCSI 500J6R068S	●	12.7	1/2	12.7	1/2	—	—	1.73	.068	9.525	3/8	69.85	2.75	—	—
	NEW 625J6R078S	●	15.875	5/8	15.875	5/8	—	—	1.98	.078	11.91	.469	76.2	3	—	—
8	NEW RCSM 200J8R250S	●	20.0	—	20.0	—	—	—	2.5	—	15.0	—	110	—	—	—
	NEW RCSI 750J8R094S	●	19.05	3/4	19.05	3/4	—	—	2.38	.094	14.29	.562	107.95	4.25	—	—

● : stock

⊙ : 1st choice

○ : 2nd choice

Recommend Cutting Conditions for cast iron

Application	Flute	ϕD_c	Depth of cut a_p (mm)	Width of cut a_e (mm)	Feed (mm/t)	Cutting speed (m/min)			Coolant
						350	600	750	
Side Milling 	4/6/8	12, 1/2"	≤9.0	≤2.0	0.1				DRY
		16, 5/8"	≤12.0	≤2.0	0.1				
		20, 3/4"	≤15.0	≤2.0	0.1				
Slotting 	4/6/8	12, 1/2"	≤3.0	—	0.1				DRY
		16, 5/8"	≤4.0	—	0.1				
		20, 3/4"	≤5.0	—	0.05				

For Maximum Productivity

- A minimum speed of 350m/min is required. (Don't run at lower speed)
- A shorter tool overhang($L/D \approx 2$) is recommended.
- Machining under coolant remain is possible , but no coolant is highly recommended for stable machining.
- Machining with light depth cut using only bottom edge is not recommended.

ST4

S U P E R T O U G H C O A T

For Stainless Steel

Extended tool life with
new PVD coated carbide grades.
[ST4] for stainless steels
like **SUS304**.

Stable and consistent performance when machining stainless steel

Low tool life, and unstable chip evacuation are factors preventing stable machining of stainless steel.

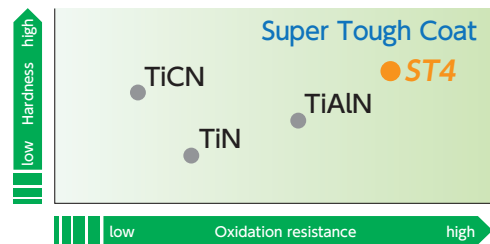
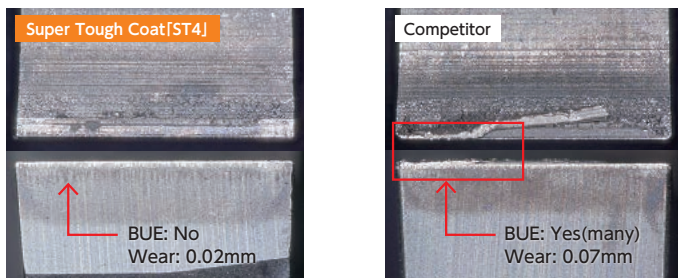
The New PVD coated carbide grade ST4 solves the issues related to machining stainless steel.



Higher hardness and oxidation resistance

NTK's unique coating technology creates a high-aluminum coated composition. Extends tool life and allows high-speed machining of stainless steel.

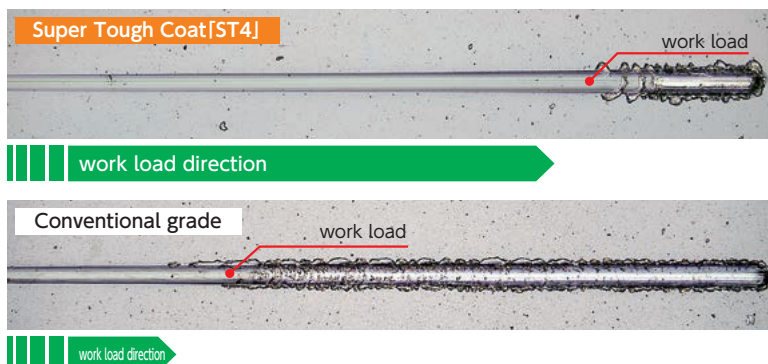
NTK vs. competitor (cut off)
Workmaterial : SUS304 ($\phi 11$) $V_c=80\text{m/min}$ $f=0.03\text{mm}$ after 200pcs cut-off



Stable machining, excellent surface finish \Rightarrow Extended tool life

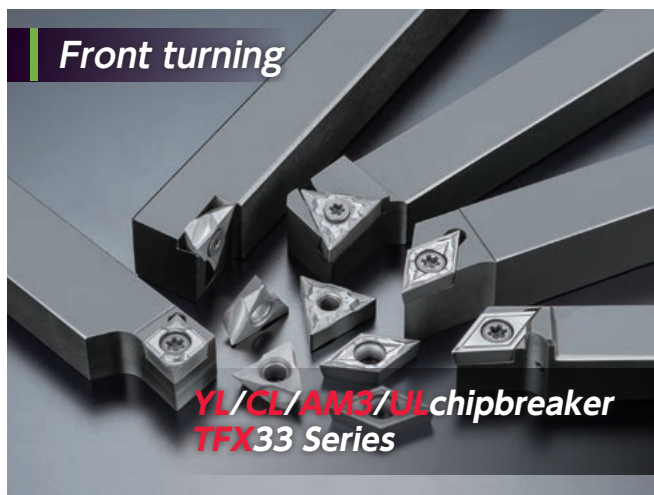
NTK new PVD coated carbide grades [ST4] improved bonding force and surface smoothness. It prevents BUE trouble from stainless steel machining, and achieved stable cutting.

Measurement (Scratch test on coating layer)

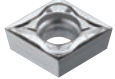
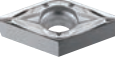


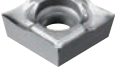









Super Tough Coat [ST4] × Chipbreaker for stainless steel


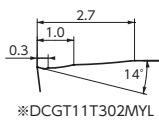

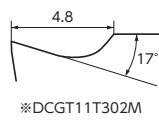
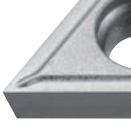
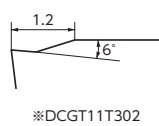

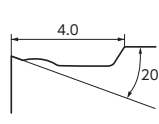
NTK's ST4 grade combined with unique chipbreakers meet the demands of your machining.



Front turning YL • CL • AM3 • UL chipbreaker

Shape	Item number	Corner R	Stock	Dimensions (mm)	
				I.C.	Thickness
			ST4		
	CCGT 09T301M YL	0.08	●	9.525	3.97
	09T302M YL	0.18	●		
	09T304M YL	0.38	●		
	09T308M YL	0.78	●		
	DCGT 11T301M YL	0.08	●	9.525	3.97
	11T302M YL	0.18	●		
	11T304M YL	0.38	●		
	11T308M YL	0.78	●		
	VCGT 110301M YL	0.08	●	6.35	3.18
	110302M YL	0.18	●		
	110304M YL	0.38	●		
	VBGT 160402FN YL	0.2	●	9.525	4.76
	160404FN YL	0.4	●		
	160408FN YL	0.8	●		
	CCGT 060201M CL	0.08	●	6.35	2.38
	060202M CL	0.18	●		
	09T301M CL	0.08	●		
	09T302M CL	0.18	●		
	09T304M CL	0.38	●		
	DCGT 070201M CL	0.08	●	6.35	2.38
	070202M CL	0.18	●		
	070204M CL	0.38	●		
	11T301M CL	0.08	●		
	11T302M CL	0.18	●		
	11T304M CL	0.38	●		
	VCGT 110301M YL	0.08	●	6.35	3.18
	110302M YL	0.18	●		
	110304M YL	0.38	●		
	CCGT 060201M FN AM3	0.08	●	6.35	2.38
	060202M FN AM3	0.18	●		
	060204M FN AM3	0.38	●		
	09T301M FN AM3	0.08	●		
	09T302M FN AM3	0.18	●		
	DCGT 070201M FN AM3	0.08	●	6.35	2.38
	070202M FN AM3	0.18	●		
	070204M FN AM3	0.38	●		
	11T301M FN AM3	0.08	●		
	11T302M FN AM3	0.18	●		
	VCGT 110301M FN AM3	0.08	●	6.35	3.18
	110302M FN AM3	0.18	●		
	110304M FN AM3	0.38	●		
	VPGT 110301M FN AM3	0.08	●	6.35	3.18
	110302M FN AM3	0.18	●		
	TNGG 160401M FN UL	0.08	●	9.525	4.76
	160402M FN UL	0.18	●		
	160404M FN UL	0.38	●		
	160408M FN UL	0.78	●		

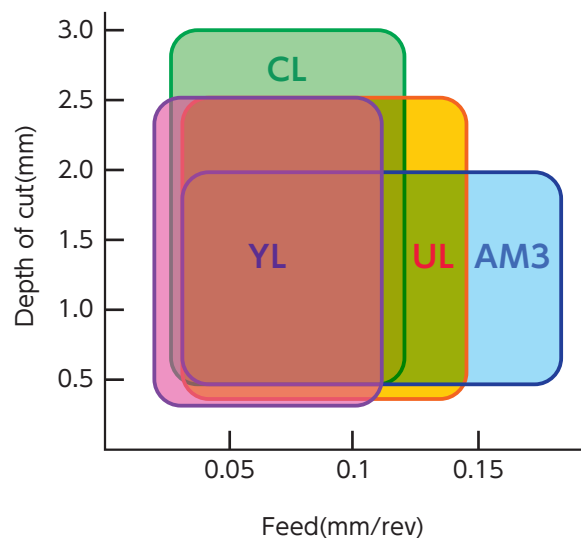
Features

Name	Chipbreaker Geometry		Features
YL		 ※DCGT11T302MYL	<ul style="list-style-type: none"> • Great combination of sharpness and toughness • Covers extremely wide range • Excellent chip control
CL		 ※DCGT11T302M	<ul style="list-style-type: none"> • Sharpest molded chipbreaker • Excellent chip control • Less tool pressure
AM3		 ※DCGT11T302	<ul style="list-style-type: none"> • All purpose chipbreaker • Sharp edge with toughness
UL		 ※TNGG160401MFN	<ul style="list-style-type: none"> • Negative insert with a positive insert's chipbreaker • Reduced burrs • Improves microfinish • Superb advantage in cost per corner over positive inserts

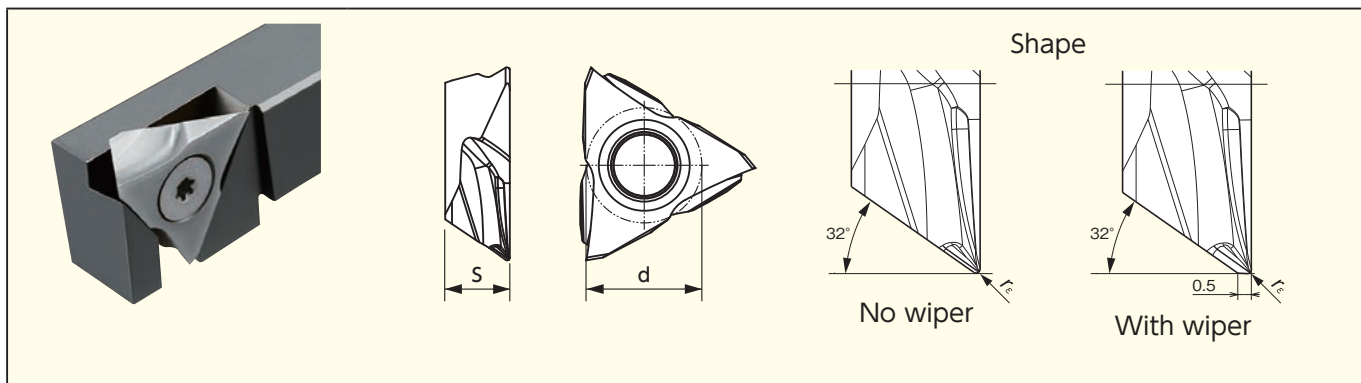
Chipbreaker Geometry

Toolholder	CCGT Series	DCGT Series	VCGT Series	VPGT Series	TNGG Series
2019-2020 General catalogue	G24~G25	G26~G29	G30~G33	G34~G35	G40~G41
2018 SS catalogue	D22~D23	D24~D27	D28~D31	D32~D33	D36~D37

Chip Control Range



Front turning TFX Series

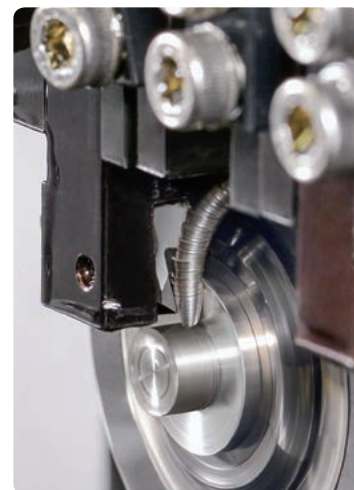
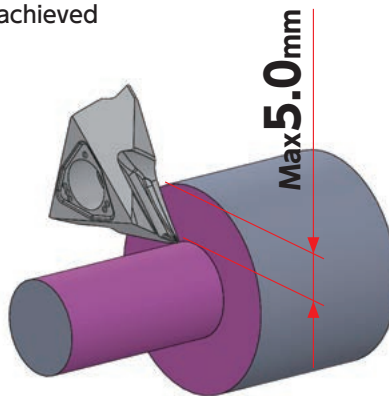
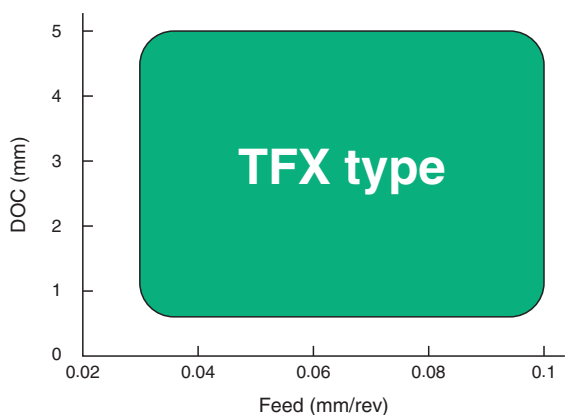


Wiper	Item number	f_e (mm)	Stock ST4	Max. DOC (mm)	Dimensions (mm)		Toolholder
					d	s	2019-2020 General catalogue
Yes	TFX 3301MR	0.08	●	5.0	9.525	4.76	G36
	3302MR	0.18	●				
	3304MR	0.38	●				
No	TFX 3301MRW	0.08	●	5.0	9.525	4.76	G36
	3302MRW	0.18	●				
	3304MRW	0.38	●				

Features

Specially designed sharp chipbreaker provides 1 pass turning up to 5.0mm.

Reduce cutting force with high DOC turning, and achieved excellent chipcontrol with good surface finish.

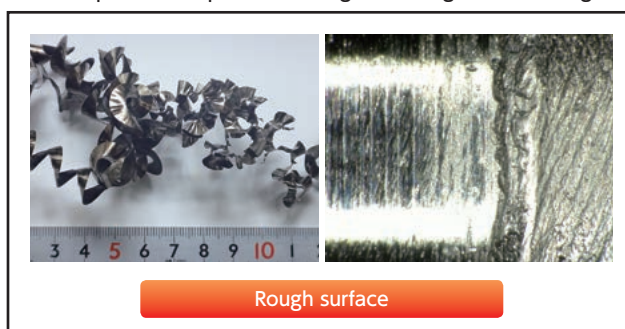
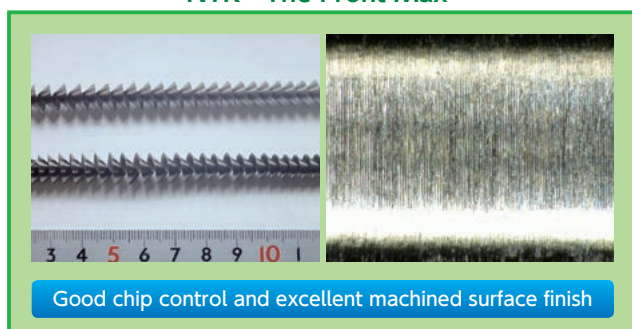


DOC 5.0mm

Workmaterial : SUS304 Cutting condition : $V_c=80\text{m/min}$ $f=0.03\text{mm/rev}$ WET

NTK The Front Max

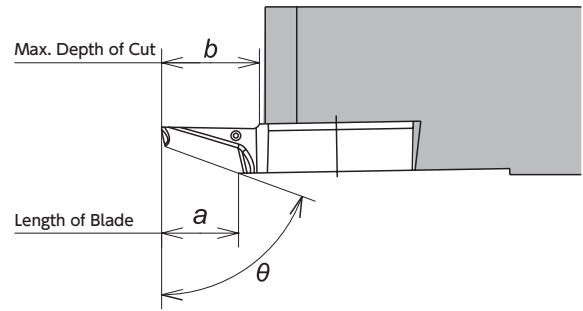
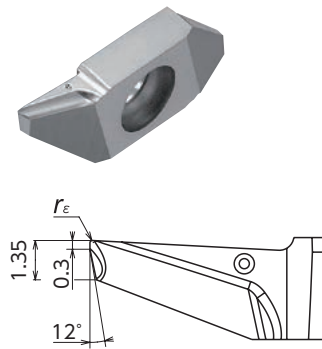
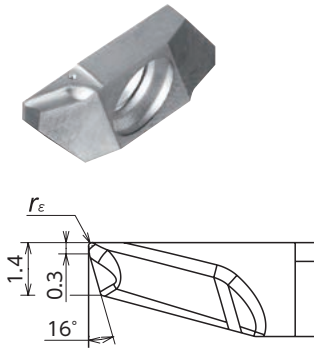
Competitor's chipbreaker designed for high DOC turning



Back turning TBP/TBPA-BM Series

TBP-BM Series

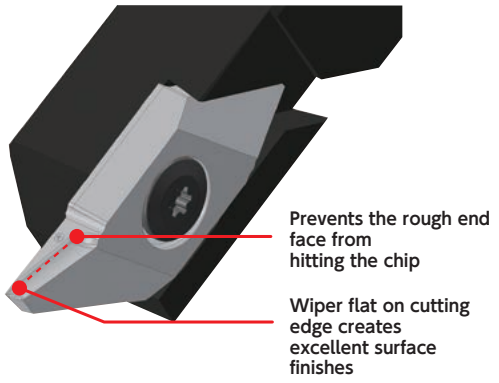
TBPA-BM Series



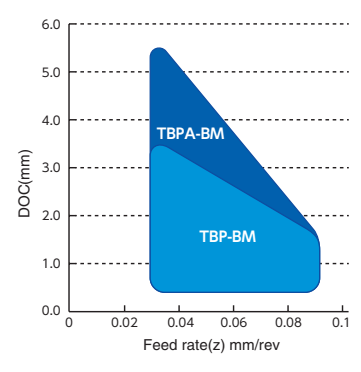
Item number	r_ϵ (mm)	Length of Blade a (mm)	Max. Depth of Cut b (mm)	Cutting edge angle θ	Stock ST4	Toolholder	
						2019-2020 General catalogue	2018 SS catalogue
TBP 72FR05-BM	0.05	3.5	5.3	72°	●	G54 ~ G55	E12 ~ E13
72FR10M-BM	0.08	3.5	5.3	72°	●		
72FR20M-BM	0.18	3.5	5.3	72°	●		
TBPA 70FR05-BM	0.05	5.5	6.5	70°	●	G56 ~ G57	E14
70FR10M-BM	0.08	5.5	6.5	70°	●		
70FR20M-BM	0.18	5.5	6.5	70°	●		

Features

Chip control range



BM chipbreaker	Competitor's tool
<p>Good chip control</p>	<p>Unstable chip control</p>
<p>Cutting condition: $V_c=80\text{m/min}$ WET Material: SUS304 $\phi 16$ Holder: TBPR12 Insert: TM4 TBP72FR10M-BM</p>	

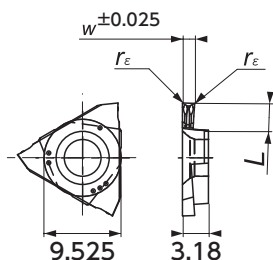


Superior Surface Finish

1 Pass	BM chipbreaker		Competitor's tool	
	End face	OD	End face	OD
	<p>Excellent surface</p>	<p>Ra : 0.72 μm Rz : 4.46 μm</p>	<p>Rough surface</p>	<p>Ra : 1.65 μm Rz : 6.01 μm</p>
	<p>Cutting condition: $V_c=80\text{m/min}$ $f(x)=0.02\text{mm/rev}$ $f(z)=0.08\text{mm/rev}$ $a_p=3.0\text{mm}$ WET Material: SUS304 $\phi 16$ Holder: TBPR12 Insert: TM4 TBP72FR10M-BM</p>			

Grooving GTMH32-GX Series

side turning capability
 Details
 Front rake angle: 17degree
 Side rake angle :14 degree



Groove width: ~ 1.0



Groove width : 1.5 ~



Item number	Dimension(mm)					Stock
	W	r _ε	L	Max Depth Grooving (mm)	Max Depth Side turning (mm)	ST4
GTMH32 033RGX	0.33	0.05	0.6	0.25	—	●
043RGX	0.43	0.05	1.2	0.9	—	●
050RGX	0.50	0.05	1.2	0.9	—	●
053RGX	0.53	0.05	1.2	0.9	—	●
075RGX	0.75	0.05	2.0	1.6	0.75	●
095RGX	0.95	0.05	2.0	1.6	1.5	●
100RGX	1.0	0.05	2.0	1.6	1.5	●
100RGX01	1.0	0.1	2.0	1.6	1.5	●
GTMH32 150RGX	1.5	0.05	3.0	2.7	2.0	●
150RGX01	1.5	0.1	3.0	2.7	2.0	●
150RGX02	1.5	0.2	3.0	2.7	2.0	●
200RGX	2.0	0.05	3.0	2.7	2.0	●
200RGX01	2.0	0.1	3.0	2.7	2.0	●
200RGX02	2.0	0.2	3.0	2.7	2.0	●
300RGX	3.0	0.05	3.0	2.7	2.0	●
300RGX02	3.0	0.2	3.0	2.7	2.0	●

Features



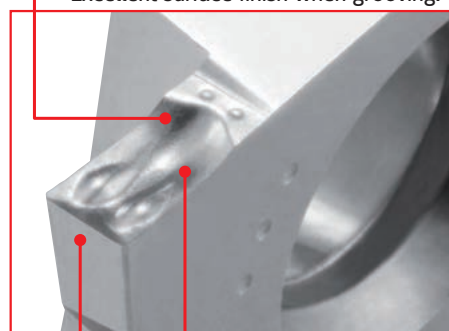
Typical Grooving Problems

- Chips remain at the bottom of groove
- Bird's nest of chips



Center bump and dent design improves chip control

Helps chip curl & control.
 Excellent surface finish when grooving.



Improved chip control when side turning.

Chip control performance at side turning improved (MAX. ap- 2.0mm)

Outer periphery polishing offers excellent surface finish

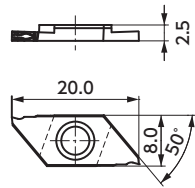
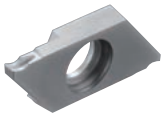
Sharpness equal to ground chipbreaker

Toolholder

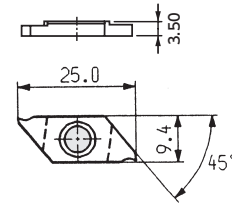
Toolholder	
2019-2020 General catalogue	2018 SS catalogue
H18 ~ H21	H8 ~ H11

Cut off CTP/CTPA-CX Series

CTP-TH Series
(Max. Cut-off Dia. ~ ϕ 12)



CTPA-TH Series
(Max. Cut-off Dia. ~ ϕ 16)



Type	Hand	Shape	Item number	Max. Cut-off Dia. (mm) ϕ D	Dimension(mm)				Stock
					W	A	θ	r_ϵ	
CTP Series	R		CTP 10FR-CX	12.0	1.0	0.32	16°	0.05	●
			13FR-CX	12.0	1.3	0.40	16°	0.05	●
			15FR-CX	12.0	1.5	0.46	16°	0.05	●
			CTP 10FRN-CX	12.0	1.0	—	0°	0.05	●
			13FRN-CX	12.0	1.3	—	0°	0.05	●
			15FRN-CX	12.0	1.5	—	0°	0.05	●
	L		CTP 10FLK-CX	11.0	1.0	0.32	16°	0.05	●
			13FLK-CX	11.0	1.3	0.40	16°	0.05	●
	15FLK-CX		11.0	1.5	0.46	16°	0.05	●	
	L		CTP 10FLN-CX	12.0	1.0	—	0°	0.05	●
			13FLN-CX	12.0	1.3	—	0°	0.05	●
			13FLN02-CX	12.0	1.3	—	0°	0.2	●
			15FLN-CX	12.0	1.5	—	0°	0.05	●
			15FLN02-CX	12.0	1.5	—	0°	0.2	●
CTPA Series	R		CTPA 15FR-CX	16.0	1.5	0.46	16°	0.05	●
			CTPA 15FRN-CX	16.0	1.5	—	0°	0.05	●
	L		CTPA 15FLK-CX	14.5	1.5	0.46	16°	0.05	●
			CTPA 15FLN-CX	16.0	1.5	—	0°	0.05	●

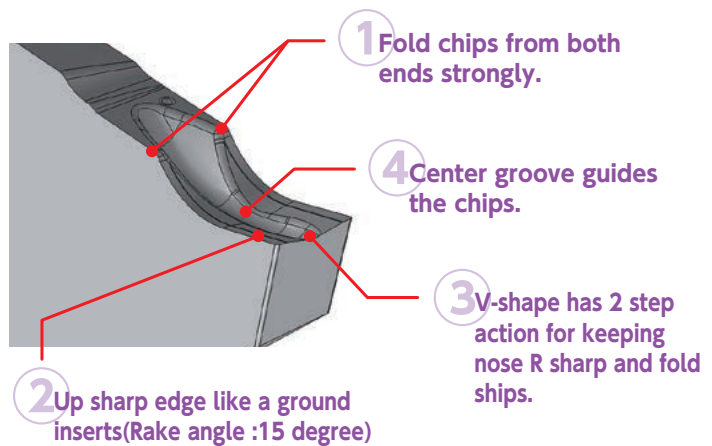
※Max. Cut-off Dia. is indicates the cutting diameter of the insert when the top of the cutting edge is located on center

Features

Folds chip strongly from both ends and achieves superior machined surface finish.



Excellent chip control

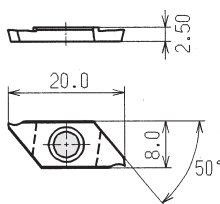
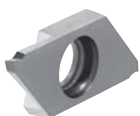


Toolholder

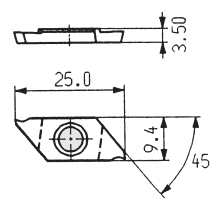
Catalogue	CTP Series	CTPA Series
2019-2020 General catalogue	G76 ~ G77	G82 ~ G83
2018 SS catalogue	F10 ~ F11	F16 ~ F17

Cut-off CTP/CTPA-TH Series (Tough edge type)

CTP-TH Series
(Max. Cut-off Dia. ~φ12)



CTPA-TH Series
(Max. Cut-off Dia. ~φ16)

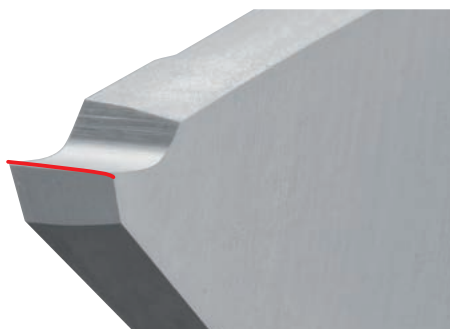


Type	Hand	Shape	Item number	Max. Cut-off Dia. (mm) φD	Dimension(mm)				Stock
					w	A	θ	r _ε	
CTP Series	R		CTP 10FR-TH	12.0	1.0	0.32	16°	0.05	●
			15FR-TH	12.0	1.5	0.46	16°	0.05	●
			20FR-TH	12.0	2.0	0.61	16°	0.05	●
			CTP 10FRN-TH	12.0	1.0	—	0°	0.05	●
			15FRN-TH	12.0	1.5	—	0°	0.05	●
			20FRN-TH	12.0	2.0	—	0°	0.05	●
	L		CTP 10FLK-TH	11.0	1.0	0.32	16°	0.05	●
			15FLK-TH	11.0	1.5	0.46	16°	0.05	●
			20FLK-TH	11.0	2.0	0.61	16°	0.05	●
			CTP 10FLN-TH	12.0	1.0	—	0°	0.05	●
			15FLN-TH	12.0	1.5	—	0°	0.05	●
			20FLN-TH	12.0	2.0	—	0°	0.05	●
CTPA Series	R		CTPA 15FR-TH	16.0	1.5	0.46	16°	0.05	●
			20FR-TH	16.0	2.0	0.61	16°	0.05	●
			CTPA 15FRN-TH	16.0	1.5	—	0°	0.05	●
			20FRN-TH	16.0	2.0	—	0°	0.05	●
	L		CTPA 15FLK-TH	14.5	1.5	0.46	16°	0.05	●
			20FLK-TH	14.5	2.0	0.61	16°	0.05	●
			CTPA 15FLN-TH	16.0	1.5	—	16°	0.05	●
			20FLN-TH	16.0	2.0	—	16°	0.05	●

※Max. Cut-off Dia. is indicates the cutting diameter of the insert when the top of the cutting edge is located on center

Features

[-TH] achieves superior fracture resistance.
Long tool life on stainless steel cut-off operation



Case study	CTP-TH type	Competitor's tool
Material: SUS304 φ11 Cutting condition: Vc=80m/min f=0.03mm/rev Tools: Insert: CTP-TH Series 2.0mm width Holder: CTPR12		
	200pcs. machined	100pcs. machined

Toolholder

Catalogue	CTP Series	CTPA Series
2019-2020 General catalogue	G76 ~ G77	G82 ~ G83
2018 SS catalogue	F10 ~ F11	F16 ~ F17

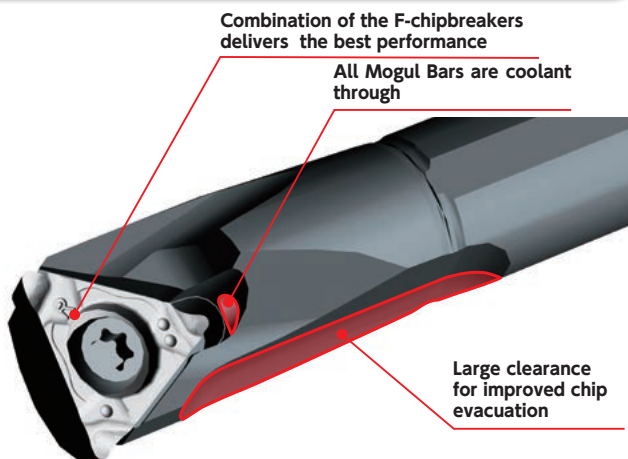
ID turning F05 • F1 • FG chipbreaker

Shape	Number	Corner R	Stock	Dimensions (mm)	
			ST4	I.C.	Thickness
	TCGH 060101FR F05	0.1	●	3.97	1.59
	060102FR F05	0.2	●		
	060104FR F05	0.4	●		
	TPGH 090201FR F1	0.1	●	5.58	2.38
	090202FR F1	0.2	●		
	090204FR F1	0.4	●		
	090208FR F1	0.8	●		
	110302FR F1	0.2	●		
	110304FR F1	0.4	●		
	110308FR F1	0.8	●		
	TPGH 090202R FG	0.2	●	5.56	2.38
	090204R FG	0.4	●		
	110302R FG	0.2	●		
	110304R FG	0.4	●		
	MBL 005FR F1	0.05	●	3.60	2.38
	015FR F1	0.15	●		
	ERGH 30101FR F1	0.1	●	3.97	1.59
	30102FR F1	0.2	●		
	30104FR F1	0.4	●		
	CPGH 040101FR F1	0.1	●	4.76	1.59
	040102FR F1	0.2	●		
	040104FR F1	0.4	●		
	060202FR F1	0.2	●		
	CCGT 060201FR F1	0.1	●	6.35	2.38
	060202FR F1	0.2	●		
	060204FR F1	0.4	●		
	09T302FR F1	0.2	●		
	09T304FR F1	0.4	●		
	09T304FR F1	0.4	●		

Toolholder

Catalogue	TCGH Series	TPGH Series	MBL Series	ERGH Series	CPGH Series	CCGT Series
2019-2020 General catalogue	K32 ~ K33	K32 ~ K33	K26 ~ K27	K28 ~ K29	K30 ~ K31	K30
2018 SS catalogue	K36 ~ K37	K36 ~ K37	K30 ~ K31	K32 ~ K33	K34 ~ D35	K34

Features



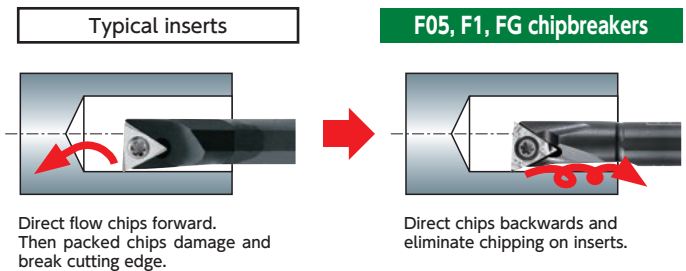
Features

- [F] type chipbreaker allow chips to evacuate backward.
- Combination of the F-chipbreakers and Mogul Bar delivers the best performance

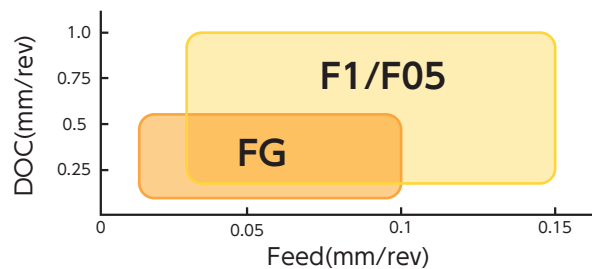
	DOC (mm)	Feed(mm/rev)	
		0.05	0.1
FG chipbreaker <ul style="list-style-type: none"> • Best for finishing • Works for small DOC (ap-0.5mm) • High rake angle 	0.1		
	0.3		
F1 • F05 chipbreaker <ul style="list-style-type: none"> • Covers wide range of conditions • Ground chipbreaker 	0.5		

Note: Right-hand inserts with FG and F1 chipbreakers should be used with right-hand holders

Material : SCM435 Holder : S10K-STUPR11D12-OH
 Insert : TPGH110304 Series Cutting condition : $V_c=80\text{m/min}$
 Bore diameter : $\phi 12$ External coolant Depth of cut : 20mm



Chip control range



Recommended Cutting Condition (Grooving, Cut-off)

GTMH32-GX Series

Width (mm)	Feed (mm/rev)				Cutting speed (mm/min)		
	Grooving		Side turning		SUS303	SUS304	SUS440C
	Range	SUS304	Range	SUS304			
0.33 ~ 0.53	0.01 ~ 0.03	0.02	No capability	No capability	60 100 150	50 70 100	30 60 80
0.75 ~ 1.0	0.02 ~ 0.05	0.03	0.015 ~ 0.04	0.02			
1.5 ~ 2.0	0.02 ~ 0.08	0.04	0.015 ~ 0.06	0.03			
3.0	0.03 ~ 0.10	0.05	0.025 ~ 0.08	0.04			

CTP/CTPA-CX Series

Width (mm)	Feed (mm/rev)		Cutting speed (mm/min)		
	Range	SUS304	SUS303	SUS304	SUS440C
1.0	0.02 ~ 0.04	0.02	60 100 150	50 70 100	30 60 80
1.3	0.02 ~ 0.05	0.03			
1.5	0.02 ~ 0.06	0.03			

CTP/CTPA-TH Series

Width (mm)	Feed (mm/rev)		Cutting speed (mm/min)		
	Range	SUS304	SUS303	SUS304	SUS440C
1.0	0.02 ~ 0.05	0.03	60 100 150	50 70 100	30 60 80
1.5	0.02 ~ 0.06	0.04			
2.0	0.02 ~ 0.07	0.04			

Recommended Cutting Condition (Front, back turning, cut-off)

〈Feed〉

Please see application pages in 2019-2020 general catalogue and set the cutting conditions for each work material.

〈Calculating of feed〉

$$\text{Feed (mm/rev)} = \sqrt{\text{Roughness needed } (\mu\text{m}) \times \frac{8 \times \text{nose radius } R}{1000}}$$

〈Example〉

In case of using insert nose radius, and try to obtain roughness Rz3.2. Calculate to determine feed as follows:

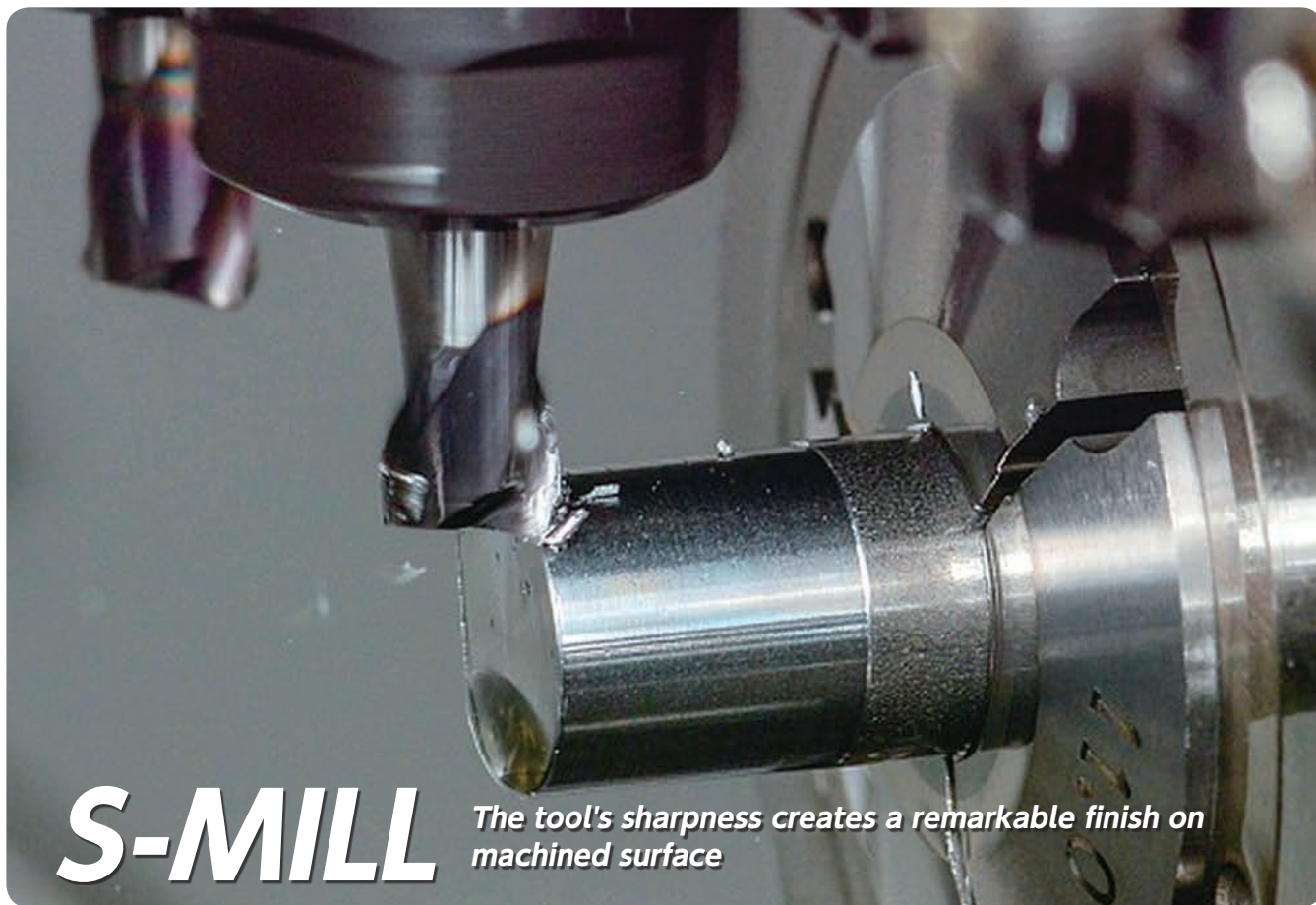
$$\sqrt{(3.2 \times (8 \times 0.2) \div 1000)} \doteq 0.07\text{mm/rev}$$

If turning with f=0.07mm/rev, it would not meet roughness Rz3.2. So set feed 50% down.

〈Cutting speed〉

Please see each Grooving and cut-off application page of 2019-2020 general catalogue.

S-MILL Line up Expansion



S-MILL

The tool's sharpness creates a remarkable finish on machined surface



- **Excellent surface finish**
- **Reduce cutting resistance**
- **Stable machining**

- **Line up Expansion**
φ8.0, φ10.0 with φ7.0 shank Dia.



WATCH ON
You Tube

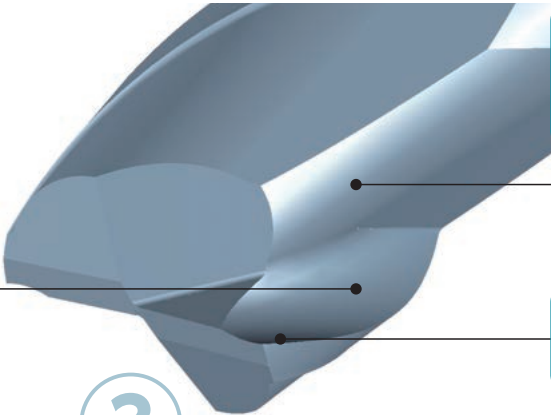
Features

1 The tool's sharpness creates a remarkable finish on machined surface.

High rake angle to reduce cutting resistance

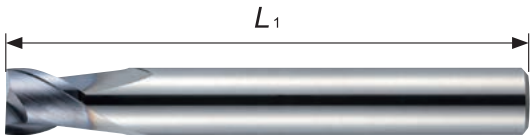
Flute angles ensure good chip evacuation

Corner radius 0.0



2 Ideal for swiss type lathe

- $\phi 3.0 / \phi 4.0 = 40.0\text{mm}$
- $\phi 5.0 / \phi 6.0 = 45.0\text{mm}$
- $\phi 7.0 / \phi 8.0 / \phi 10.0 = 50.0\text{mm}$

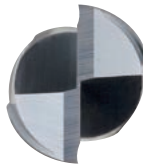


3 2, 3, 4 flutes designs to cover a variety of applications. (2 flutes available in $\phi 2\text{mm}$)

2 flutes

3 flutes

4 flutes



Comparison of machined surfaces

	NTK (S-MILL)	Competitor A	Competitor B
Side face			
Magnified (side face)			
	<p>Excellent surface finish</p>	<p>Rough surface finish</p>	
<p>Tool : $\phi 6.0$ 2 flutes Workmaterial : SUS304 ($\phi 16.0$) Cutting condition : $a_p=3.0\text{mm}$ $a_e=1.2\text{mm}$ $S=3,000\text{rpm}$ $F=300\text{mm/min}$</p>			

Stocs list

RWEM Series



Z=2



Z=3



Z=4



35°



Side Milling



Slotting



Profiling

Figure. 1

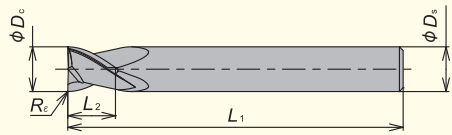
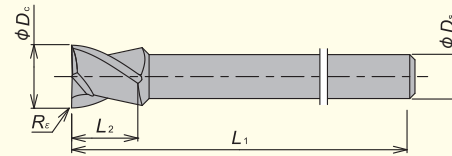


Figure. 2



Tolerance: mm

ϕD_c	Tolerance
2, 3, 5	+0 / -0.025
4, 6, 7	+0 / -0.03
8, 10	+0 / -0.035

Material Group

P: Steel	M: Stainless steel	K: Cast iron	N: Nonferrous metal	S: Heat resistant alloy	H: Hardened material
○	○				

○ : 1st Choice

2 flutes

Shape	Flute	Item Number	Grade	Cutting dia. ϕD_c (mm)	Shank dia. ϕD_s (mm)	Length L_1 (mm)	Cutting edge length L_2 (mm)	Corner radius R_c (mm)
			AC3					
Figure. 1	2	RWEM 020H2R00S04	●	2.0	4.0	40.0	2.0	0.0
		030H2R00S04	●	3.0	4.0	40.0	3.0	
		040H2R00S04	●	4.0	4.0	40.0	4.0	
		050H2R00S06	●	5.0	6.0	45.0	5.0	
		060H2R00S06	●	6.0	6.0	45.0	6.0	
		070H2R00S08	●	7.0	8.0	50.0	6.0	
		080H2R00S08	●	8.0	8.0	50.0	6.0	
Figure. 2	2	NEW RWEM 080H2R00S07	●	8.0	7.0	50.0	6.0	0.0
		NEW 100H2R00S07	●	10.0	7.0	50.0	6.0	

3 flutes

Shape	Flute	Item Number	Grade	Cutting dia. ϕD_c (mm)	Shank dia. ϕD_s (mm)	Length L_1 (mm)	Cutting edge length L_2 (mm)	Corner radius R_c (mm)
			AC3					
Figure. 1	3	RWEM 030H3R00S04	●	3.0	4.0	40.0	3.0	0.0
		040H3R00S04	●	4.0	4.0	40.0	4.0	
		050H3R00S06	●	5.0	6.0	45.0	5.0	
		060H3R00S06	●	6.0	6.0	45.0	6.0	
		070H3R00S08	●	7.0	8.0	50.0	6.0	
		080H3R00S08	●	8.0	8.0	50.0	6.0	
		100H3R00S10	●	10.0	10.0	50.0	6.0	
Figure. 2	3	NEW RWEM 080H3R00S07	●	8.0	7.0	50.0	6.0	0.0
		NEW 100H3R00S07	●	10.0	7.0	50.0	6.0	

4 flutes

Shape	Flute	Item Number	Grade	Cutting dia. ϕD_c (mm)	Shank dia. ϕD_s (mm)	Length L_1 (mm)	Cutting edge length L_2 (mm)	Corner radius R_c (mm)
			AC3					
Figure. 1	4	RWEM 030H4R00S04	●	3.0	4.0	40.0	3.0	0.0
		040H4R00S04	●	4.0	4.0	40.0	4.0	
		050H4R00S06	●	5.0	6.0	45.0	5.0	
		060H4R00S06	●	6.0	6.0	45.0	6.0	
		070H4R00S08	●	7.0	8.0	50.0	6.0	
		080H4R00S08	●	8.0	8.0	50.0	6.0	
		100H4R00S10	●	10.0	10.0	50.0	6.0	
Figure. 2	4	NEW RWEM 080H4R00S07	●	8.0	7.0	50.0	6.0	0.0
		NEW 100H4R00S07	●	10.0	7.0	50.0	6.0	

Field result

SUS416F(D-cut) $\phi 6\text{mm}$ -2 flutes	
Work material : SUS416F	
rev/min : 3,200	
Feed(mm /rev) : 140	
DOC (mm) : 0.6	
Coolant : WET	
NTK : S-MILL	12,000 pcs/corner+ α
Competitor's solid endmill	10,000 pcs/corner
<p>As the competitor's end mill reached the end of its tool life there was an obvious decrease in machined part surface finish quality NTK's S-MILL maintained quality surface finish throughout its longer tool life.</p>	

S45C(Hexagon machining $\phi 10 \Rightarrow \phi 8\text{mm}$ AF) $\phi 6\text{mm}$ -2 flutes	
Work material : S45C	
rev/min : 2,600	
Feed(mm /rev) : 480	
DOC (mm) : 1.0	
Coolant : WET	
NTK : S-MILL	70 pcs/corner+ α
Competitor's solid endmill	50 pcs/corner
<p>The S-Mill's sharpness reduced the occurrence of burrs and increased tool life; clear improvements over the competitor's tool. The sharp cutting edge also produces noticeably less sound than the current tooling</p>	

Recommend Cutting Condition

Flute	Cutting diameter ϕD_c (mm)	Carbon steel S45C		Alloy steel SCM435		Stainless steel SUS304		 $a_e = \phi D_c \times 0.2$		 $a_e = \phi D_c \times 0.5$		 $a_e = \phi D_c \times 0.75$		 $a_e = \phi D_c \times 0.9$		 $a_e = \phi D_c$
		RPM (min^{-1})	Feed (mm/min)	RPM (min^{-1})	Feed (mm/min)	RPM (min^{-1})	Feed (mm/min)	a_p (mm)	a_e (mm)	a_p (mm)	a_e (mm)	a_p (mm)	a_e (mm)	a_p (mm)	a_e (mm)	a_p (mm)
		2 flutes	2.0	6,000	100	6,000	100	6,000	90	≤ 2.0	0.4	≤ 0.8	1.0	≤ 0.6	1.5	≤ 0.5
	3.0	6,000	210	6,000	240	6,000	180	≤ 3.0	0.6	≤ 1.2	1.5	≤ 0.9	2.3	≤ 0.7	2.7	≤ 0.6
	4.0	6,000	320	5,600	300	5,200	240	≤ 4.0	0.8	≤ 1.6	2.0	≤ 1.2	3.0	≤ 1.0	3.6	≤ 0.8
	5.0	5,000	370	4,500	330	4,100	260	≤ 5.0	1.0	≤ 2.0	2.5	≤ 1.5	3.8	≤ 1.2	4.5	≤ 1.0
	6.0	4,200	380	3,700	340	3,400	270	≤ 6.0	1.2	≤ 2.4	3.0	≤ 1.8	4.5	≤ 1.5	5.4	≤ 1.2
	7.0	3,600	370	3,200	330	3,000	270	≤ 6.0	1.4	≤ 2.8	3.5	≤ 2.1	5.3	≤ 1.7	6.3	≤ 1.4
	8.0	3,200	360	2,800	320	2,600	250	≤ 6.0	1.6	≤ 3.2	4.0	≤ 2.4	6.0	≤ 2.0	7.2	≤ 1.6
	10.0	2,500	320	2,200	280	2,100	230	≤ 6.0	2.0	≤ 4.0	5.0	≤ 3.0	7.5	≤ 2.5	9.0	≤ 2.0
3 flutes	3.0	6,000	250	6,000	250	6,000	220	≤ 3.0	0.6	≤ 1.2	1.5	≤ 0.9	2.3	≤ 0.7	2.7	≤ 0.6
	4.0	6,000	390	5,600	360	5,200	290	≤ 4.0	0.8	≤ 1.6	2.0	≤ 1.2	3.0	≤ 1.0	3.6	≤ 0.8
	5.0	5,000	440	4,500	400	4,100	310	≤ 5.0	1.0	≤ 2.0	2.5	≤ 1.5	3.8	≤ 1.2	4.5	≤ 1.0
	6.0	4,200	460	3,700	410	3,400	330	≤ 6.0	1.2	≤ 2.4	3.0	≤ 1.8	4.5	≤ 1.5	5.4	≤ 1.2
	7.0	3,600	450	3,200	400	3,000	320	≤ 6.0	1.4	≤ 2.8	3.5	≤ 2.1	5.3	≤ 1.7	6.3	≤ 1.4
	8.0	3,200	430	2,800	380	2,600	310	≤ 6.0	1.6	≤ 3.2	4.0	≤ 2.4	6.0	≤ 2.0	7.2	≤ 1.6
	10.0	2,500	380	2,200	330	2,100	280	≤ 6.0	2.0	≤ 4.0	5.0	≤ 3.0	7.5	≤ 2.5	9.0	≤ 2.0
4 flutes	3.0	6,000	290	6,000	290	6,000	250	≤ 3.0	0.6	≤ 1.2	1.5	≤ 0.9	2.3	≤ 0.7	2.7	≤ 0.6
	4.0	6,000	450	5,500	410	5,200	340	≤ 4.0	0.8	≤ 1.6	2.0	≤ 1.2	3.0	≤ 1.0	3.6	≤ 0.8
	5.0	5,000	520	4,500	460	4,100	370	≤ 5.0	1.0	≤ 2.0	2.5	≤ 1.5	3.8	≤ 1.2	4.5	≤ 1.0
	6.0	4,200	540	3,700	480	3,400	380	≤ 6.0	1.2	≤ 2.4	3.0	≤ 1.8	4.5	≤ 1.5	5.4	≤ 1.2
	7.0	3,600	520	3,200	460	3,000	380	≤ 6.0	1.4	≤ 2.8	3.5	≤ 2.1	5.3	≤ 1.7	6.3	≤ 1.4
	8.0	3,200	500	2,800	440	2,600	360	≤ 6.0	1.6	≤ 3.2	4.0	≤ 2.4	6.0	≤ 2.0	7.2	≤ 1.6
	10.0	2,500	440	2,200	390	2,100	320	≤ 6.0	2.0	≤ 4.0	5.0	≤ 3.0	7.5	≤ 2.5	9.0	≤ 2.0

- Cutting conditions (machine, work material...) affects surface finish and burr generation.
If cutting performance is not good with above cutting conditions, please adjust speed and feed by same ratio.

Unique swiss tooling / Front turning insert for large DOC

The Front Max



The Front Max

*NEW style front turning insert for swiss type lathe.
Specially designed chipbreaker provides excellent
chip control and sharpness.*

MAX DOC

5.0mm available

TFX Series

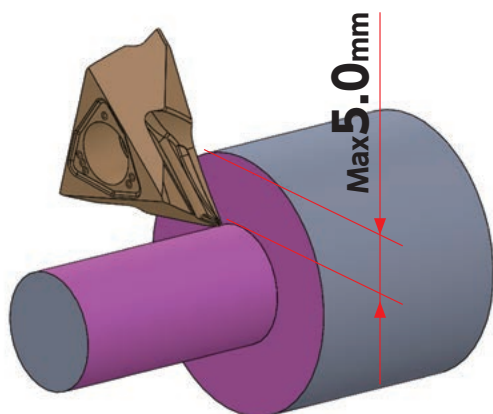


Are these common issues during your machining operation?

- It is hard to machine a large depth of cut on Swiss type lathe
- It is difficult to find suitable tooling.

The Front Max can solve a large depth of cut problem

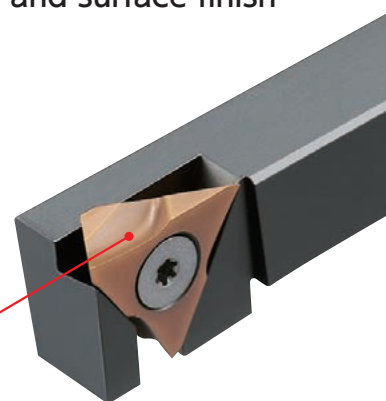
Features



1 Up to 5.0mm DOC capability

Specially designed chipbreaker reduces cutting resistance, achieves excellent chip control and surface finish. excellent chip control and surface finish achieved.

Stable chip control is achieved with special chipbreaker design.



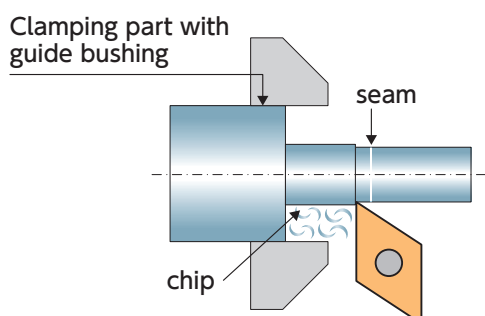
2 Rigid side clamp



Strong clamping prevents movement of insert providing stable turning by reducing the cutting resistance from Z direction; compared with conventional clamp.

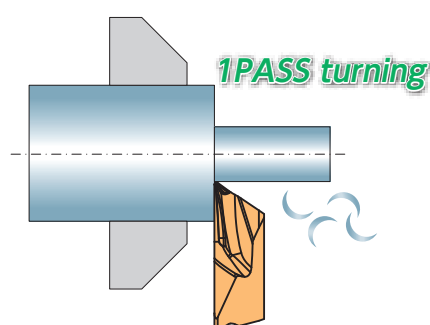
Tooling for Large DOC

Conventional tooling



- Longer cycle time with roughing and finish turning.
- Seam on surface occurs with separate turning.
- Tool wear increase with 2 passes
- Chip may go into guidebushing.
- Cannot continue cutting due to guide bushing inability to maintain control of bar stock

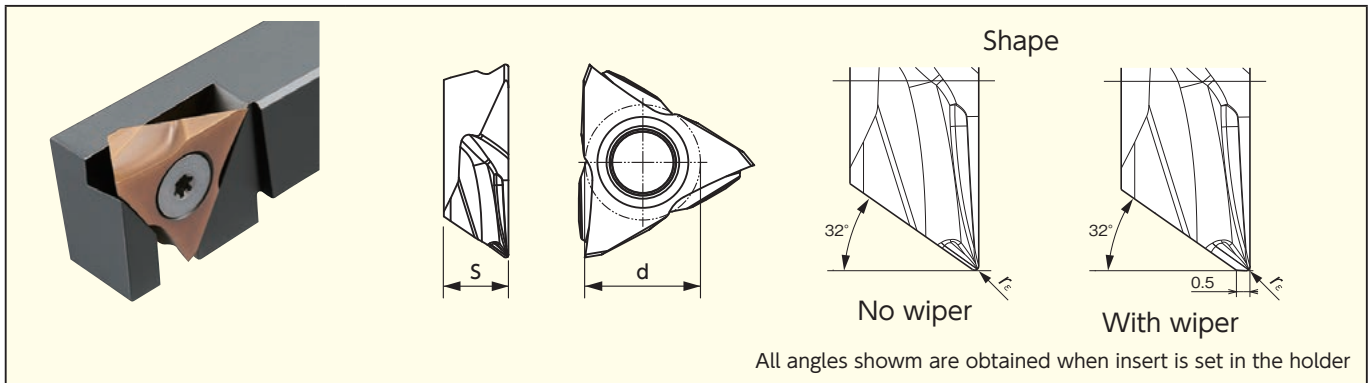
The Front Max




- Reduce cycle time
- Extend chip life
- Improve machining precision
- Simplify machining program

Insert

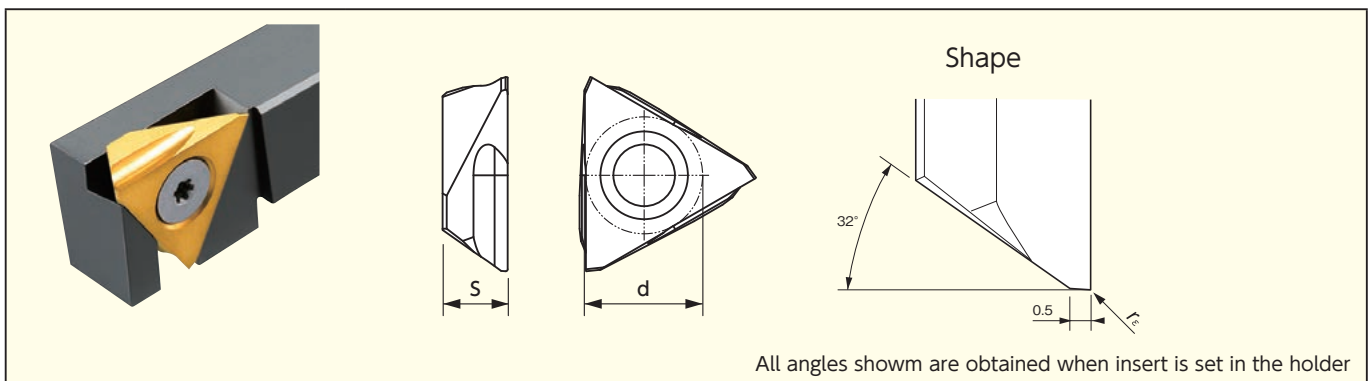
NEW TFX Series(3D mold chipbreaker)




shape	Max. DOC (mm)	Wiper	Item number	Dimension (mm)			PVD coated carbide		
				r_ϵ	d	s	ST4	DM4	ZM3
	5.0	No	TFX 3301MR	0.08	9.525	4.76	●	●	
			3302MR	0.18	9.525	4.76	●	●	
			3304MR	0.38	9.525	4.76	●	●	
		Yes	TFX 3301MRW	0.08	9.525	4.76	●	●	
			3302MRW	0.18	9.525	4.76	●	●	
			3304MRW	0.38	9.525	4.76	●	●	

Release on Feb, 2019

TF Series(Ground chipbreaker)



shape	Max. DOC (mm)	Wiper	Item number	Dimension (mm)			PVD coated carbide		
				r_ϵ	d	s	ST4	DM4	ZM3
	4.0	Yes	TF 3300R	0.0	9.525	4.76			●
			3305R	0.05	9.525	4.76			●
			3315R	0.15	9.525	4.76			●
			3320R	0.2	9.525	4.76			●

Tool holder

NEW TFT-OH2 Series

Coolant through (Screw accessible from both sides)

Taper cut capability

Item Number	Taper cut capability		
	D max	A max	T max
TFTR 1014H-OH2	20	2.5	30 °
1214H-OH2	30		
1616X-OH2	40		

● Right-Hand style shown

Holder dimension • Spare parts

Item Number	Stock	Dimensions (mm)							Screw parts A			
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>h</i> ₂	<i>L</i> ₂	<i>L</i> ₃	Clamp screw	Wrench	Screw parts A	Screw parts B
TFTR 1014H-OH2	●	10	14	100	10	4	15	15				
1214H-OH2	●	12	14	100	12	2	15	15	LR-S-4*10PW	CLR-15S	SS0605SC	SS0505SC (Wrench : LW-2.5)
1616X-OH2	●	16	16	120	16	-	-	17.5	LR-S-4*10PW	CLR-15S	SPR1/8	

When coolant is supplied from the tool post directly to the tools, please remove screw parts [B] and set screw parts A at side and rear of toolholder. Wrench for screw parts [A] (SS0605SC) is not attached. Please use hex wrench 3.0 (LW-3) for SS0605SC, hex wrench 5.0 (LW-5) for SPR1/8.

TFT Series

(Screw accessible from both sides)

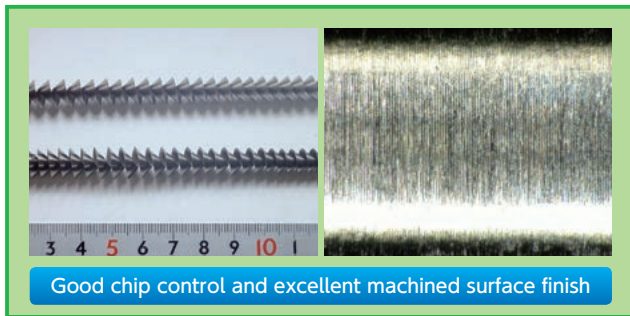
● Right-Hand style shown

Item Number	Stock	Dimensions (mm)						Parts		Taper cut capability
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>f</i>	<i>h</i> ₁	<i>h</i> ₂	Clamp screw	Wrench	
TFTR 10	●	10	10	120	0.0	10	3			No capability for taper cut.
12	●	12	12	120	0.0	12	1			
16	●	16	16	120	0.0	16	-			
20	●	20	20	120	0.0	20	-			

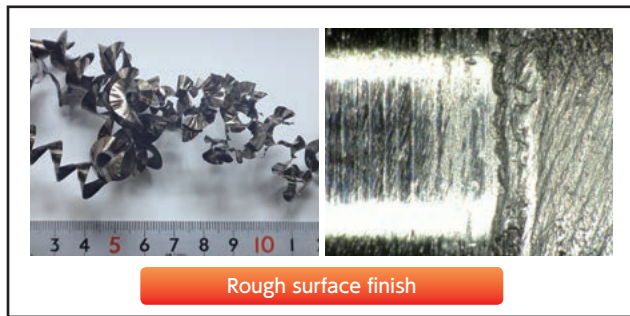
Cutting performance

DOC 5.0mm Workmaterial : SUS304 Cutting condition : Vc=80m/min f=0.03mm/rev WET

NTK The Front Max

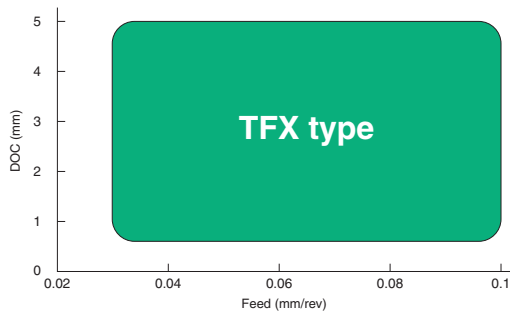


Competitor's chipbreaker designed for high DOC turning

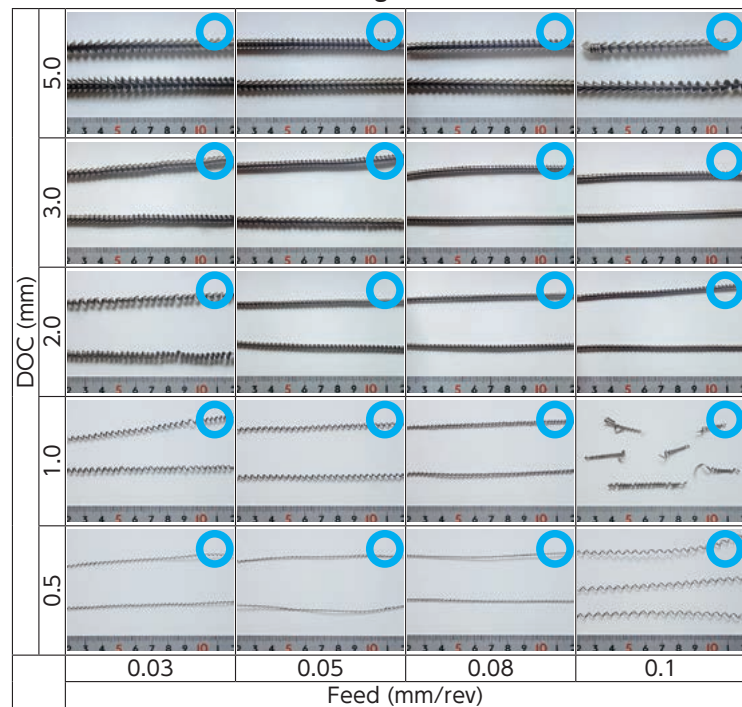


Excellent chip control in any cutting condition!
Covers a wide range of depths and feeds.

<Chip control>

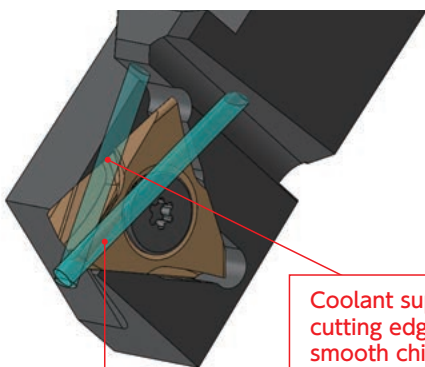


Workmaterial : SUS304 Cutting condition : Vc=80m/min WET



Coolant through tool holder line up!

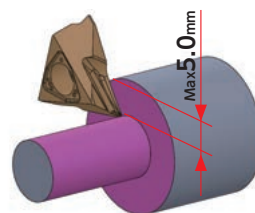
- Capability for 30 degree angle taper cut.
- Use with TFX type insert enables stable turning.



Steady coolant supply to the edge improves part tolerance

Work material : SUS304

	The Front Max	Competitor
Cutting speed(m/min)	80	110
Feed(mm/rev)	0.03	0.01
DOC(mm/rev)	5.0	←
Coolant	Wet	←



Insert item number:
DM4 TFX3302MR

	The Front Max	Competitor
	180pcs./corner	50pcs./corner

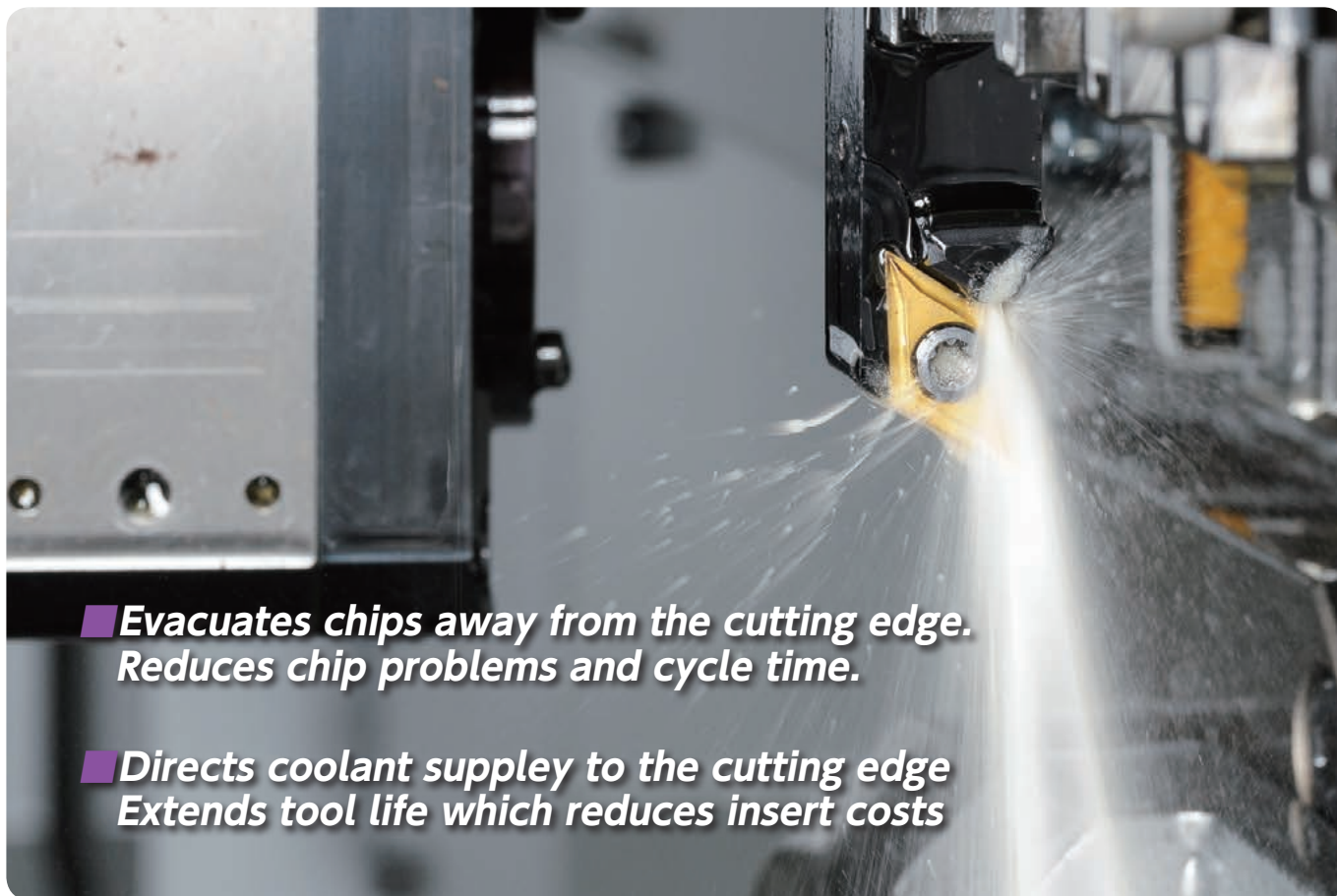
• NTK Front Max provided high DOC(5.0mm) cutting with high feed, and achieved 3 times longer tool life.

NEW

Internal coolant type tool holders

SPLASH Series Lineup expansion

NTK



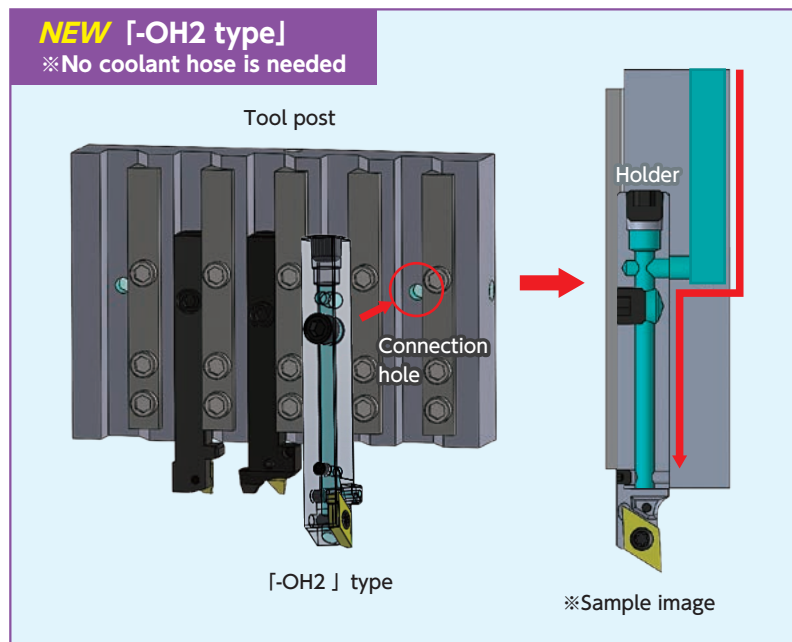
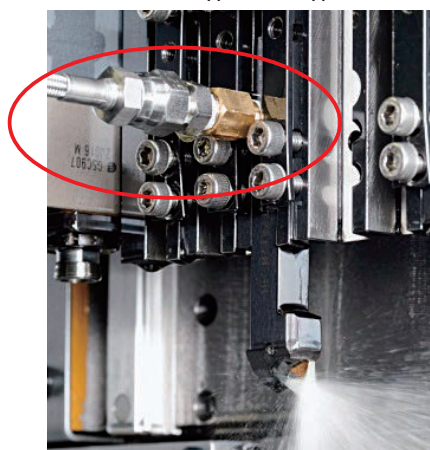
■ **Evacuates chips away from the cutting edge.**
Reduces chip problems and cycle time.

■ **Directs coolant supply to the cutting edge**
Extends tool life which reduces insert costs

■ **Hose free capability - OH2 - new feature added** Coolant is supplied from the tool post directly to the tools

※ No coolant hose is needed

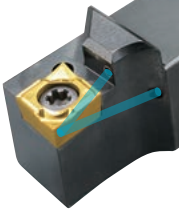
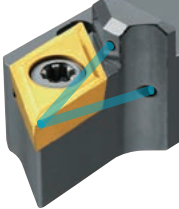


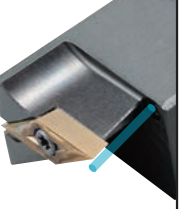
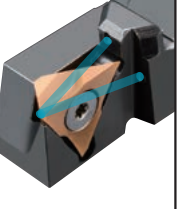
※ Conventional type [OH] type (hose is needed)



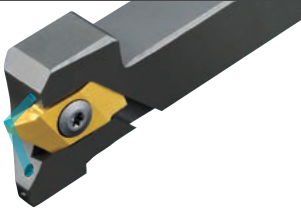

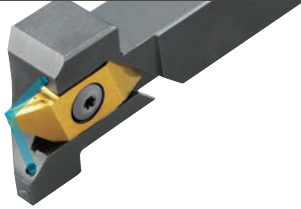
- **Eliminates chip entanglement on hoses**
- **Use the tool post space effectively**

➔ **Install more SPLASH toolholders, for higher productivity**

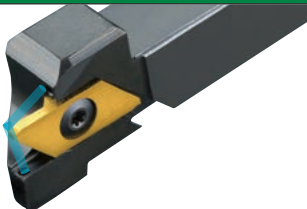
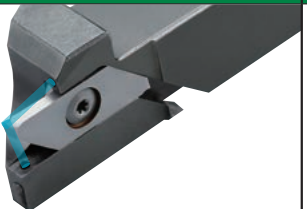

Front turning

Inserts	CC.. Series	DC.. Series		VC.. Series		TFX33../TF33..Series
	SCLC-OH2/OH	SDJC-OH2/OH	Y-SDJC-OH2/OH	SVJC-OH	Y-SVJC-OH	TFTR-OH2
Holder						

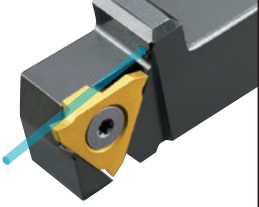
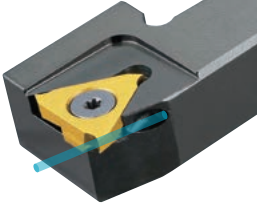
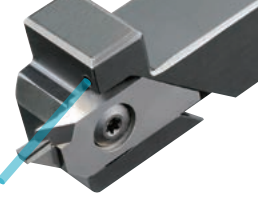
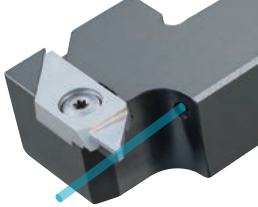
Back turning

Inserts	TBP Series		TBPA Series
	TBP-OH2/OH	Y-TBP-OH	TBPA-OH
Holder			


Cut off

Inserts	CTP Series	CTPA Series	CTDP Series
	CTP-OH2/OH	CTPA-OH2/OH	CTDP-OH2/OH
Holder			
MAX Bar Dia.	~φ12	~φ16	~φ25.4

Grooving/ Side turning

Inserts	GTM.. Series		GTPA.. Series	
	GTT-OH2/OH	Y-GTT-OH	GTPA-OH	Y-GTPA-OH
Holder				

ID turning - STICKDUO SPLASH-

Inserts	HY-NBH-OH Series
Holder	

NOTE for [-OH2] type toolholder

- When coolant is supplied from the tool post directly to the holder: please remove set screw [B] (SS0505SC) and install both set screws [A] (for hoseconnections) on side and rear of toolholder.
- Wrench for screw part [A] (SS0605SC) is not included. Please use hex wrench3.0(LW-3) for SS0605SC, hex wrench5.0(LW-5) for SPR1/8.

Stock list

For Front turning

SCLC-OH2 Series

Fig.1

Th(screw parts [A])
1214/1616size: SPR1/8(Rc1/8)

● R-hand shown

SCLC-OH Series

Fig.2

Th(screw parts [A])
1014size: SS0605SC (M6x1.0)
1214/1616size: SPR1/8(Rc1/8)

● R-hand shown

Holder dimension • Spare parts

Shape	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
			h	b	h ₁	L ₁	f	L ₂	g		Clamp screw	Wrench
Fig.1	SCLCR 1214H09N-F02OH2	●	12	14	12	100	2.0	70	12	CC 09T3	LRIS-4*10	LLR-25S
	1616X09N-F02OH2	●	16	16	16	120	2.0	70	17.7			
Fig.2	SCLCR 1014F09N-F02OH	●	10	14	10	80	2.0	55	12	CC 09T3	LRIS-4*10	LLR-25S
	1214H09N-F02OH	●	12	14	12	100	2.0	75	12			
	1616H09N-F02OH	●	16	16	16	100	2.0	75	17.7	CC 09T3	LRIS-4*10	LLR-25S

SDJC-OH2 Series

Fig.1

Th(screw parts [A])
1214/1616size: SPR1/8(Rc1/8)

● R-hand shown

SDJC-OH Series

Fig.2

Th(screw parts [A])
1014size: SS0605SC (M6x1.0)
1214/1616size: SPR1/8(Rc1/8)

● R-hand shown

Holder dimension • Spare parts

Shape	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
			h	b	h ₁	L ₁	f	L ₂	g		Clamp screw	Wrench
Fig.1	SDJCR 1214H11N-F02OH2	●	12	14	12	100	2.0	70	16	DC 11T3	LRIS-4*10	LLR-25S
	1616X11N-F02OH2	●	16	16	16	120	2.0	70	18.4			
Fig.2	SDJCR 1014F11N-F02OH	●	10	14	10	80	2.0	55	16	DC 11T3	LRIS-4*10	LLR-25S
	1214H11N-F02OH	●	12	14	12	100	2.0	75	16			
	1616H11N-F02OH	●	16	16	16	100	2.0	75	18.4	DC 11T3	LRIS-4*10	LLR-25S

Y-SDJC-OH2 Series

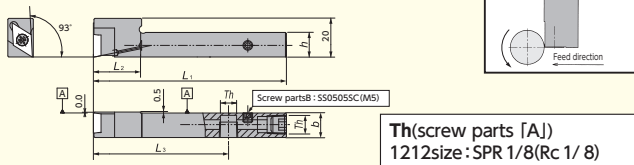


Fig.1

● R-hand shown
● Takes Right-hand or Neutral insert

Th(screw parts [A])
1212size : SPR 1/8(Rc 1/8)

Y-SDJC-OH Series

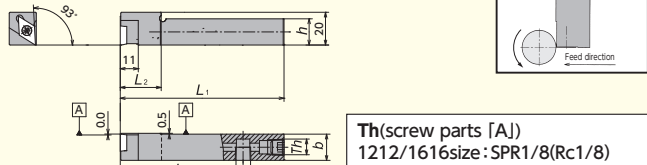


Fig.2

● R-hand shown
● Takes Right-hand or Neutral insert

Th(screw parts [A])
1212/1616size : SPR1/8(Rc1/8)

Holder dimension • Spare parts

Shape	Toolholder	Stock	Dimensions (mm)						Applicable insert	Spare parts	
			h	b	L ₁	f	L ₂	L ₃		Clamp screw	Wrench
Fig.1	Y-SDJCR 1212H11S-OH2	●	12	12	100	—	20	70	DC 11T3	LRIS-4 * 8	LLR-25S
Fig.2	Y-SDJCR 1212H11S-OH	●	12	12	100	—	20	75	DC 11T3	LRIS-4 * 8	LLR-25S
	1616H11-OH	●	16	16	100	—	25	75	DC 11T3	LRIS-4 * 8	LLR-25S

SVJC-N-OH Series

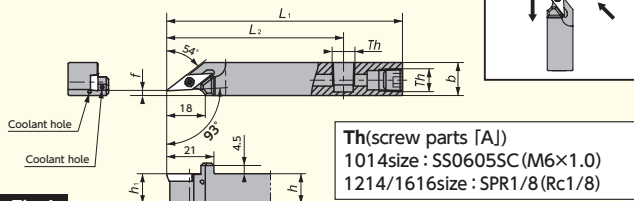


Fig.1

● R-hand shown

Th(screw parts [A])
1014size : SS0605SC (M6×1.0)
1214/1616size : SPR1/8 (Rc1/8)

Y-SVJC-OH Series

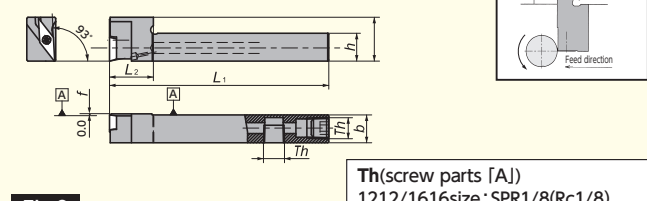


Fig.2

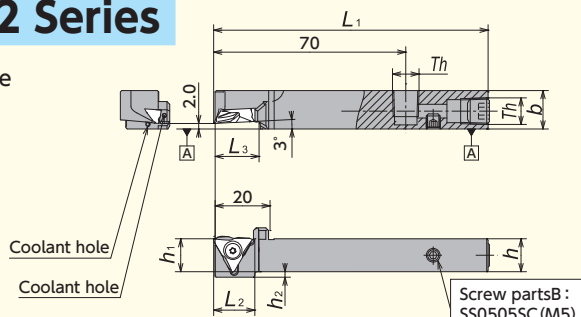
Th(screw parts [A])
1212/1616size : SPR1/8(Rc1/8)

Holder dimension • Spare parts

Shape	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
			h	b	L ₁	h ₁	f	L ₂	g		Clamp screw	Wrench
Fig.1	SVJCR 1014F11N-F02OH	●	10	14	80	10	2.0	55	—	VC 1103	LRIS-2.5 * 7	CLR-15S
	1214H11N-F02OH	●	12	14	100	12	2.0	75	—	VC 1103	LRIS-2.5 * 7	CLR-15S
	1616H11N-F02OH	●	16	16	100	16	2.0	75	—	VC 1103	LRIS-2.5 * 7	CLR-15S
Fig.2	Y-SVJCR 1212H11S-OH	●	12	12	100	—	0	20	—	VC 1103	LRIS-2.5 * 7	CLR-15S
	1616H11S-OH	●	16	16	100	—	0	20	—	VC 1103	LRIS-2.5 * 7	CLR-15S

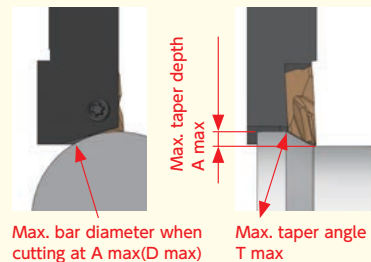
TFT-OH2 Series

Screw accessible from both sides



Th(screw parts [A])
1014size : SS0605SC (M6×1.0) 1214/1616size : SPR1/8 (Rc1/8)

Taper cut capability



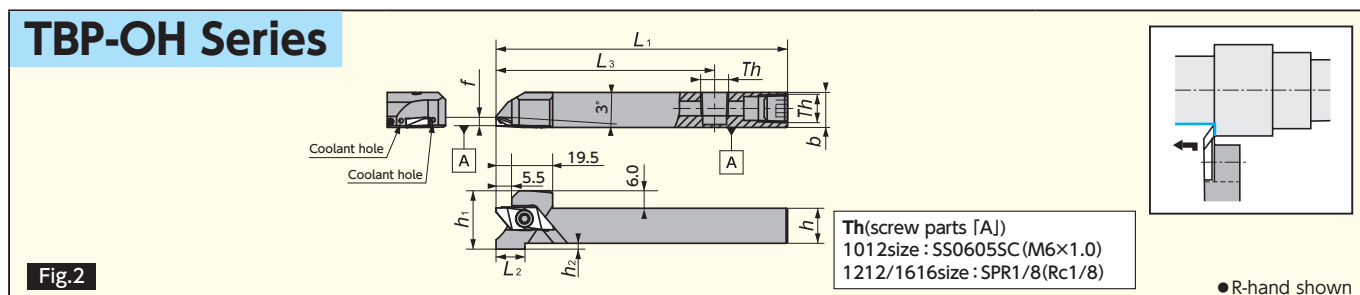
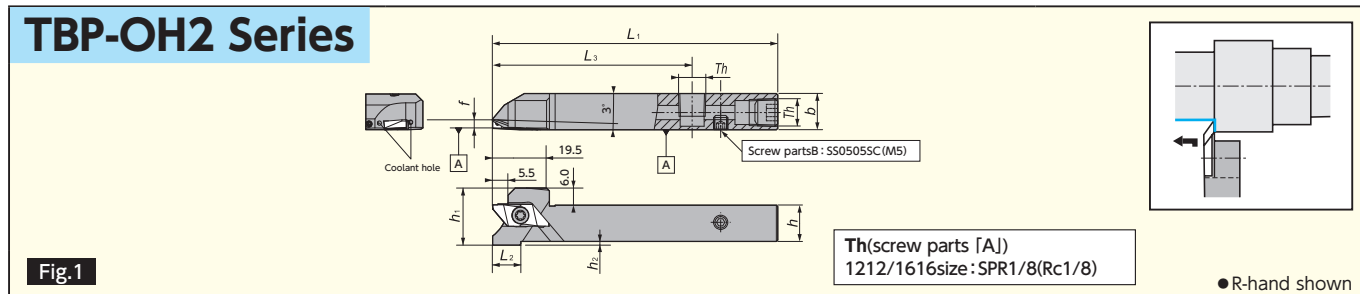
Toolholder	Taper cut capability		
	D max	A max	T max
TFTR 1014H-OH2	20	2.5	30°
1214H-OH2	30		
1616X-OH2	40		

● R-hand shown

Holder dimension • Spare parts

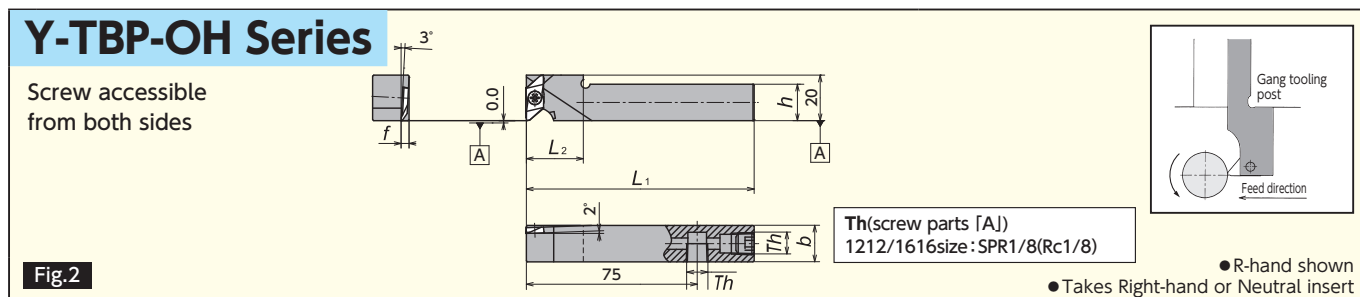
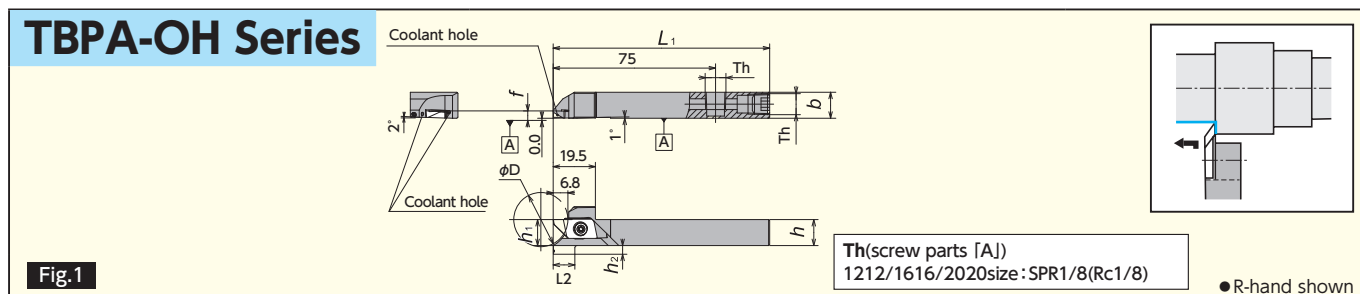
Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts	
		h	b	L ₁	h ₁	h ₂	L ₂	L ₃		Clamp screw	Wrench
TFTR 1014H-OH2	●	10	14	100	10	4	15	15	TF / TFX	LR-S-4 * 10PW	CLR-15S
1214H-OH2	●	12	14	100	12	2	15	15	TF / TFX	LR-S-4 * 10PW	CLR-15S
1616X-OH2	●	16	16	120	16	—	—	17.5	TF / TFX	LR-S-4 * 10PW	CLR-15S

For Back turning



Holder dimension • Spare parts

Shape	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts		
			<i>h</i>	<i>b</i>	<i>h</i> ₁	<i>L</i> ₁	<i>f</i>	<i>L</i> ₂	<i>h</i> ₂		<i>L</i> ₃	Clamp screw	Wrench
Fig.1	TBPR 12H-OH2	●	12	12	12	100	3.5	10	2.0	70	TBP	LRIS-4*12PW	CLR-15S
	TBPR 16X-OH2	●	16	16	16	120	3.5	0	0	70		TBP	LRIS-4*12PW
Fig.2	TBPR 1012H-OH	●	10	12	10	100	3.5	19	4	75	TBP	LRIS-4*10PW	CLR-15S
	12H-OH	●	12	12	12	100	3.5	10	2	75	TBP	LRIS-4*12PW	CLR-15S
	16H-OH	●	16	16	16	100	3.5	0	0	75	TBP	LRIS-4*12PW	CLR-15S



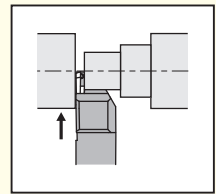
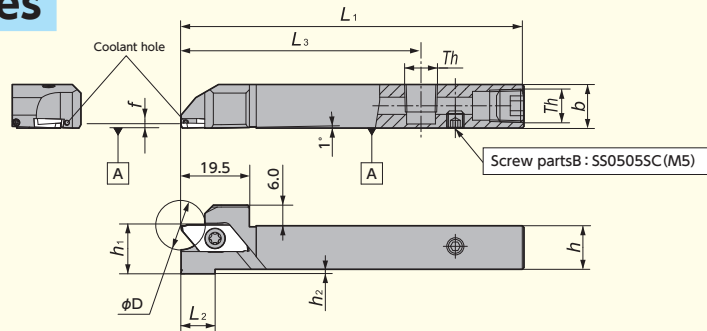
Holder dimension • Spare parts

Shape	Toolholder	Stock	最大加工径 (mm) ϕD	Dimensions (mm)							Applicable insert	Spare parts		
				<i>h</i>	<i>b</i>	<i>h</i> ₁	<i>L</i> ₁	<i>f</i>	<i>L</i> ₂	<i>h</i> ₂		Clamp screw	Wrench	
Fig.1	TBPAR 12H-OH	●	25	12	12	12	100	3.4	10	4	TBPA	LRIS-4*12PW	CLR-15S	
Fig.1	16H-OH	●	35	16	16	16	100	3.4	10	2		TBPA	LRIS-4*12PW	CLR-15S
Fig.1	20H-OH	●	50	20	20	20	100	3.4	0	0		TBPA	LRIS-4*12PW	CLR-15S
Fig.2	Y-TBPR 12HS-OH	●	—	12	12	—	100	3.5	20	—	TBP	LRIS-4*12PW	CLR-15S	
Fig.2	16H-OH	●	—	16	16	—	100	3.5	25	—	TBP	LRIS-4*12PW	CLR-15S	

For Cut off

※Max Dia. would be changed by insert.

CTP-OH2 Series

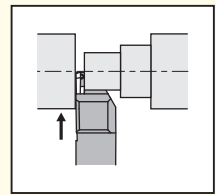
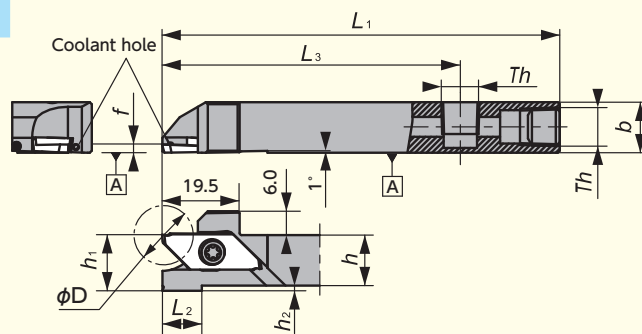


Th(screw parts [A])
1212size : SPR1/8(Rc1/8)

Fig.1

L-hand coolant through holders are designed for R-hand machines

CTP-OH Series



Th(screw parts [A])
1012size : SS0605SC (M6×1.0)
1212/1616size : SPR1/8(Rc1/8)

Fig.2

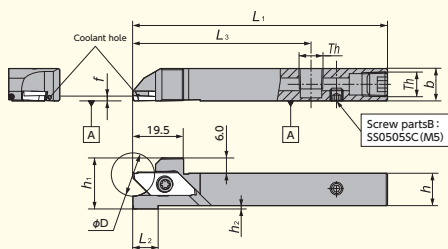
L-hand coolant through holders are designed for R-hand machines

Holder dimension • Spare parts

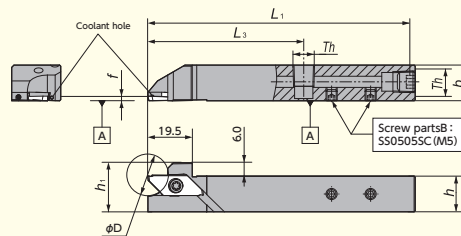
Shape	Toolholder	Stock	Max. cut off Dia. (mm) ϕD	Dimensions (mm)								Applicable insert	Spare parts	
				h	h_1	b	L_1	h_2	L_2	L_3	f		Clamp screw	Wrench
Fig.1	CTP $\frac{1}{2}$ 12H-OH2	●	12	12	12	12	100	2	10	70	1.5	CTP	LRIS-4 * 12PW	CLR-15S
	CTP $\frac{1}{2}$ 1012H-OH	●	12	10	12	12	100	4	19	75	1.5			
Fig.2	12H-OH	●	12	12	12	12	100	2	10	75	1.5	CTP	LRIS-4 * 12PW	CLR-15S
	16H-OH	●	12	16	16	16	100	0	0	75	1.5			

※Dimension is set 1.5mm width insert

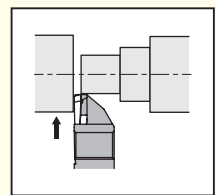
CTPA-OH2 Series



CTPA $\frac{1}{2}$ 12H-OH2



CTPA $\frac{1}{2}$ 16X-OH2



Th(screw parts [A])
1212/1616size : SPR1/8(Rc1/8)

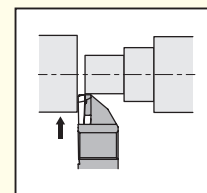
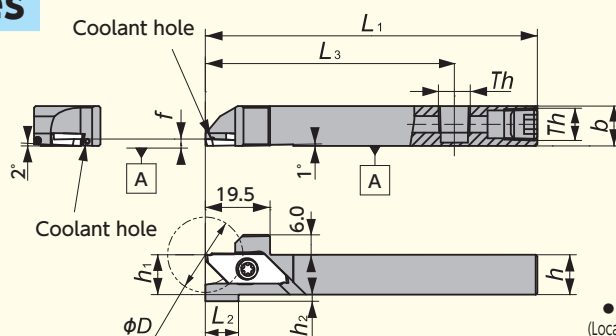
● L-hand coolant through holders are designed for R-hand machines
(Location of coolant connection parts is same with R/L hand holders.)
● Right-Hand style shown

Holder dimension • Spare parts

Toolholder	Stock	Max. cut off Dia. (mm) ϕD	Dimensions (mm)								Applicable insert	Spare parts	
			h	h_1	b	L_1	h_2	L_2	L_3	f		Clamp screw	Wrench
CTPA $\frac{1}{2}$ 12H-OH2	●	16	12	12	12	100	2	10	70	2.0	CTPA	LRIS-4 * 12PW	CLR-15S
16X-OH2	●	16	16	16	16	120	0	0	70	2.0			

※Dimension is set 2.0mm width insert

CTPA-OH Series



Th(screw parts [A])
1212/1616size: SPR1/8(Rc1/8)

- L-hand coolant through holders are designed for R-hand machines (Location of coolant connection parts is same with R/L hand holders.)
- Right-Hand style shown

Holder dimension • Spare parts

Toolholder	Stock	Max. cut off Dia. (mm) ϕD	Dimensions (mm)								Applicable insert	Spare parts	
			h	h_1	b	L_1	h_2	L_2	L_3	*		Clamp screw	Wrench
CTPA ^{R/L} 12H-OH	●	16	12	12	12	100	2	10	75	2.0			
16H-OH	●	16	16	16	16	100	0	0	75	2.0	CTPA	LRIS-4 * 12PW	CLR-15S

*Dimension is set 2.0mm width insert

CTDP-OH2 Series

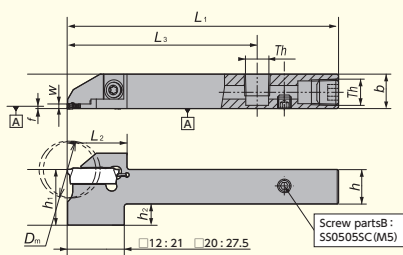
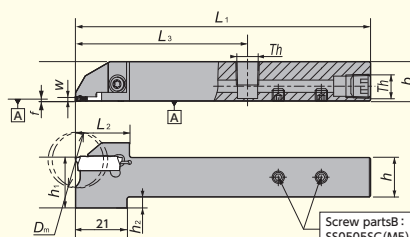
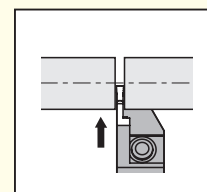


Fig.1

CTDPR/L 12-20D25-OH2
CTDPR/L 20-25D34A-OH2



CTDPR/L 16-20D25-OH2



Th(screw parts [A])
1212/1616/2020size: SPR1/8(Rc1/8)

- R-hand shown

CTDP-OH Series

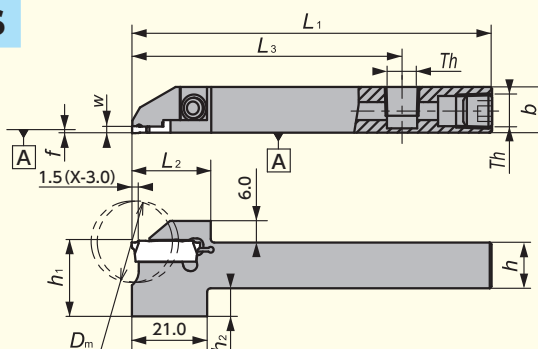


Fig.2

Th(screw parts [A])
1212/1616size: SPR1/8(Rc1/8)

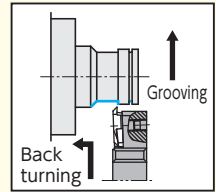
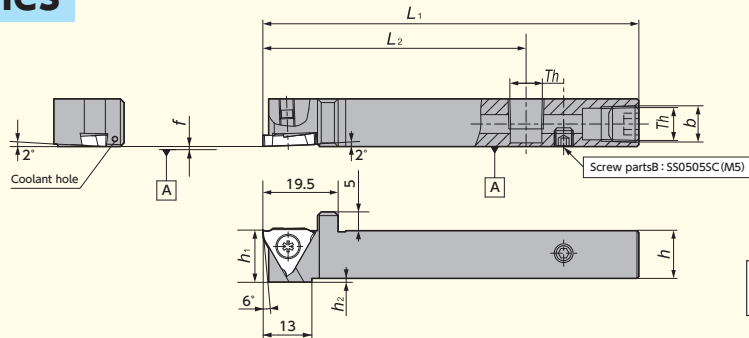
- R-hand shown

Holder dimension • Spare parts

Shape	Toolholder	Stock	Max. cut off Dia. (mm) ϕD	Dimensions (mm)										Applicable insert	Spare parts	
				w	h	b	h_1	L_1	h_2	L_2	L_3	f	Clamp screw		Wrench	
Fig.1	CTDPR/L 12-20D25-OH2	●	25.4	2	12	12	20.5	100	8.5	22.0	70	0.15				
	16-20D25-OH2	●	25.4	2	16	16	20.5	100	4.5	22.0	70	0.15	CTDP20	LRIS-4 * 12	LLR-28S	
	20-25D34A-OH2	●	34.0	2.5	20	20	24.0	120	4.0	28.5	75	0.15	CTDP25	CS0516LSH	LW-3	
Fig.2	CTDPR/L 12-20D25-OH	●	25.4	2	12	12	20.5	100	8.5	22.0	75	0.15	CTDP20	LRIS-4 * 12	LLR-25S	
	16-20D25-OH	●	25.4	2	16	16	20.5	100	4.5	22.0	75	0.15	CTDP20	LRIS-4 * 12	LLR-25S	

For Grooving / For Back turning

GTT-OH2 Series

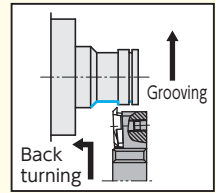
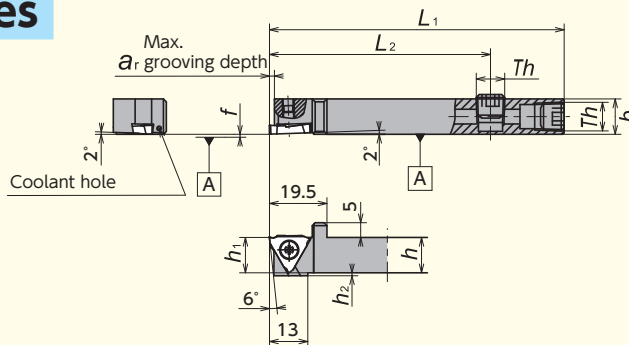


Th(screw parts [A])
1212/1616size: SPR1/8(Rc1/8)

Fig.1

● R-hand shown

GTT-OH Series






Th(screw parts [A])
1012size: SS0605SC (M6×1.0)
1212/1616size: SPR1/8(Rc1/8)

Fig.2

● R-hand shown

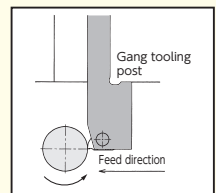
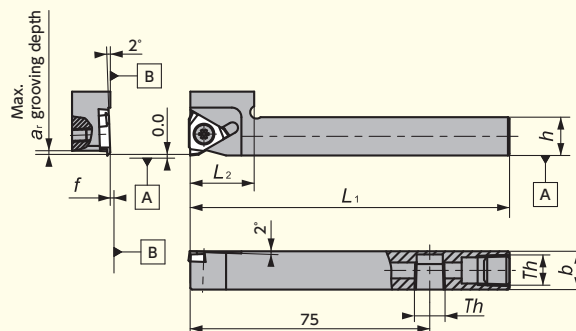
Holder dimension • Spare parts

Shape	Toolholder	Stock	Dimensions (mm)								Groove width* (mm) w	Applicable insert 	Spare parts	
			h	b	h ₁	L ₁	f	L ₂	a _r	h ₂			Clamp screw 	Wrench 
Fig.1	GTRR 12H00-OH2	●	12	12	12	100	0	70	1.6	1	0.3~3.00	GTM $\frac{32}{32}$ / TBMH32	LRIS-4*10PW	CLR-15S
	16X00-OH2	●	16	16	16	120	0	70	1.6	0	0.3~3.00	GTM $\frac{32}{32}$ / TBMH32	LRIS-4*10PW	CLR-15S
Fig.2	GTRR 1012H00-OH	●	10	12	10	100	0	70	1.6	1	0.3~3.00	GTM $\frac{32}{32}$ / TBMH32	LRIS-4*10PW	CLR-15S
	12H00-OH	●	12	12	12	100	0	70	1.6	1	0.3~3.00	GTM $\frac{32}{32}$ / TBMH32	LRIS-4*10PW	CLR-15S
	16H00-OH	●	16	16	16	100	0	70	1.6	0	0.3~3.00	GTM $\frac{32}{32}$ / TBMH32	LRIS-4*10PW	CLR-15S

*Dimension (ar) shows max. grooving depth. Max. grooving depth would be changed by insert.

Y-GTT-OH Series




Screw accessible from both sides



Th(screw parts [A])
1212/1616size: SPR1/8(Rc1/8)

● R-hand shown
● Takes Right-hand Insert

Holder dimension • Spare parts

Toolholder	Stock	Dimensions (mm)								Groove width* (mm) w	Applicable insert 	Spare parts	
		h	b	L ₁	h ₁	f	L ₂	a _r	h ₂			Clamp screw 	Wrench 
Y-GTRR 12H00S-OH	●	12	12	100	-	0	20	1.6	-	0.3~3.00	GTM $\frac{32}{32}$ / TBMH32	LRIS-4*10PW	CLR-15S
16H00-OH	●	16	16	100	-	0	25	1.6	-	0.3~3.00	GTM $\frac{32}{32}$ / TBMH32	LRIS-4*10PW	CLR-15S

*Dimension (ar) shows max. grooving depth. Max. grooving depth would be changed by insert.

For Grooving / Side turning

GTPA-OH Series

Th(screw parts [A])
1214size : SPR1/8 (Rc1/8)

●R-hand shown

Holder dimension • Spare parts

Toolholder	Stock	Dimensions (mm)						Applicable insert	Spare parts	
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>f</i>	<i>L</i> ₂		Clamp screw	Wrench
GTPAR 1214H-OH	●	12	14	100	12	0.1	—			

Y-GTPA-OH Series

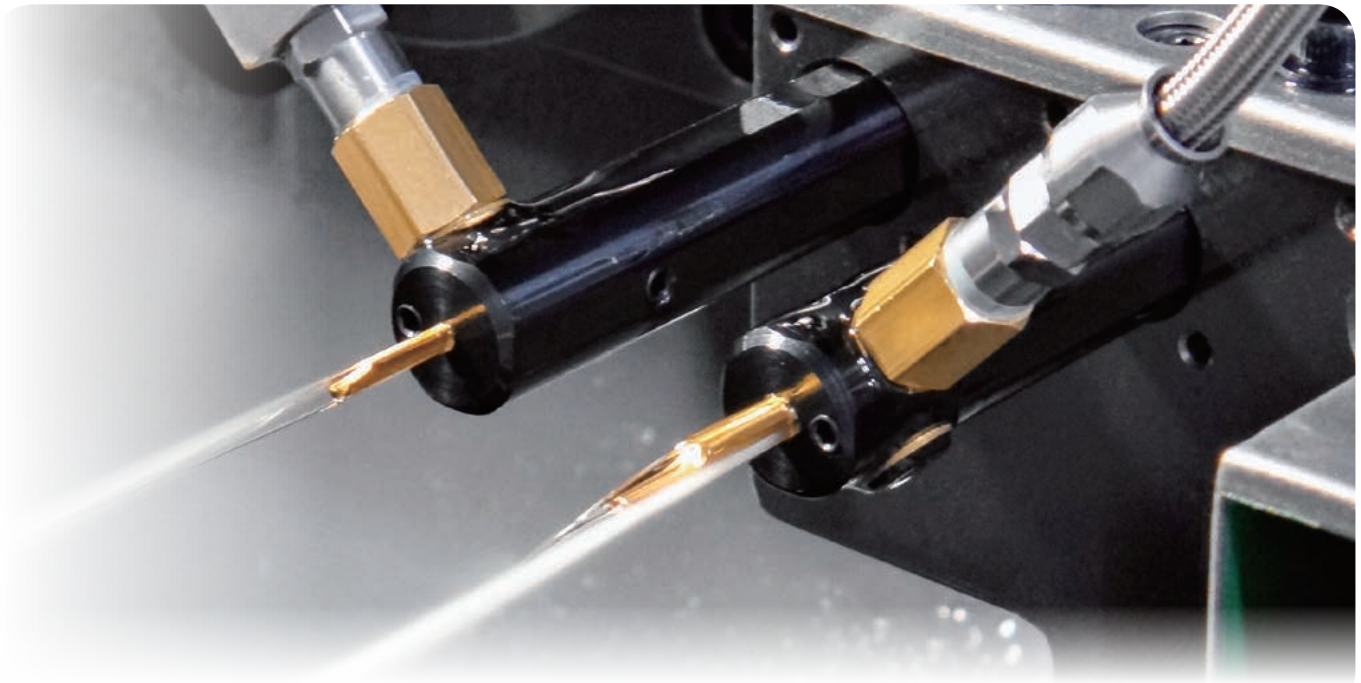
Th(screw parts [A])
1014size : SS0605SC (M6×1.0)
1216/1616size : SPR1/8 (Rc1/8)

●R-hand shown

Holder dimension • Spare parts

Toolholder	Stock	Dimensions (mm)						Applicable insert	Spare parts	
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>f</i>	<i>L</i> ₂		Clamp screw	Wrench
Y-GTPAR 1014FSS-OH	●	10	14	80	—	0.1	15			
1216HS-OH	●	12	16	100	—	0.1	20			
1616H-OH	●	16	16	100	—	0.1	25			

Boring bar "STICK DUO SPLASH"

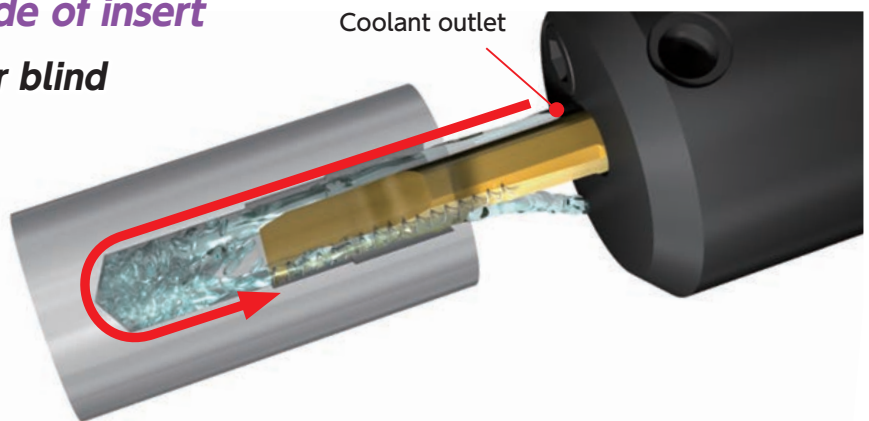


Features

You can select from 2 types of coolant outlet

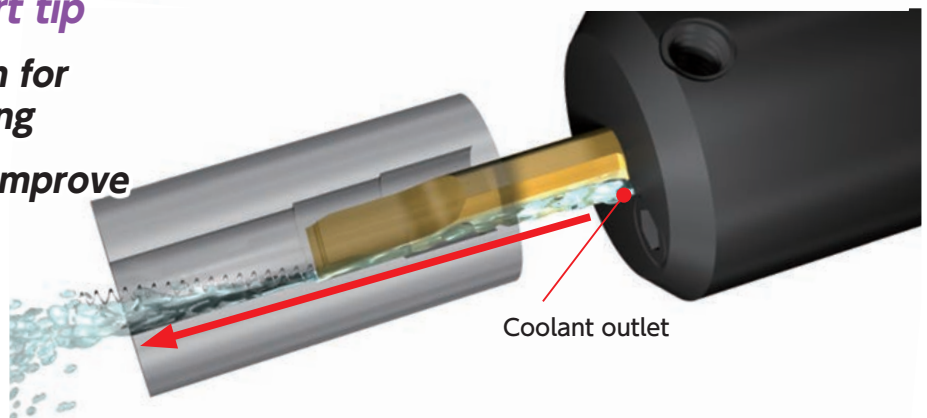
Internal coolant to back side of insert

- Good chip evacuation for blind hole machining



Internal coolant to insert tip

- Good chip evacuation for through-hole machining
- Coolant to insert tip improve the wear resistance



Structure

Connecting coolant horse to front and rear is possible

Designed for using with coolant fed machine

Connecting coolant horse to front side
M6×1.0screw hole
(Adjusting screw hole size is possible with adapter)



Connecting coolant horse to rear
Screw hole size RC1/8

Adjustable overhang length

Connecting coolant horse for front side
M6×1.0screw hole
(Adjusting screw hole size is possible with adapter)

Machined work piece comparison

External coolant	Internal coolant to insert tip
Chip clogging	No chip clogging

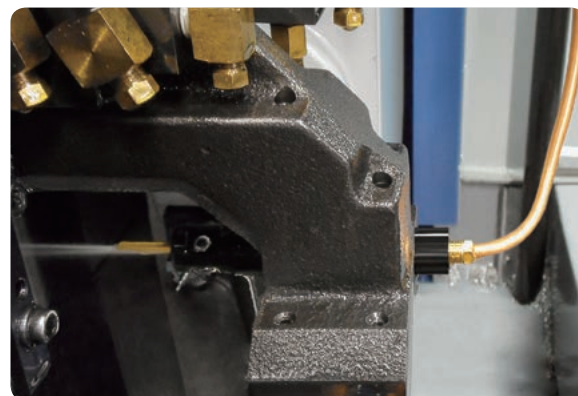
Work material : SCM435
 Insert : SHFS040R005S
 Cutting speed : $v_c=50\text{m/min}$
 D.O.C. : $a_p=0.2$
 Feed : $f=0.02\text{mm/rev}$
 Hole depth : 15mm
 Pilot hole : $\phi 5.1 \times 28\text{L}$
 Coolant pressure : 5MPa

Picture for jointing coolant horse

Front connection example



Rear connection example



STICK DUO sleeve(HY-NBH-OH Series)

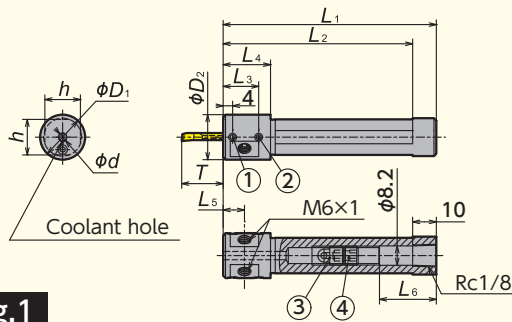


Fig.1

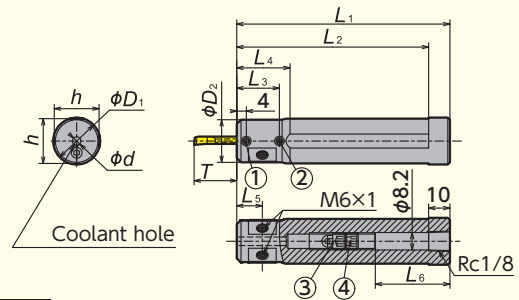
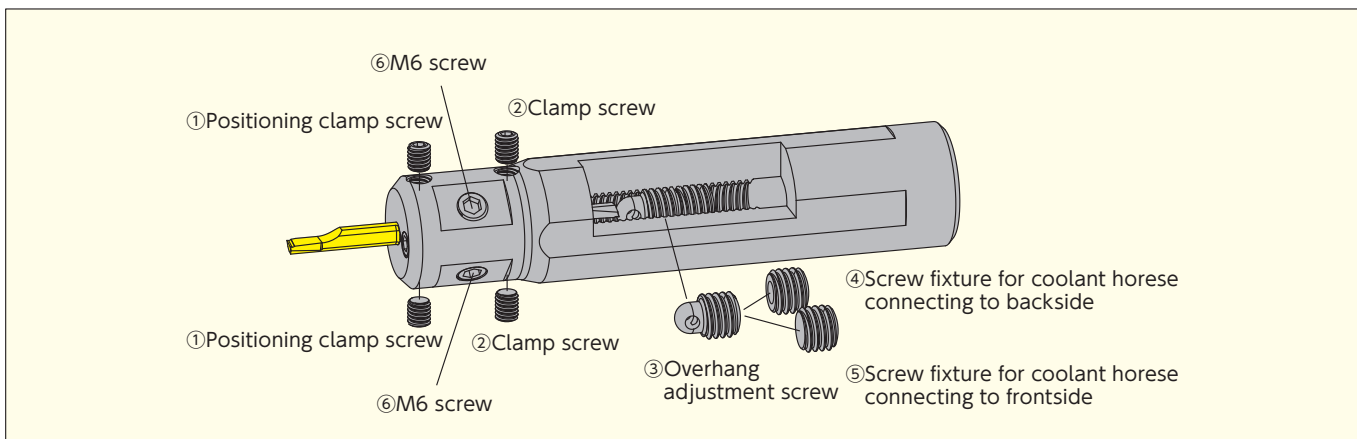


Fig.2

Shape	Code No.	Holder number	Dimensions (mm)										overhang length of bar (mm)	
			ϕd	ϕD_1	ϕD_2	h	L_1	L_2	L_3	L_4	L_5	L_6	Min.	Max.
Fig.1	●	HY-NBH 02016G-OH	2	16	19	15	90	80	15	19	9.5	29	5	18
	●	02516G-OH	2.5	16	19	15	90	80	15	19	9.5	30	6.3	19.5
	●	03016G-OH	3	16	19	15	90	80	15	19	9.5	31	7.5	21
	●	03516G-OH	3.5	16	19	15	90	80	15	19	9.5	23	8.8	24.5
	●	04016G-OH	4	16	19	15	90	80	20	24	12	24	10	28
	●	05016G-OH	5	16	19	15	90	80	20	24	12	16	12.5	35
Fig.2	●	HY-NBH 02019J-OH	2	19.05	19.05	18	110	100	15	—	9.5	49	5	18
	●	02519J-OH	2.5	19.05	19.05	18	110	100	15	—	9.5	50	6.3	19.5
	●	03019J-OH	3	19.05	19.05	18	110	100	15	—	9.5	51	7.5	21
	●	03519J-OH	3.5	19.05	19.05	18	110	100	15	—	9.5	43	8.8	24.5
	●	04019J-OH	4	19.05	19.05	18	110	100	20	—	12	44	10	28
	●	05019J-OH	5	19.05	19.05	18	110	100	20	—	12	36	12.5	35
	●	06019J-OH	6	19.05	19.05	18	110	100	20	—	12	28.5	15	42
	●	HY-NBH 02020J-OH	2	20	20	19	110	100	15	—	9.5	49	5	18
	●	02520J-OH	2.5	20	20	19	110	100	15	—	9.5	50	6.3	19.5
	●	03020J-OH	3	20	20	19	110	100	15	—	9.5	51	7.5	21
	●	03520J-OH	3.5	20	20	19	110	100	15	—	9.5	43	8.8	24.5
	●	04020J-OH	4	20	20	19	110	100	20	—	12	44	10	28
	●	05020J-OH	5	20	20	19	110	100	20	—	12	36	12.5	35
	●	06020J-OH	6	20	20	19	110	100	20	—	12	28.5	15	42
	●	HY-NBH 02022X-OH	2	22	20	21	120	110	15	25	9.5	59	5	18
	●	02522X-OH	2.5	22	20	21	120	110	15	25	9.5	60	6.3	19.5
	●	03022X-OH	3	22	20	21	120	110	15	25	9.5	61	7.5	21
	●	03522X-OH	3.5	22	20	21	120	110	15	25	9.5	53	8.8	24.5
	●	04022X-OH	4	22	20	21	120	110	20	25	12	54	10	28
	●	05022X-OH	5	22	20	21	120	110	20	25	12	46	12.5	35
	●	06022X-OH	6	22	20	21	120	110	20	25	12	28.5	15	42
	●	HY-NBH 02025.0K-OH	2	25.0	20	24	125	115	15	25	9.5	64	5	18
	●	02525.0K-OH	2.5	25.0	20	24	125	115	15	25	9.5	65	6.3	19.5
	●	03025.0K-OH	3	25.0	20	24	125	115	15	25	9.5	66	7.5	21
●	03525.0K-OH	3.5	25.0	20	24	125	115	15	25	9.5	58	8.8	24.5	
●	04025.0K-OH	4	25.0	20	24	125	115	20	25	12	59	10	28	
●	05025.0K-OH	5	25.0	20	24	125	115	20	25	12	51	12.5	35	
●	06025.0K-OH	6	25.0	20	24	125	115	20	25	12	28.5	15	42	
●	HY-NBH 02025.4K-OH	2	25.4	20	24	125	115	15	25	9.5	64	5	18	
●	02525.4K-OH	2.5	25.4	20	24	125	115	15	25	9.5	65	6.3	19.5	
●	03025.4K-OH	3	25.4	20	24	125	115	15	25	9.5	66	7.5	21	
●	03525.4K-OH	3.5	25.4	20	24	125	115	15	25	9.5	58	8.8	24.5	
●	04025.4K-OH	4	25.4	20	24	125	115	20	25	12	59	10	28	
●	05025.4K-OH	5	25.4	20	24	125	115	20	25	12	51	12.5	35	
●	06025.4K-OH	6	25.4	20	24	125	115	20	25	12	28.5	15	42	

Dimension "T" show overhang length of STICKDUO(hyper) bar when attached to sleeve with adjustment screw ③,④.

Parts



Holder number	Clamp screw		Overhang adjustment			M6 screw	Wrench		
	①	②	③	④*1	⑤*2		for ①, ②	for ③, ④, ⑤	for ⑥
HY-NBH 020 ○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS06055C	LW-2	LW-4*104	LW-3
025 ○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS06055C	LW-2	LW-4*104	LW-3
030 ○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS06055C	LW-2	LW-4*104	LW-3
035 ○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS06055C	LW-2	LW-4*104	LW-3
040 ○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS06055C	LW-2	LW-4*104	LW-3
050 ○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS06055C	LW-2	LW-4*104	LW-3

※1 Select screw ④ to connect coolant hoses to backside

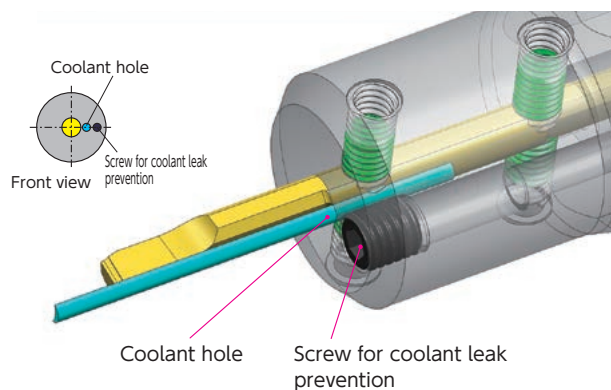
※2 Select screw ⑤ to connect coolant hoses to frontside

How to set bar in the sleeve when internal coolant to insert tip or to insert backside

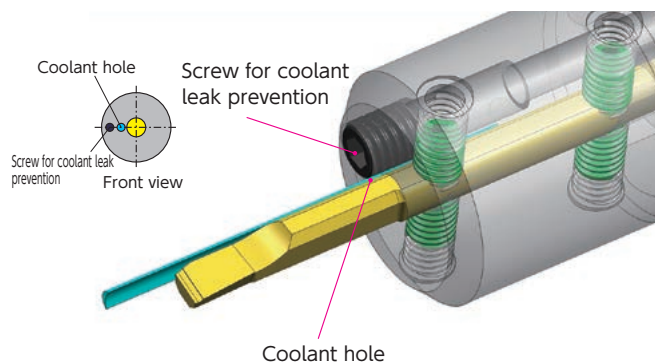
By rotating sleeve up side down, you can select the coolant output position

Coolant hole located in screw side for coolant leak prevention. See the following about the details.

① Coolant to insert tip

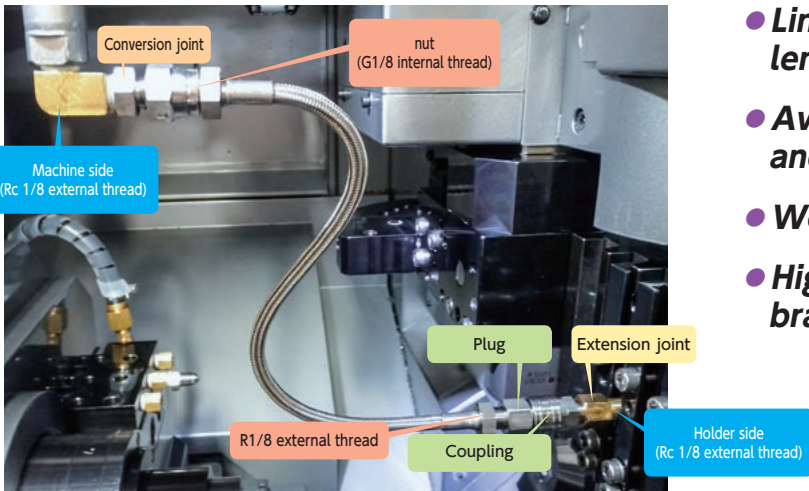


② Coolant to insert backside



Coolant Components

Coolant hose for connecting with R1/8



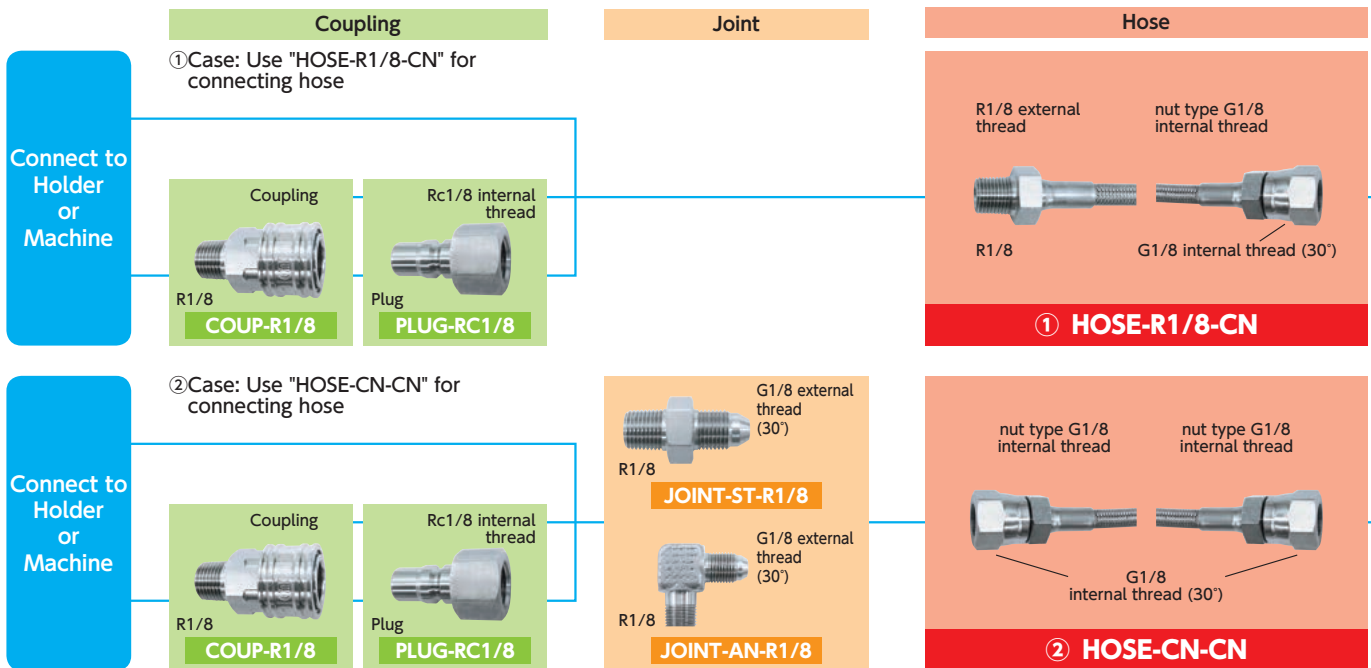
Ex. of connecting ①

- Line up a wide range of coolant hose length
- Available for 2 types of coupling and conversion joint
- Working pressure MAX. 20.6 MPa
- High quality flexible stainless steel braided hose

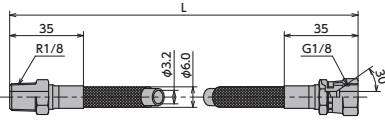
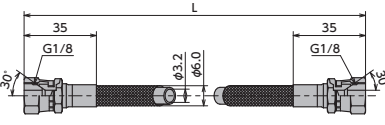
Ex. of connecting ①

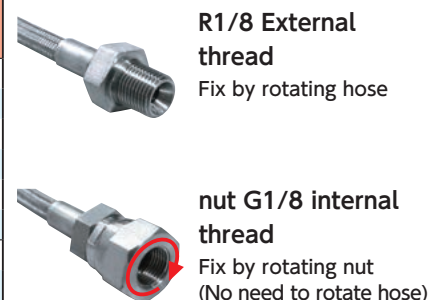
Parts	P/N
Conversion joint	JOINT-ST-R1/8
hose	HOSE-R1/8-CN-400
Plug	PLUG-RC1/8
Coupling	COUP-R1/8
Extension joint	SCJ-R1/8-RC1/8-L

Chart for connecting coolant components



Hose

Shape	P/N	Dimensions (mm)	Working pressure MAX.	Working pressure MIN.
		L		
① R1/8 External thread + nut: G1/8 internal thread 	HOSE-R1/8-CN-200	200	20.6	50
	HOSE-R1/8-CN-250	250	20.6	50
	HOSE-R1/8-CN-300	300	20.6	50
	HOSE-R1/8-CN-400	400	20.6	50
	HOSE-R1/8-CN-500	500	20.6	50
	HOSE-R1/8-CN-800	800	20.6	50
② Both side: nut G1/8 internal thread 	HOSE-CN-CN-200	200	20.6	50
	HOSE-CN-CN-250	250	20.6	50
	HOSE-CN-CN-300	300	20.6	50
	HOSE-CN-CN-400	400	20.6	50
	HOSE-CN-CN-500	500	20.6	50
	HOSE-CN-CN-800	800	20.6	50



SPLASH Series Selection Support Sheet

Able to search the material you need by choosing the combination you wish to the support sheet.

CUTTING TOOLS



Conversion / Extension Joint

	Stock	Spare parts	Dimensions (mm)					
			T ₁	T ₂	L ₁ ※1	L ₂	B	d
	●	SCJ-M6-RC1/8-L	M6	Rc1/8 (PT1/8)	16	15	13	2.5
	●	SCJ-R1/8-M10-L	Rc1/8 (PT1/8)	M10×1	16	12	13	4.5
	●	SCJ-R1/8-RC1/8-L	Rc1/8 (PT1/8)	Rc1/8 (PT1/8)	16	15	13	4.5
	●	SCJ-R1/8-NPT1/8-L	Rc1/8 (PT1/8)	NPT1/8	16	15	13	4.5
	●	SCJ-M6-M10	M6×1	M10×1	6	15	12	2.5
	●	SCJ-M6-RC1/8	M6×1	Rc1/8 (PT1/8)	6	15	13	2.5
	●	SCJ-M6-NPT1/8	M6×1	NPT1/8	6	15	13	2.5
	●	SCJ-M8-RC1/8	M8×1	Rc1/8 (PT1/8)	6	15	13	3.5
	●	SCJ-R1/8-M10	Rc1/8 (PT1/8)	M10×1	10	15	12	4.5
	●	SCJ-R1/8-NPT1/8	Rc1/8 (PT1/8)	NPT1/8	10	15	13	4.5

※1 To prevent hitting the coolant connecting part of holder from the gang tool post, "L1" dimension length is set longer.
NPT: ANSI/ASME B.1.20-1-1983(National Taper Pipe)

Joint

G1/8 external thread (30°) R1/8
JOINT-ST-R1/8

G1/8 external thread (30°) R1/8
JOINT-AN-R1/8

Coupling

Rc1/8 internal thread Plug
PLUG-RC1/8

Coupling R1/8
COUP-R1/8

Connect to Holder or Machine

Suitable use of Coupling and Joint

- Detach Hose frequently
⇒ **Coupling is suitable**
- Less detach Hose
⇒ **Joint is suitable**

G1/8 external thread (30°) R1/8
JOINT-ST-R1/8

G1/8 external thread (30°) R1/8
JOINT-AN-R1/8

Rc1/8 internal thread Plug
PLUG-RC1/8

Coupling R1/8
COUP-R1/8

Connect to Holder or Machine

Conversion joint (nut G1/8 internal thread)

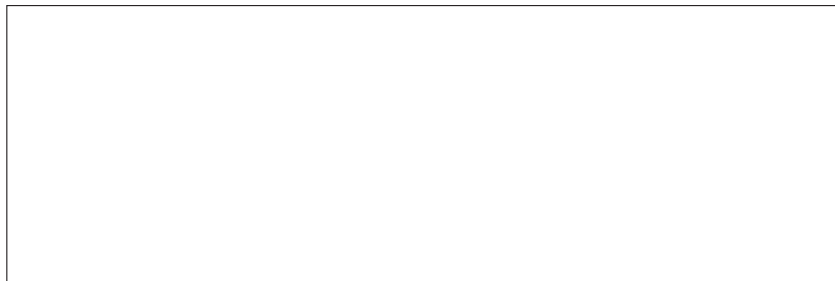
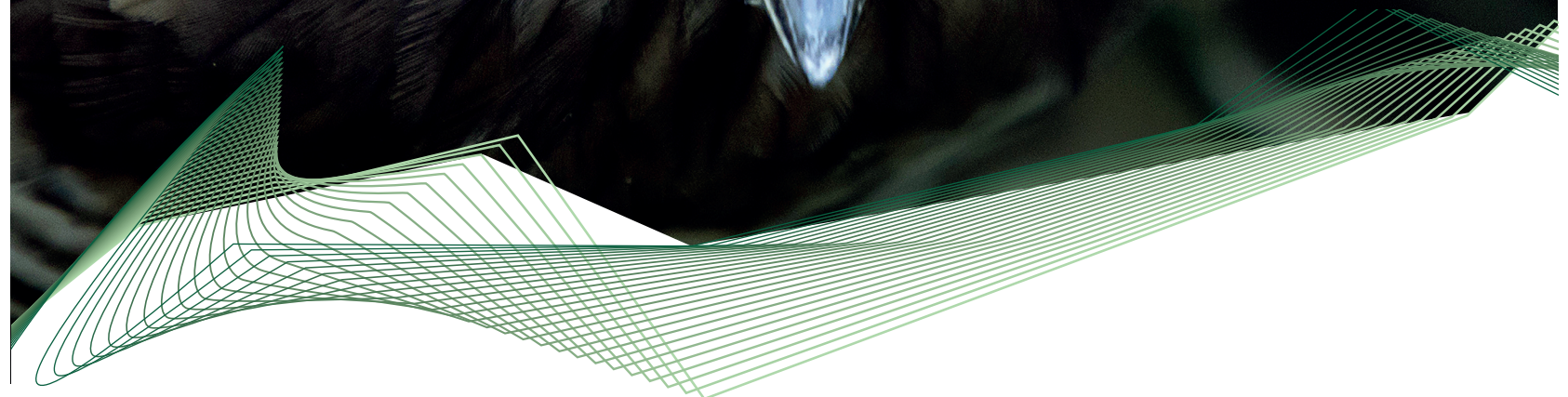
Parts	Straight style	L style
P/N	JOINT-ST-R1/8	JOINT-AN-R1/8
Working pressure MAX.	20.6	20.6
Shape		

※Screw standard will be different in both sides of straight and L style screw part. Please use the same screw standard when connecting to hose or one touch coupler.

Coupling

Parts	Plug	Coupling
P/N	PLUG-RC1/8	COUP-R1/8
Working pressure MAX.	7.5	7.5
Shape		

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