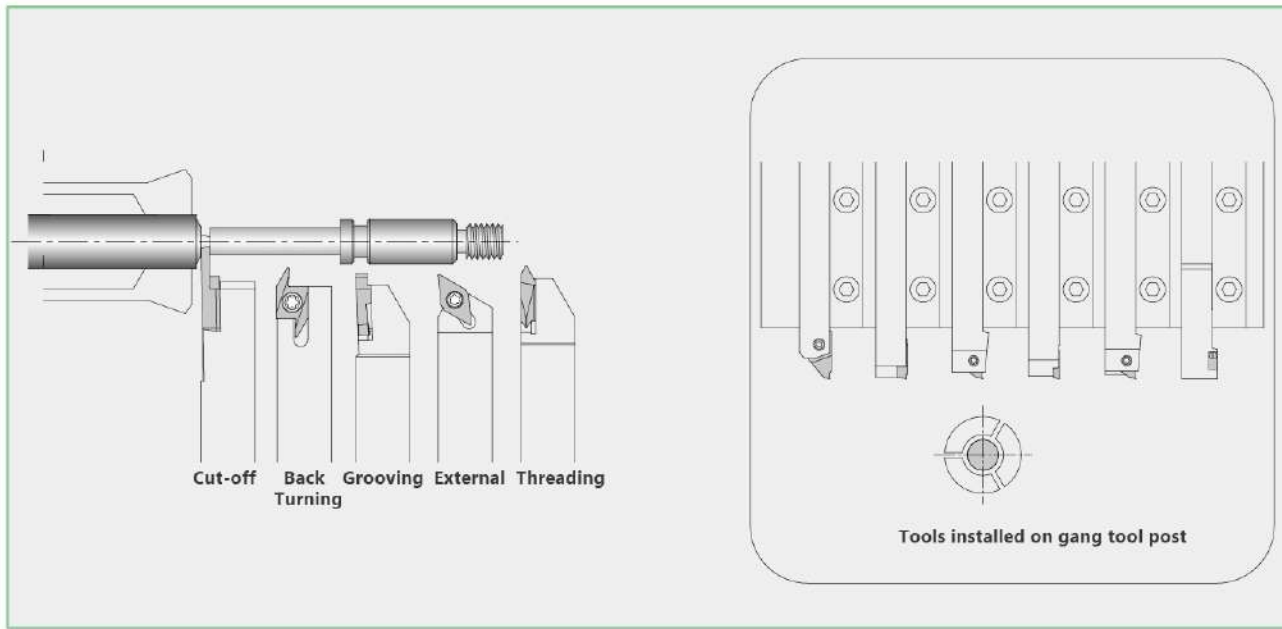
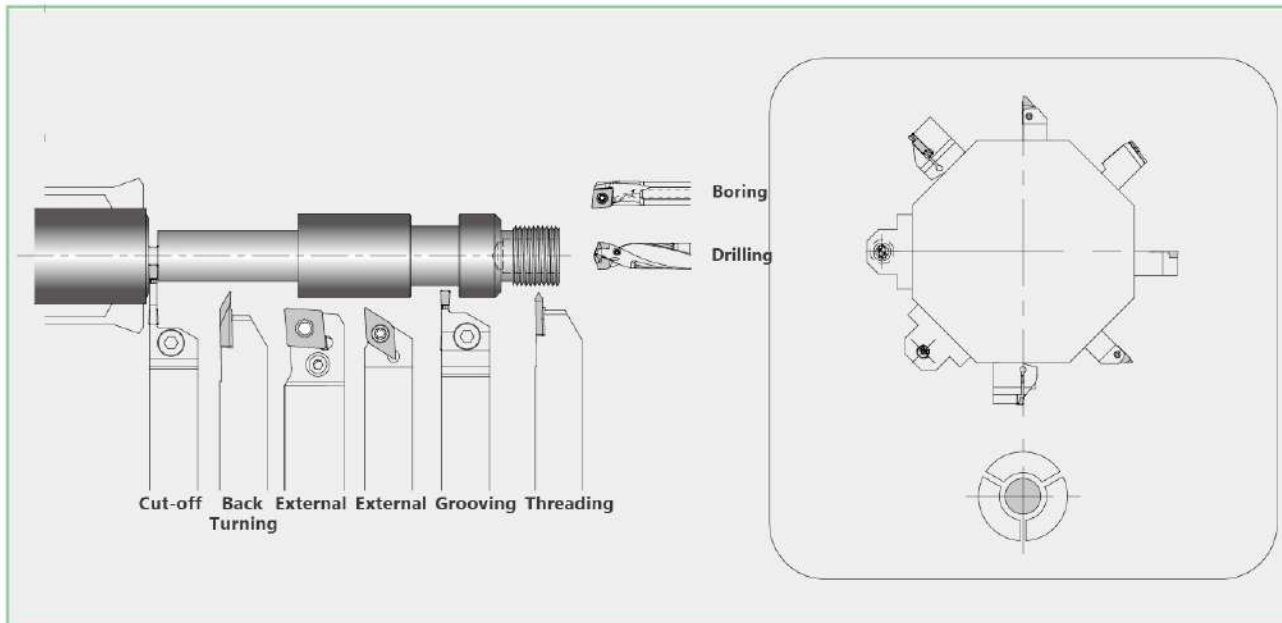


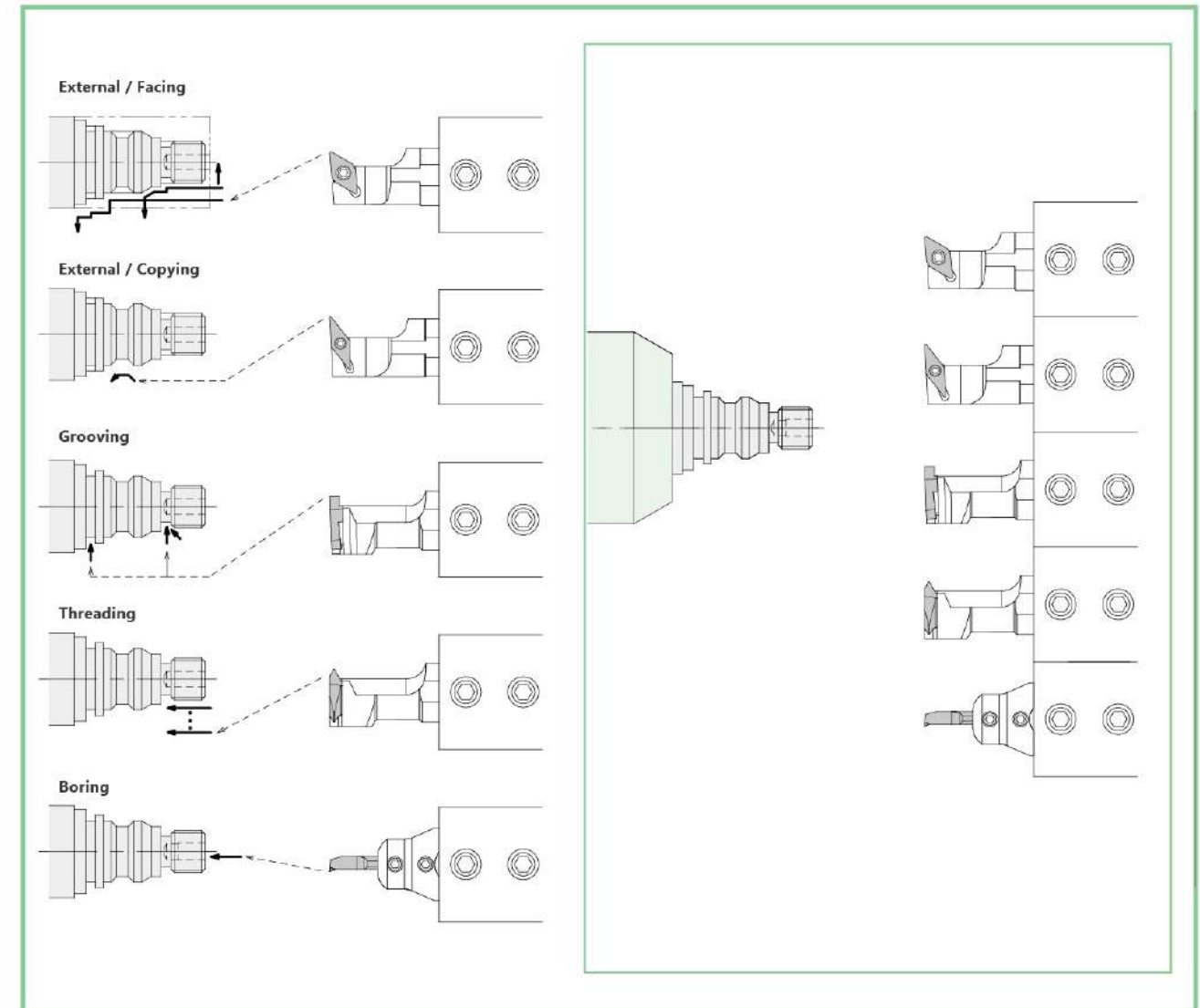
## Tooling example for a small CNC automatic Lathe(gang type)



## Tooling example for a small CNC automatic Lathe(turret type)



## Recommendation for Auto Tooling



TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

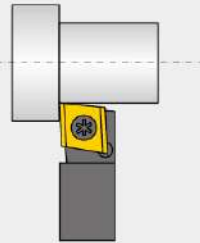
DRILL LINE

TOOL LINE

## General Turning Inserts Explained

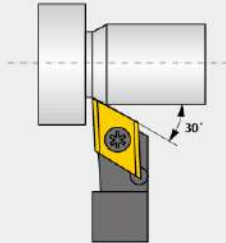
### Advantage for each geometry

CC.. Style (80°)



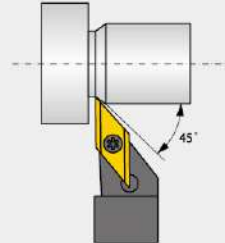
Increased toughness. Cutting edge is close to insert pocket. Not applicable to undercut

DC.. Style (55°)



Versatile geometry. Toughness of CC.. with flexibility of VC.. Up to 30 deg. undercuts

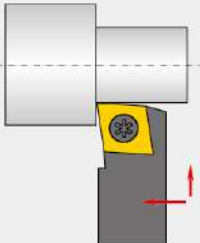
VB / VC / VP Style (35°)



Wide coverage in work geometry. Up to 45 deg. undercuts

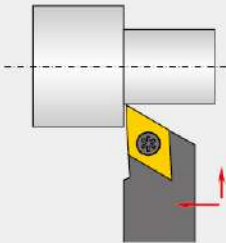
### Chip Control and Finish

SCLCR



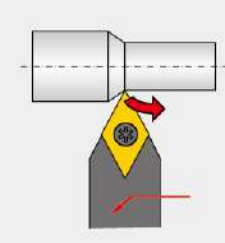
Rigid clamping  
High dimensional repeatability

SDJCR



Increased room for chip evacuation creates better surface finish

SDNCN



Chips flow away from the work

TURN LINE

THREAD LINE

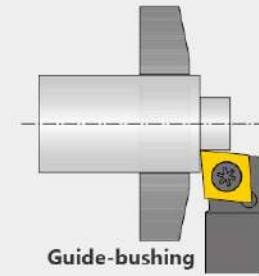
GROOVE LINE

MILL LINE

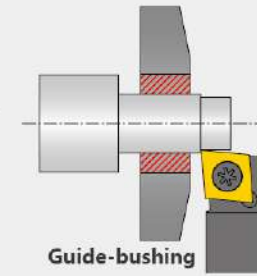
DRILL LINE

TOOL LINE

## Roughing and Finishing Long Work on Swiss Lathes

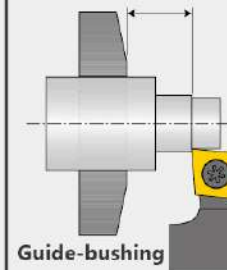


Single pass machining is common in Swiss front turning operations.



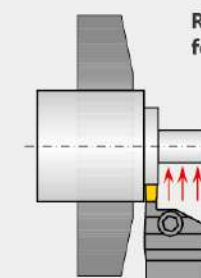
Conventional toolholders are not suitable for roughing or finishing of long parts. The guide-bushing cannot hold machined bar stock.

### Shifted Holders

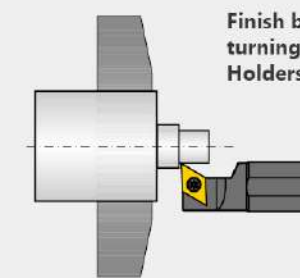


SCLC-N-F Shifted Holders make a finishing process possible without worrying about the bar stock coming out of the guide-bushing.  
SDJC-N-F Coolant flows effectively which improves chip control thanks to the increased room between the tools and guide-bushing.  
SVJC-N-F

### Combination of Grooving Tool and DS Holders



Rough with grooving tool for good chip control



Finish by using general turning inserts with DS Holders



## SCACR/L-FF

Without setoff, External / Facing



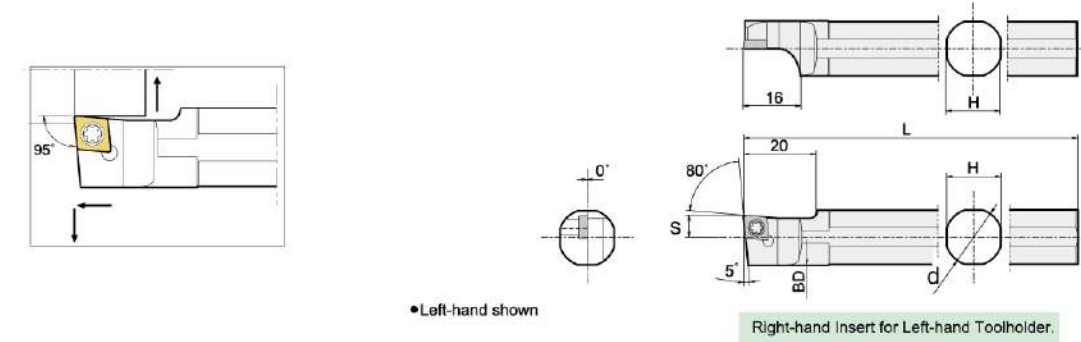
※ Only SCACR/L1010-X09A is designed as above picture.

Offset  
0°

Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	H	W	h	ℓ	L	S		screw	Wrench
SCACR/L 0808-X06FF			8	8	8	10	120	8	CC□T0602□□	M2.5x7	T-8
1010-X06FF			10	10	10	10	120	10			
1010-X09FF			10	10	10	13	120	10	CC□T09T3□□	M4.0x10	T-15
1212-X09FF			12	12	12	16	120	12			
1616-X09FF			16	16	16	16	120	16			

## S-SCLCL

External Sleeve Holder (External / Facing)



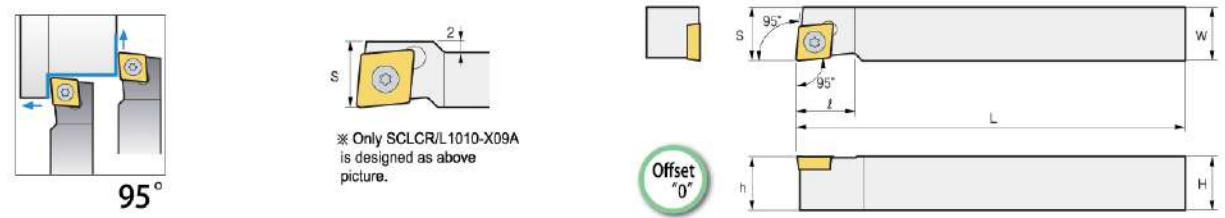
•Left-hand shown

Right-hand Insert for Left-hand Toolholder.

Designation	Stock		Dimensions(mm)					Insert	Spare parts	
	R	L	d	H	L	S	BD		screw	Wrench
S12F-SCLCL06			12.000	11	80	6	13.4	CC□T0602□□	M2.5x7	T-8
S14H-SCLCL06			14.000	13	100	6	13.4			
S15F-SCLCL06			15.875	15	85	6	15.4			
S16F-SCLCL06			16.000	15	85	6	15.4			
S19G-SCLCL06			19.050	17	90	6	18.4			
S19K-SCLCL06			19.050	17	120	6	18.4			
S20G-SCLCL06			20.000	18	90	6	19.4	CC□T09T3□□	M4.0x7	T-15
S20K-SCLCL06			20.000	18	120	6	19.4			
S19G-SCLCL09			19.050	17	90	10	18.4			
S19K-SCLCL09			19.050	17	120	10	18.4			
S20G-SCLCL09			20.000	18	90	10	19.4			
S20K-SCLCL09			20.000	18	120	10	19.4			
S25H-SCLCL09			25.000	23	100	10	24.4	CC□T09T3□□	M4.0x7	T-15
S25K-SCLCL09			25.400	23	120	10	24.8			

## SCLCR/L-FF

Without setoff, External / Facing



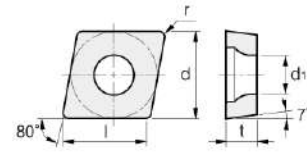
※ Only SCLCR/L1010-X09A is designed as above picture.

Offset  
0°

Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	H	W	h	ℓ	L	S		screw	Wrench
SCLCR/L 0808-X06FF			8	8	8	10	120	8	CC□T0602□□	M2.5x7	T-8
1010-X06FF			10	10	10	10	120	10			
1010-X09FF			10	10	10	13	120	10	CC□T09T3□□	M4.0x10	T-15
1212-X09FF			12	12	12	16	120	12			
1616-X09FF			16	16	16	16	120	16			

## Inserts

### CCGT

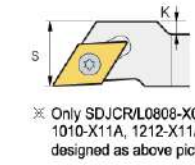
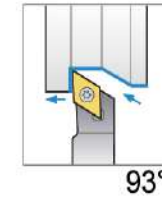


Workpiece	Machining Type											
	Material	Code	TPM8020	TPU15B	TPM8115S	TPM8125	TPM8225	TPM8135	TPM930	TPK01	TTIN30	TTIN3025
Steel	P	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●

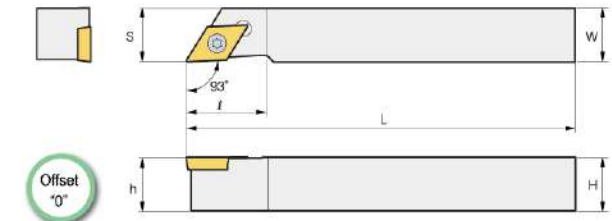
Designations	Dimensions(mm)					Coated						Uncoated		Cermets		
	l	d	t	r	d1	TPM8020	TPU15B	TPM8115S	TPM8125	TPM8225	TPM8135	TPM930	TPK01	TTIN30	TTIN3025	
<b>CCGT-F</b>																
030102R-F	4.0	3.500	1.39	0.2	1.9		○	○								
030104R-F	4.0	3.500	1.39	0.4	1.9		○	○								
030102L-F	4.0	3.500	1.39	0.2	1.9		●	○					●	●		
030104L-F	4.0	3.500	1.39	0.4	1.9		●	○					●	●		
040102R-F	4.8	4.300	1.79	0.2	2.3		○	○								
040104R-F	4.8	4.300	1.79	0.4	2.3		○	○								
040102L-F	4.8	4.300	1.79	0.2	2.3		●	○					●	●		
040104L-F	4.8	4.300	1.79	0.4	2.3		●	○					●	●		
<b>CCGT-U</b>																
060202ER-U	6.5	6.350	2.38	0.2	2.8	●	●	○					●	●		
060204ER-U	6.5	6.350	2.38	0.4	2.8	●	●	○					●	●		
060202EL-U	6.5	6.350	2.38	0.2	2.8		●	○					●	●		
060204EL-U	6.5	6.350	2.38	0.4	2.8		●	○					●	●		
09T302ER-U	9.7	9.525	3.97	0.2	4.4	●	●	○					●	●		
09T304ER-U	9.7	9.525	3.97	0.4	4.4	●	●	○					●	●		
09T302EL-U	9.7	9.525	3.97	0.2	4.4		●	○					●	●		
09T304EL-U	9.7	9.525	3.97	0.4	4.4		●	○					●	●		
<b>CCGT-W</b>																
060202R-W15	6.5	6.350	2.38	0.2	2.8	●	●	○					●	●		
060204R-W15	6.5	6.350	2.38	0.4	2.8	●	●	○					●	●		
060202L-W15	6.5	6.350	2.38	0.2	2.8		●	○					●	●		
060204L-W15	6.5	6.350	2.38	0.4	2.8		●	○					●	●		
09T302R-W20	9.7	9.525	3.97	0.2	4.4	●	●	○					●	●		
09T304R-W20	9.7	9.525	3.97	0.4	4.4	●	●	○					●	●		
09T302L-W20	9.7	9.525	3.97	0.2	4.4		●	○					●	●		
09T304L-W20	9.7	9.525	3.97	0.4	4.4		●	○					●	●		

## SDJCR/L-FF

### Without setoff, External / Copying



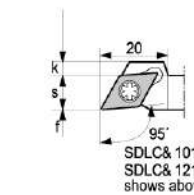
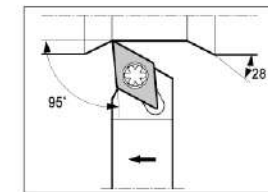
※ Only SDJCR/L0808-X07A, 1010-X11A, 1212-X11A is designed as above picture.



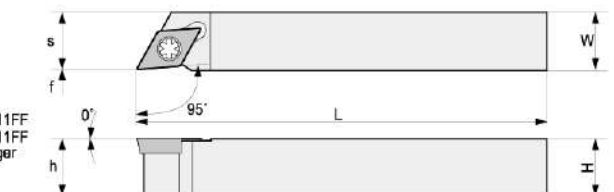
Designation	Stock		Dimensions(mm)						Insert	Spare parts		
	R	L	H	W	h	l	L	S		K	screw	Wrench
<b>SDJCR/L 0808-X07FF</b>			8	8	8	18	120	8	2	DC□T0702□□	M2.5x7	T-8
1010-X07FF			10	10	10	15	120	12	-			
1010-X11FF			10	10	10	18	120	10	4			
1212-X11FF			12	12	12	18	120	10	2	DC□T11T3□□	M4.0x10	T-15
1616-X11FF			16	16	16	22	120	12	-			

## SDLCR/L-FF

### Without setoff, External / Copying



SDLC & 1010-.11FF, SDLC & 1212-.11FF shows above figure. • Right-hand shown

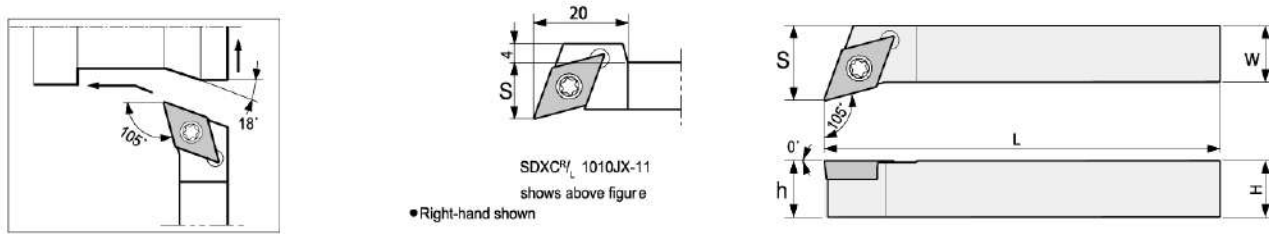


Designation	Stock		Dimensions(mm)						Insert	Spare parts		
	R	L	H	W	h	L	S	K		f	screw	Wrench
<b>SDLCR/L 1010-X07FF</b>			10	10	10	120	10	-	0	DC□T0702□□	M2.5x7	T-8
1212-X07FF			12	12	12	120	12	-	0			
1616-X07FF			16	16	16	120	16	-	0			
1010-X11FF			10	10	10	120	10	4	0			
1212-X11FF			12	12	12	120	12	2	0	DC□T11T3□□	M4.0x10	T-15
1616-X11FF			16	16	16	120	16	-	0			
1212-F07FF			12	12	12	80	12	-	0	DC□T0702□□	M2.5x7	T-8
1010-F11FF			10	10	10	80	10	4	0			
1212-F11FF			12	12	12	80	12	2	0	DC□T11T3□□	M4.0x10	T-15
1616-H11FF			16	16	16	100	16	-	0			



## SDXCR/L

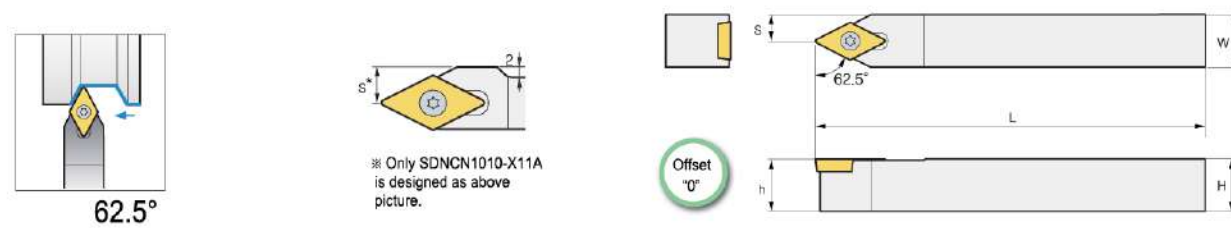
External / Facing / Copying



Designation	Stock		Dimensions(mm)					Insert	Spare parts	
	R	L	H	W	h	L	S		screw	Wrench
SDXCR/L 1010-X07			10	10	10	120	12	DC□T0702□□	M2.5x7	T-8
1010-X11			10	10	10	120	12	DC□T11T3□□	M4.0x10	T-15
1212-X11			12	12	12	120	16			
1616-X11			16	16	16	120	20			

## SDNCN-FF

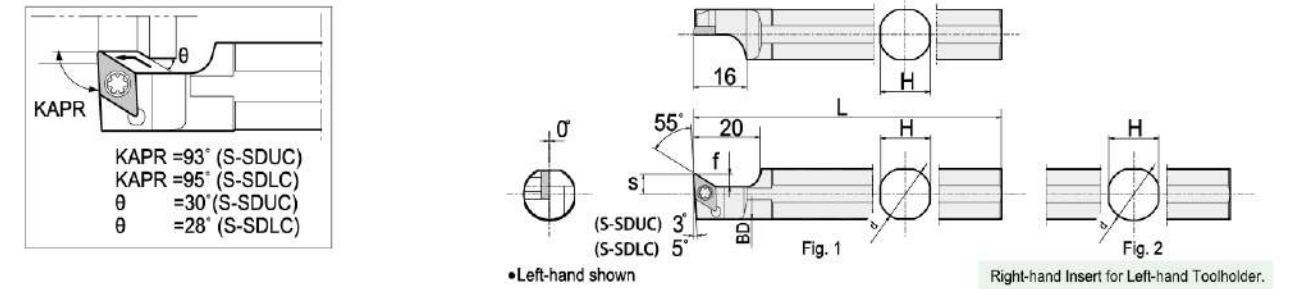
Without setoff, External / Copying



Designation	Stock		Dimensions(mm)					Insert	Spare parts	
	R	L	H	W	h	L	S		screw	Wrench
SDNCN 0808-X07FF			10	10	10	120	4	DC□T0702□□	M2.5x7	T-8
1010-X07FF			12	12	12	120	5			
1010-X11FF			10	10	10	120	7			
1212-X11FF			12	12	12	120	6	DC□T11T3□□	M4.0x10	T-15
1616-X11FF			16	16	16	120	8			

## S-SDUCL / SDLCL

External Sleeve Holder (External / Facing)

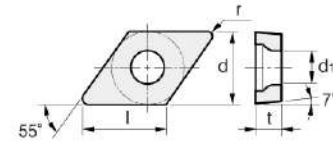


Designation	Stock		Dimensions(mm)					Insert	Spare parts		Fig.
	R	L	d	H	L	S	f		screw	Wrench	
S14H-SDUCL07			14.000	13	100	6	3.8	DC□T0702□□	M2.5x6	T-8	1
S15F-SDUCL07			15.875	15	85	6	3.8				1
S19G-SDUCL07			19.050	17	90	6	3.8				1
S19K-SDUCL07			19.050	17	120	6	3.8				1
S20G-SDUCL07			20.000	18	90	6	3.8				1
S20K-SDUCL07			20.000	18	120	6	3.8				1
S19G-SDUCL11			19.050	17	90	10	5.8	DC□T11T3□□	M4.0x9	T-15	1
S19K-SDUCL11			19.050	17	120	10	5.8				1
S20G-SDUCL11			20.000	18	90	10	5.8				1
S20K-SDUCL11			20.000	18	120	10	5.8				1
S22K-SDUCL11			22.000	20	120	10	5.8				1
S25H-SDUCL11			25.000	23	100	10	5.8				1
S25K-SDUCL11			25.400	23	120	10	5.8	1			
S12F-SDLCL07			12.000	11	80	6	3.8	DC□T0702□□	M2.5x6	T-8	1
S14H-SDLCL07			14.000	13	100	6	3.8				2
S15F-SDLCL07			15.875	15	85	6	3.8				2
S16F-SDLCL07			16.000	15	85	6	3.8				2
S19G-SDLCL07			19.050	17	90	6	3.8				2
S19K-SDLCL07			19.050	17	120	6	3.8				2
S20G-SDLCL07			20.000	18	90	6	3.8	2			
S20K-SDLCL07			20.000	18	120	6	3.8	2			
S19G-SDLCL11			19.050	17	90	10	5.8	DC□T11T3□□	M4.0x9	T-15	2
S19K-SDLCL11			19.050	17	120	10	5.8				2
S20G-SDLCL11			20.000	18	90	10	5.8				2
S20K-SDLCL11			20.000	18	120	10	5.8				2
S22K-SDLCL11			22.000	20	120	10	5.8				2
S25H-SDLCL11			25.000	23	100	10	5.8				2
S25K-SDLCL11			25.400	23	120	10	5.8	2			



## Inserts

### DCGT



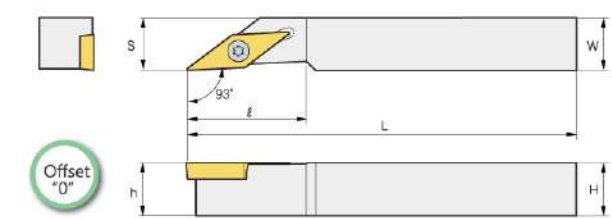
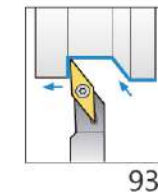
Workpiece	Machining Type		Machining Type																	
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	TPM8020	TPU15B	TPM8115S	TPM8125	TPM8225	TPM8135	TPM930	TPK01	TTIN30	TTIN3025	
Steel	P						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H						●	●	●	●	●	●	●	●	●	●	●	●	●	●

Designations	Dimensions(mm)					Coated						Uncoated	Cermet		
	l	d	t	r	d1	TPM8020	TPU15B	TPM8115S	TPM8125	TPM8225	TPM8135	TPM930	TPK01	TTIN30	TTIN3025
<b>DCGT-F</b>															
070202R-F	7.8	6.350	2.38	0.2	2.8		○		○						
070204R-F	7.8	6.350	2.38	0.4	2.8		○		○						
070202L-F	7.8	6.350	2.38	0.2	2.8		○		○						
070204L-F	7.8	6.350	2.38	0.4	2.8		○		○						
11T302R-F	11.6	9.525	3.97	0.2	4.4		○		○						
11T304R-F	11.6	9.525	3.97	0.4	4.4		○		○						
11T302L-F	11.6	9.525	3.97	0.2	4.4		○		○						
11T302L-F	11.6	9.525	3.97	0.4	4.4		○		○						
<b>DCGT-U</b>															
070202ER-U	7.8	6.350	2.38	0.2	2.8		○		○						
070204ER-U	7.8	6.350	2.38	0.4	2.8		○		○						
070202EL-U	7.8	6.350	2.38	0.2	2.8				○						
070204EL-U	7.8	6.350	2.38	0.4	2.8				○						
11T302ER-U	11.6	9.525	3.97	0.2	4.4	●	●		○				●	●	
11T304ER-U	11.6	9.525	3.97	0.4	4.4	●	●		○				●	●	
11T302EL-U	11.6	9.525	3.97	0.2	4.4		●		○				●	●	
11T304EL-U	11.6	9.525	3.97	0.4	4.4		●		○				●	●	

## SVJBR/L-FF

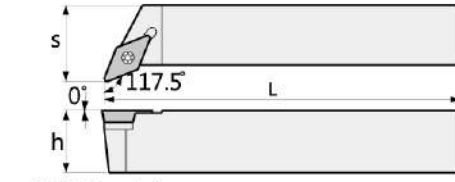
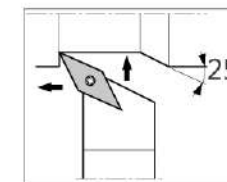
### Without setoff, External / Copying



Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	H	W	h	ℓ	L	S		screw	Wrench
<b>SVJBR/L</b> 1010-X11FF			10	10	10	22	120	10	VB□T1103□□	M2.5x7	T-8
1212-X11FF			10	12	12	22	120	12			
1616-X11FF			12	16	16	24	120	16			
2020-X11FF			16	20	20	30	120	20			

## SVPBR/L

### External / Facing / Copying / Undercutting

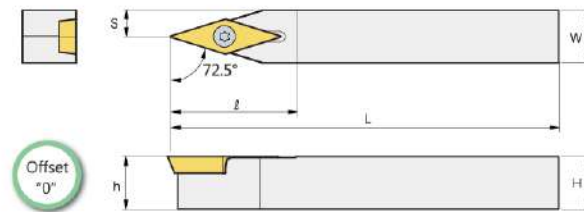
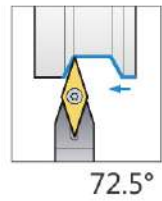


Corner (RE)	ap (mm)	DCN (MIN.)
0.4	0.5	ø25
1	1	ø30
0.8	0.5	ø45
1	1	ø55

Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	H	W	h	L	S	RE		screw	Wrench
<b>SVPBR/L</b> 1010-X11			10	10	10	120	14.5	0.4	VB□T1103□□	M2.5x7	T-8
1212-X11			12	12	12	120	16.5	0.4			
1616-X11			16	16	16	120	20.5	0.4			
2020-K11			20	20	20	125	25.0	0.4			
2525-M11			25	25	25	150	32.0	0.4			
2020-K16			20	20	20	125	25.0	0.8	VB□T11604□□	M4.0x9	T-15
2525-M16			25	25	25	150	32.0	0.8			

## SVVBN

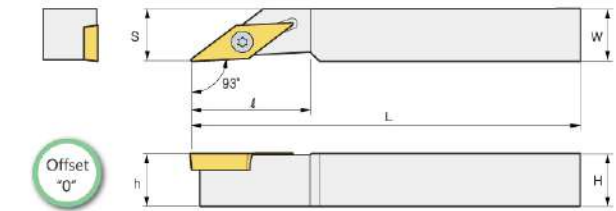
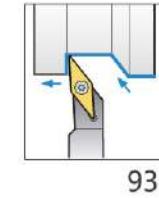
Without setoff, External / Copying



Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	H	W	h	ℓ	L	S		screw	Wrench
SVVBN 1010-X11FF			10	10	10	24	120	5	VB□T1103□□	M2.5x7	T-8
1212-X11FF			12	12	12	24	120	6			
1616-X11FF			16	16	16	28	120	8			

## SVJCR/L-FF

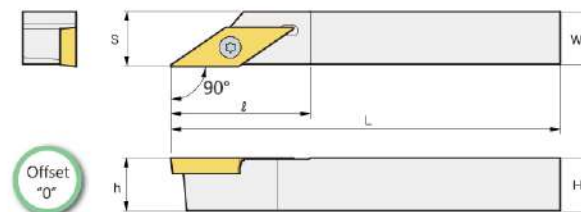
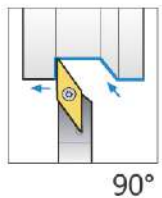
Without setoff, External / Copying



Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	H	W	h	ℓ	L	S		screw	Wrench
SVJCR/L 1010-X11FF			10	10	10	22	120	10	VC□T1103□□	M2.5x7	T-8
1212-X11FF			12	12	12	22	120	12			
1616-X11FF			16	16	16	24	120	16			
2020-X11FF			20	20	20	30	120	20			

## SVACR/L

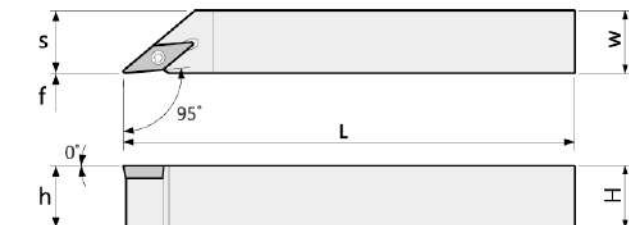
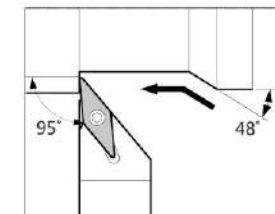
Without setoff, External / Copying



Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	H	W	h	ℓ	L	S		screw	Wrench
SVACR/L 0808-X11FF			8	8	8	26	120	8.5	VC□T1103□□	M2.5x7	T-8
1010-X11FF			10	10	10	26	120	10.5			
1212-X11FF			12	12	12	26	120	12.5			
1616-X11FF			16	16	16	26	120	16.5			

## SVLCR/L-FF

Without setoff, External / Copying

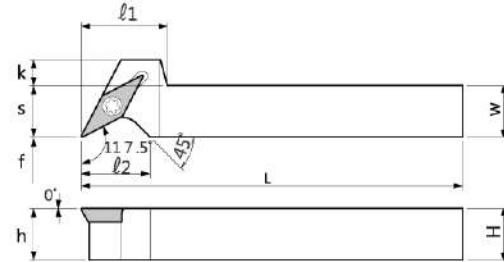
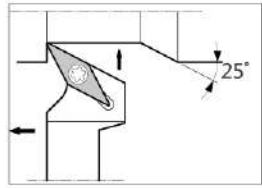


Designation	Stock		Dimensions(mm)							Insert	Spare parts	
	R	L	H	W	h	L	S	f	screw		Wrench	
SVLCR/L 1010-X11FF			10	10	10	120	10	0	VC□T1103□□	M2.5x7	T-8	
1212-X11FF			12	12	12	120	12	0				
1616-X11FF			16	16	16	120	16	0				
2020-X11FF			20	20	20	120	20	0				

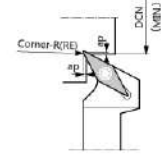


## SVPCR/L-FF

Without setoff, External / Facing / Copying / Undercutting



Undercutting diameter of SVPC-FF

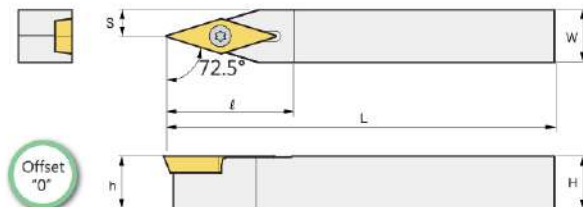
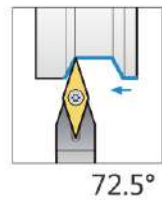


Corner-R (R)	ap (mm)	DCN (M/M)
0.2	0.5	ø20
	0.7	ø25

Designation	Stock		Dimensions(mm)								Insert	Spare parts		
	R	L	H	W	h	l <sub>1</sub>	l <sub>2</sub>	L	S	K		f	screw	Wrench
SVPCR/L 1010-X11FF			10	10	10	20	16	120	10	8	0	VC□T1103□□	M2.5x7	T-8
1212-F11FF			12	12	12	20	16	80	12	6	0			
1212-X11FF			12	12	12	20	16	120	12	6	0			
1616-X11FF			16	16	16	20	20	120	16	2	0			

## SVVCN

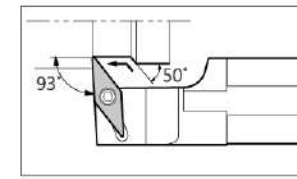
Without setoff, External / Copying



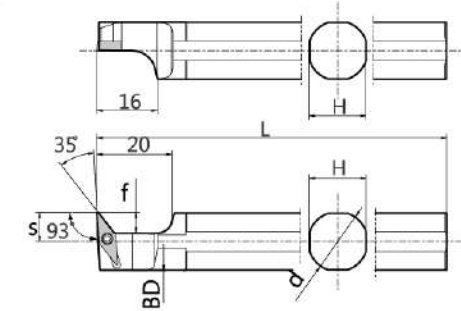
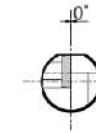
Designation	Stock		Dimensions(mm)					Insert	Spare parts		
	R	L	H	W	h	l	L		S	screw	Wrench
SVVCN 1010-X11FF			10	10	10	24	120	5	VC□T1103□□	M2.5x7	T-8
1212-X11FF			12	12	12	24	120	6			
1616-X11FF			16	16	16	28	120	8			

## S-SVUBL / SVUCL

External Sleeve Holder (External / Copying)



Left-hand shown



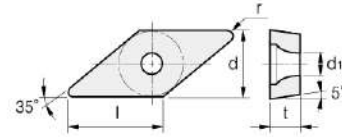
Right-hand Insert for Left-hand Toolholder.

Designation	Stock		Dimensions(mm)					Insert	Spare parts		
	R	L	d	H	L	S	f		BD	screw	Wrench
S19G-SVUBL11			19.05	17	90	10.5	8	18.4	VB□T1103□□	M2.5x7	T-8
S19K-SVUBL11			19.05	17	125	10.5	8	18.4			
S20G-SVUBL11			20.00	18	90	10.5	8	19.4			
S20K-SVUBL11			20.00	18	125	10.5	8	19.4			
S25H-SVUBL11			25.00	23	100	10.5	8	24.4			
S25K-SVUBL11			25.40	23	125	10.5	8	24.8			
S19G-SVUCL11			19.05	17	90	10.5	8	18.4	VC□T1103□□	M2.5x7	T-8
S19K-SVUCL11			19.05	17	125	10.5	8	18.4			
S20G-SVUCL11			20.00	18	90	10.5	8	19.4			
S20K-SVUCL11			20.00	18	125	10.5	8	19.4			
S25H-SVUCL11			25.00	23	100	10.5	8	24.4			
S25K-SVUCL11			25.40	23	125	10.5	8	24.8			



## Inserts

### VBGT



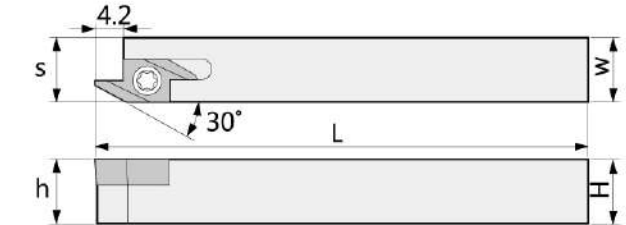
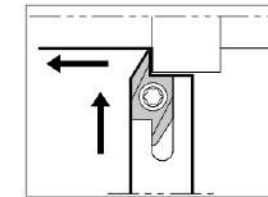
Workpiece	Machining Type		Machining Type																	
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	TPM8020	TPU15B	TPM8115S	TPM8125	TPM8225	TPM8135	TPM930	TPK01	TTIN30	TTIN3025	
Steel	P						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S						●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H						●	●	●	●	●	●	●	●	●	●	●	●	●	●

Designations	Dimensions(mm)					Coated						Uncoated	Cermet		
	l	d	t	r	d1	TPM8020	TPU15B	TPM8115S	TPM8125	TPM8225	TPM8135	TPM930	TPK01	TTIN30	TTIN3025
<b>VBGT-F</b>															
110301R-F	11.2	6.350	3.18	0.1	2.8		○	○				○			
110302R-F	11.2	6.350	3.18	0.2	2.8		○	○				○			
110301L-F	11.2	6.350	3.18	0.1	2.8		○	○				○			
110302L-F	11.2	6.350	3.18	0.2	2.8		○	○				○			
<b>VBGT-Y</b>															
110301R-Y	11.2	6.350	3.18	0.1	2.8		○	○				○		●	●
110302R-Y	11.2	6.350	3.18	0.2	2.8	●	●	○				○		●	●
110304R-Y	11.2	6.350	3.18	0.4	2.8	●	●	○				○		●	●
110301L-Y	11.2	6.350	3.18	0.1	2.8		○	○				○		○	○
110302L-Y	11.2	6.350	3.18	0.2	2.8	●	●	○				○		●	●
110304L-Y	11.2	6.350	3.18	0.4	2.8	●	●	○				○		●	●
160402R-Y	16.6	9.525	4.76	0.2	4.4		○	○				○			
160404R-Y	16.6	9.525	4.76	0.4	4.4		○	○				○			
160402L-Y	16.6	9.525	4.76	0.2	4.4		○	○				○			
160404L-Y	16.6	9.525	4.76	0.4	4.4		○	○				○			

## SABS-40F

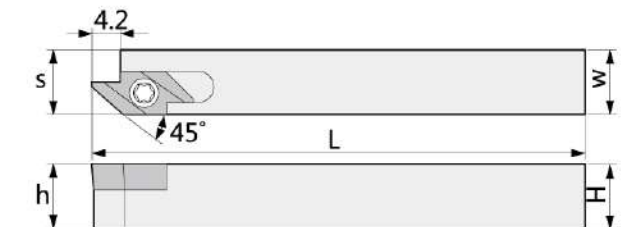
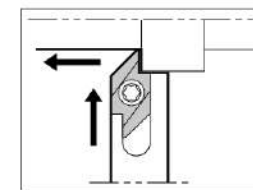
Edge Width : 2.8mm, MAX. Depth : 4mm



Designation	Stock		Dimensions(mm)					Insert	Spare parts	
	R	L	H	W	h	L	S		screw	Wrench
<b>SABSR</b> 1010-X40F			10	10	10	120	10.2	ABS15R	M3.0x8	T-10
1212-X40F			12	12	12	120	12.2			
1616-X40F			16	16	16	120	16.2			
1212-F40F			12	12	12	80	12.2			
2020-K40F			20	20	20	125	20.2			

## SABW-40F

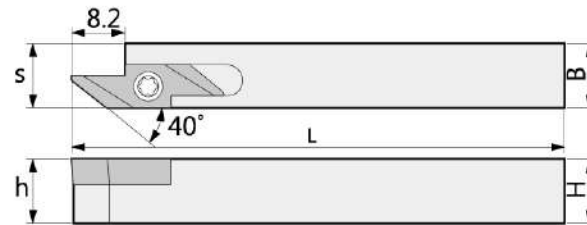
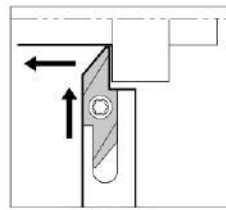
Edge Width : 4.7mm, MAX. Depth : 4mm



Designation	Stock		Dimensions(mm)					Insert	Spare parts	
	R	L	H	W	h	L	S		screw	Wrench
<b>SABWR</b> 1010-X40F			10	10	10	120	10.2	ABW15R	M3.0x8	T-10
1212-X40F			12	12	12	120	12.2			
1616-X40F			16	16	16	120	16.2			
2020-K40F			20	20	20	125	20.2			

## SABW-50F

Edge Width : 4.7mm, MAX. Depth : 5mm



Designation	Stock		Dimensions(mm)					Insert	Spare parts	
	R	L	H	W	h	L	S		screw	Wrench
SABWR 1010-X50F			10	10	10	120	10.2	ABW23R	M3.0x8	T-10
1212-X50F			12	12	12	120	12.2			
1616-X50F			16	16	16	120	16.2			
2020-K50F			20	20	20	125	20.2			

Workpiece	Steel	P	Machining Type															
	Stainless steel	M		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Cast iron	K		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Non-ferrous metal	N		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Heat resistant alloy, Titanium alloy	S		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hardened steel	H		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

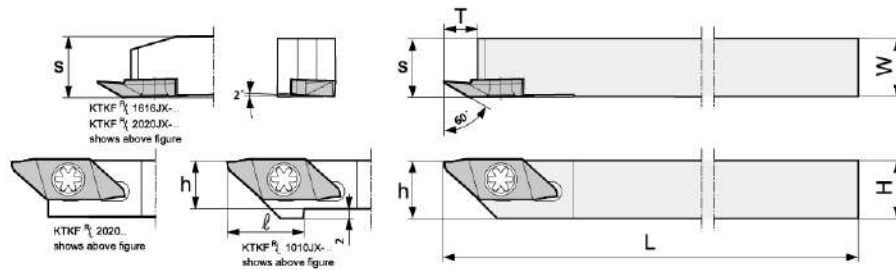
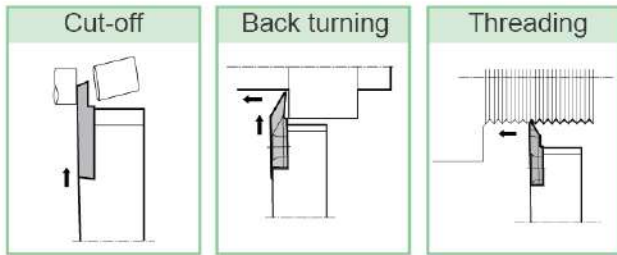
● Continuous cutting  
 \* General cutting  
 \* Interrupted cutting

Picture	Designations	r	Coated							Uncoated		Cermet	
			TPM8020	TPU15B	TPM8115S	TPM8125	TPM8225	TPM8135	TPM930	TPK01	TTIN30	TTIN3025	
 	ABS 15R4005	0.05		●	●								
	15R4015	0.15		●	●								
 	ABW 15R4005	0.05		●	●								
	15R4015	0.15		●	●								
 	ABW 23R5005	0.05		●	●								
	23R5015	0.15		●	●								



## KTKFR/L

For Small Diameter Cut-off, Turning & Threading



Designation	Stock		Dimensions(mm)							Insert	Spare parts	
	R	L	H	W	h	ℓ	T	L	S		screw	Wrench
KTKFR/L 1010JX-12	●		10	10	10	15	6	120	10	TKF□12R/L	M4.5x9	T-15
1212JX-12	●		12	12	12	-	6	120	12			
1616JX-12	●		16	16	16	-	6	120	16			
2020JX-12	●		20	20	20	-	6	120	20			
1010JX-16	●		10	10	10	20	8	120	10	TKF□16R/L	M4.5x9	T-15
1212JX-16	●		12	12	12	-	8	120	12			
1616JX-16	●		16	16	16	-	8	120	16			
2020JX-16	●		20	20	20	-	8	120	20			

## Inserts

Shape	Designation	Size							Coated		Configuration	
		W±0.03	Dmax	rε	H	T	d	θ*	TPM8020	TPM8125		
	TKFC12R/L 050-S	0.50	5	0.03	8.7	3	5	0°		●		
	070-S	0.70	8	0.03	8.7	3	5	0°		●		
	100-S	1.00	12	0.03	8.7	3	5	0°		●		
	125-S	1.25	12	0.03	8.7	3	5	0°		●		
	150-S	1.50	12	0.03	8.7	3	5	0°		●		
	200-S	2.00	12	0.03	8.7	3	5	0°		●		
	TKFC16R/L 150-S	1.50	16	0.05	9.5	4	5	0°		●		
	200-S	2.00	16	0.05	9.5	4	5	0°		●		
	TKFC12R/L 050-S-16DR	0.50	5	0.03	8.7	3	5	16°		●		
	070-S-16DR	0.70	8	0.03	8.7	3	5	16°		●		
	100-S-16DR	1.00	12	0.03	8.7	3	5	16°		●		
	125-S-16DR	1.25	12	0.03	8.7	3	5	16°		●		
150-S-16DR	1.50	12	0.03	8.7	3	5	16°		●			
200-S-16DR	2.00	12	0.03	8.7	3	5	16°		●			
	TKFC16R/L 150-S-16DR	1.50	16	0.05	9.5	4	5	16°		●		
	200-S-16DR	2.00	16	0.05	9.5	4	5	16°		●		

Shape	Designation	Size							Coated		Configuration
		W	α	rε	H	T	d	B	TPM8020	TPM8125	
	TKFB12R/L 15-005-M	1.50	0.25	<0.05	8.7	3	5.2	2.6		●	
	28-005-M	2.80	0.30	<0.05	8.7	3	5.2	4.6		●	
	28-010-M	2.80	0.30	<0.10	8.7	3	5.2	4.6		●	
	TKFB16R/L 38-005-M	3.80	0.30	<0.05	9.5	4	5.2	6.3		●	
	38-010-M	3.80	0.30	<0.10	9.5	4	5.2	6.3		●	

Shape	Designation	Pitch		Size							Coated		Configuration		
		mm	TPI	T	W	H	S1	S2	rε	d	θ*	TPM8020		TPM8125	
	TKFT12R/L A60-000	0.20-0.60	64-48	3	2.5	9	0.40	2.10	max 0.05 Flat	5.2	60°		●		
	B60-000	0.20-0.60	64-48	3	2.5	9	2.10	0.40	5.2	●					
	A60-005	0.50-1.25	48-24	3	2.5	9	0.80	1.70	0.05	5.2		●			
	B60-005	0.50-1.25	48-24	3	2.5	9	1.70	0.80	5.2	●					
	N60-010	1.00-1.50	24-18	3	2.5	9	1.25	1.25	0.1	5.2		●			
	A55-005	-	40-16	3	2.5	9	0.80	1.70	0.05	5.2		55°			●
	B55-005	-	40-16	3	2.5	9	1.70	0.80	5.2	●					

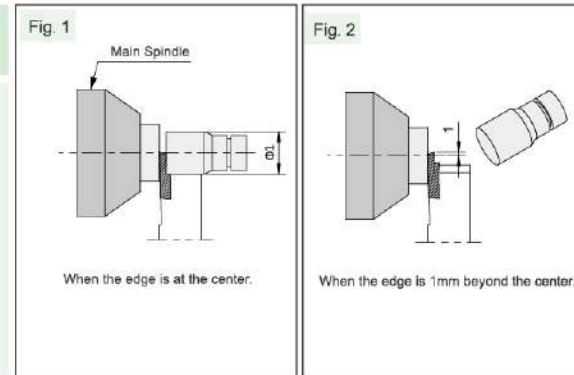
Lead angle( θ ) indicates the angle when installed in toolholder.



## Insert Cutting Diameter Dmax

### When Using Main Spindle Only

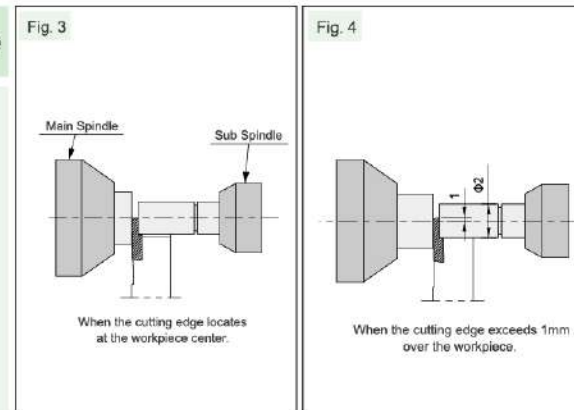
Workpiece max,  $D1 = D_{max}$ . Even if the cutting edge runs beyond the center line, the insert does not contact the workpiece, since the workpiece falls off. (The clearance between the insert and the work is 0.2mm)



### When Using Both Main and Sub Spindle

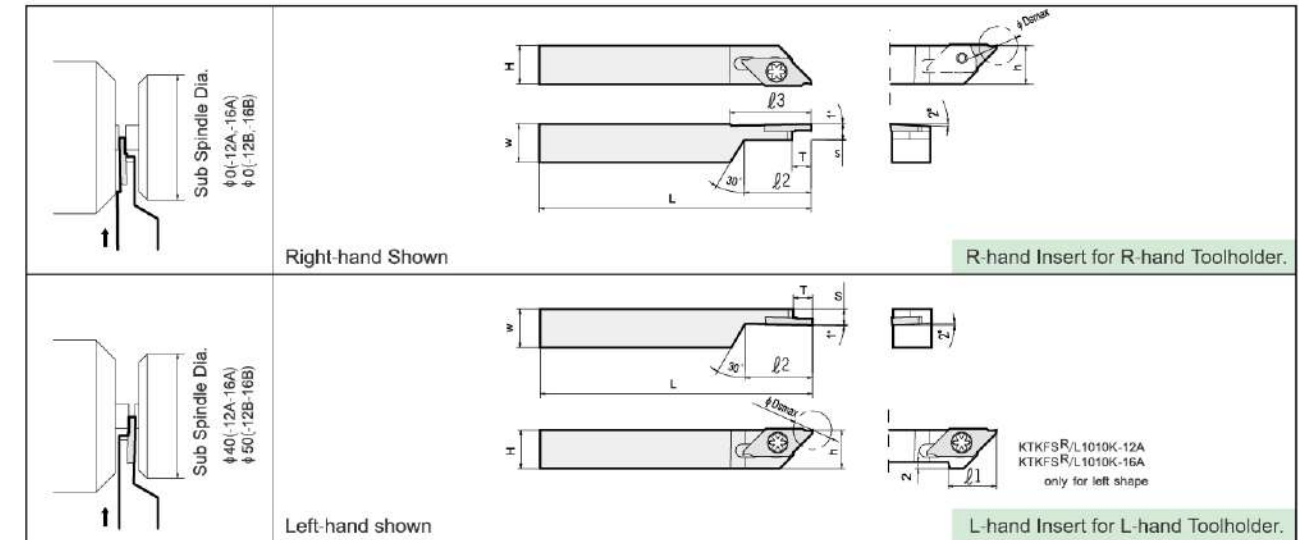
Workpiece max,  $D2 = D_{max} - (\text{Programmed distance beyond the center}) \times 2$ . In this case, when the cutting edge runs beyond the center line, the insert will contact the workpiece, since the workpiece does not fall off. Therefore the programmed distance beyond the center must be considered.

When the cutting edge is programmed to run 1mm beyond the center,  $[D2 = D_{max} - 1\text{mm} \times 2]$  (Max. clearance between insert and workpiece is 0.2mm in radius)



## KTKFSR/L


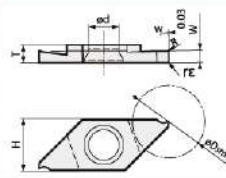
### For Micro Diameter Cutt-off at Sub Spindle



Designation	$\Phi D_{max}^*$	Dimensions(mm)									Insert	Spare parts	
		H	W	h	$l_1$	$l_2$	$l_3$	L	S	T		screw	Wrench
KTKFSR/L 1010-K12A	6-12	10	10	10	15	22	26	125	5	6	TKF□12R/L	M4.5x9	T-15
1212-F12A	6-12	12	12	12	-	22	26	85	5	6			
1212-K12B	6-12	12	12	12	-	26	26	125	5	6	TKF□16R/L	M4.5x9	T-15
1010-K16A	14-16	10	10	10	20	22	30	125	5	6			
1212-F16A	14-16	12	12	12	-	22	30	85	5	6			
1212-K16B	14-16	12	12	12	-	26	30	125	5	6			

\* Dimension T shows the distance from the Toolholder to the cutting edge. Cutting diameter ( $\phi D_{max}$ ) depends on the insert grooving width. Only Right-hand is available for l3 dimension.

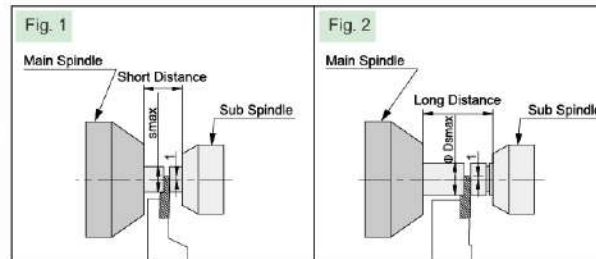
## Inserts

Shape	Designation	Size							Coated		Configuration
		W±0.03	Dmax	re	H	T	d	θ*	TPM8020	TPM8125	
	TKFS12R/L 100-S	1.00	6	0.05	8.7	2.2	4.4	0°			
	150-S	1.50	9	0.05	8.7	2.2	4.4	0°			
	200-S	2.00	12	0.05	8.7	2.2	4.4	0°			
TKFS16R/L 150-S	1.50	14	0.05	9.5	2.2	4.4	0°				
200-S	2.00	16	0.05	9.5	2.2	4.4	0°				

\*As Fig. 1 shows, cutting diameter of Insert indicates the cutting diameter when the top of the cutting edge is programmed to run 1mm beyond center. Lead angle (θ) shows the angle when installed in toolholder.

As Fig.1 shows, KTKFS is applicable when minimal clearance exists between the main spindle and sub spindle.

As Fig.2 shows, please use KTKFL when additional clearance is available. This will offer improve rigidity.






## Turning tiny tool code system

**TT 060 T R 15 - 150 ISO - 2 TTIM45**

1 Main code    2 Insert size    3 Type of operation    4 Hand of Insert    5 Max. Depth    6 Process Figure    7 Thread Profile    8 Cutting edge    9 Carbide Grades

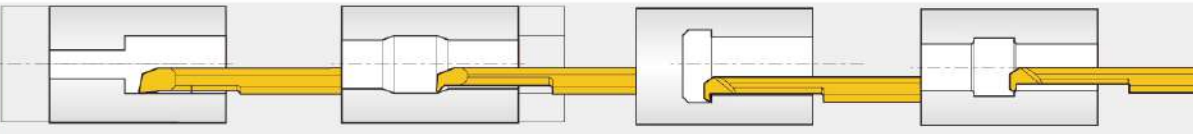
<p><b>1 Main Code</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>TT = Tiny Tool</p>	<p><b>2 Insert Size</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>010: 1.0mm 015: 1.5mm 020: 2.0mm 030: 3.0mm 040: 4.0mm 050: 5.0mm 060: 6.0mm 070: 7.0mm 080: 8.0mm 100: 10.0mm 0XX: Special size</p>	<p><b>3 Type of operation</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>B=Boring BP=Profiling &amp; Boring BB=Back Boring BF=Chamfering BU=FaceCutting BC=Copying BW=Chamfering &amp; Profiling G=Square Grooving GR=Round Grooving GF=Face Grooving GRF=Round Face Grooving T=Threading TD=Threading Relief GV= Deep Face Grooving</p>
<p><b>4 Hand of Insert</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>R = Right hand style L = Left hand style</p>	<p><b>5 Max. Depth</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>05: 5.0mm 10: 10.0mm 15: 15.0mm 20: 20.0mm 25: 25.0mm 30: 30.0mm 35: 35.0mm</p>	<p><b>6 Process Figure</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>Boring: Nose radius Grooving: Grooving width Threading: Partial profile: F60 A60 or A55 AG60 or Ag55 ISO Metric Full profile: American UN Trapez DIN 103 ACME</p>
<p><b>7 Thread Profile</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>ISO - ISO Metric UN - American UN (UNC, UNF, UNEF, UNS) ACME - ACME TR - Trapez DIN103</p>	<p><b>8 Cutting Edge</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>None:Single ended 2:Double ended</p>	<p><b>9 Carbide Grades</b></p> <p>TT 060 T R 15 150 ISO 2 TTIM45</p> <p>TTIP30 TTIM45 TTIS30 N400</p>

## Recommended Grade & Their Applications

Grade	Application Type	Sample
TTIM45	P20-P30 K20-K30, general use carbide grade for tiny tool medium to high cutting speed, TiAlN coated	
TTIS30	K10-K20, premium multipurpose submicron grade for stronger wear resistance and improved productivity. Ideal for steel and stainless steel in unstable cutting conditions. AlTiN alloyed PVD coated.	
N400	K10-K20. Sub-micron grade with advanced PVD triple coating. Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.	

## Types

**Boring**



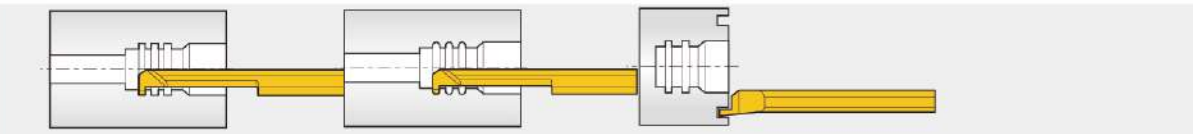
**Boring**  
 Min. dia. of machining :  $\varnothing 3.2$

**Copying**  
 Min. dia. of machining :  $\varnothing 4.2$

**Back Boring**  
 Min. dia. of machining :  $\varnothing 3.2$

**Chamfering**  
 Min. dia. of machining :  $\varnothing 4.2$

**Grooving**

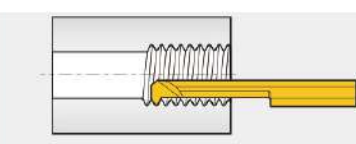


**Square Grooving**  
 Min. dia. of machining :  $\varnothing 3.2$

**Round Grooving**  
 Min. dia. of machining :  $\varnothing 3.2$

**Face Grooving**  
 Min. dia. of machining :  $\varnothing 6.0$

**Threading**



**Threading**  
 Min. dia. of machining :  $\varnothing 3.3$



## Recommended Grades, Cutting Speeds Vc [m/min]

Material Group	Material	Hardness Brinell HB	Vc [m/min]			
			TTIM45	TTIS30	N400	
<b>P</b> Steel	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	50-120	140-200	30-80
		Medium Carbon (C=0.25-0.55%)	150	40-100	120-180	
		High Carbon (C=0.55-0.85%)	170	30-80	110-180	
	Low Alloy Steel (alloying elements ≤ 5%)	Non Hardened	180	50-70	100-155	25-50
		Hardened	275	40-60	90-145	
		Hardened	350	30-50	80-135	
	Cast Steel	Annealed	200	30-50	65-115	25-50
		Hardened	325	25-40	50-100	
		Low Alloy (alloying elements < 5%)	200	30-50	30-50	
		High Alloy (alloying elements > 5%)	225	25-40	25-40	
<b>M</b> Stainless steel	Stainless Steel Ferritic	Non Hardened	200	60-100	80-120	30-60
		Hardened	330	40-60	55-95	
	Stainless Steel Austenitic	Austenitic	180	50-90	60-100	
		Super Austenitic	200	40-60	50-90	
	Stainless Steel Cast Ferritic	Non Hardened	200	40-60	60-80	
		Hardened	330	30-50	45-65	
	Stainless Steel Cast Austenitic	Austenitic	200	40-60	50-70	
		Hardened	330	30-50	40-60	
<b>K</b> Cast iron	Malleable Cast Iron	Ferritic (short chips)	130	50-70	60-80	20-50
		Pearlitic (long chips)	230	50-70	60-80	
	Grey Cast Iron	Low Tensile Strength	180	50-70	60-80	30-80
		High Tensile Strength	260	40-60	40-70	
	Nodular Sg Iron	Ferritic	160	50-70	60-80	30-80
		Pearlitic	260	60-80	70-90	
<b>N</b> <b>(K)</b> Non-Ferrous material	Aluminum Alloys Wrought	Non Aging	60	100-300	80-240	60-120
		Aged	100	100-150	100-170	
	Aluminum Alloys Cast	Cast	75	100-150	100-150	50-90
		Cast & Aged	90	60-100	60-100	
	Aluminum Alloys Cast Si 13-22%	Cast Si 13-22%	130	100-150	100-150	30-70
		Brass	90	60-100	80-200	
	Copper and Copper Alloys	Brass	90	60-100	80-200	
		Bronze and Non Leaded Copper	100	60-100	80-200	
<b>S</b> Heat Resistant material	High Temperature Alloys	Annealed (iron based)	200	25-45	25-45	15-40
		Aged (iron based)	280	20-30	20-30	
		Annealed (nickel or cobalt based)	250	15-20	15-20	
		Aged (nickel or cobalt based)	350	10-15	10-15	
	Titanium Alloys	Pure 99.5 Ti	400Rm	60-100	60-100	10-30
		1050Rm	40-50	40-50		
<b>H</b> Hardened Material	Extra Hard Steel	Hardened & Tempered	45-50HRC	20-45	20-40	15-40
		51-55HRC	20-40	20-40	15-40	

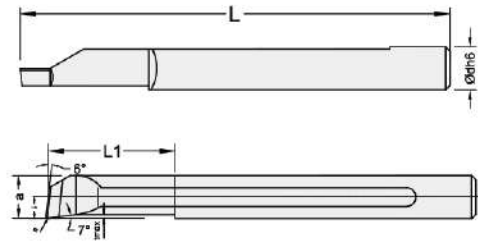
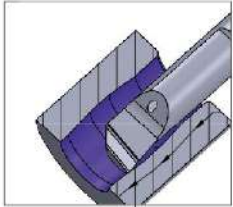
## Recommended Feed f [mm/rev] and Max Depth [mm]

Material Group	Material	Hardness Brinell HB	Feed [mm/rev]		Max Depth [mm/rev]	
			Boring	Grooving	Boring	
<b>P</b> Steel	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	0.05	0.03	0.40
		Medium Carbon (C=0.25-0.55%)	150	0.04	0.02	0.40
		High Carbon (C=0.55-0.85%)	170	0.03	0.01	0.40
	Low Alloy Steel (alloying elements ≤ 5%)	Non Hardened	180	0.04	0.02	0.30
		Hardened	275	0.04	0.01	0.30
		Hardened	350	0.03	0.01	0.30
	High Alloy Steel (alloying elements > 5%)	Annealed	200	0.04	0.02	0.15
		Hardened	325	0.03	0.01	0.15
	Cast Steel	Low Alloy (alloying elements < 5%)	200	0.04	0.02	0.15
		High Alloy (alloying elements > 5%)	225	0.04	0.02	0.15
<b>M</b> Stainless steel	Stainless Steel Ferritic	Non Hardened	200	0.04	0.01	0.20
		Hardened	330	0.03	0.01	0.15
	Stainless Steel Austenitic	Austenitic	180	0.04	0.01	0.20
		Super Austenitic	200	0.04	0.01	0.15
	Stainless Steel Cast Ferritic	Non Hardened	200	0.04	0.02	0.20
		Hardened	330	0.03	0.01	0.15
	Stainless Steel Cast Austenitic	Austenitic	200	0.04	0.02	0.20
		Hardened	330	0.03	0.01	0.15
<b>K</b> Cast iron	Malleable Cast Iron	Ferritic (short chips)	130	0.02	0.02	0.25
		Pearlitic (long chips)	230	0.01	0.01	0.25
	Grey Cast Iron	Low Tensile Strength	180	0.02	0.02	0.40
		High Tensile Strength	260	0.01	0.01	0.40
	Nodular Sg Iron	Ferritic	160	0.02	0.02	0.40
		Pearlitic	260	0.01	0.01	0.40
<b>N</b> <b>(K)</b> Non-Ferrous material	Aluminum Alloys Wrought	Non Aging	60	0.03	0.03	0.50
		Aged	100	0.03	0.03	0.50
	Aluminum Alloys Cast	Cast	75	0.03	0.03	0.50
		Cast & Aged	90	0.03	0.03	0.50
	Aluminum Alloys Cast Si 13-22%	Cast Si 13-22%	130	0.02	0.02	0.50
		Brass	90	0.03	0.03	0.50
	Copper and Copper Alloys	Brass	90	0.03	0.03	0.50
		Bronze and Non Leaded Copper	100	0.03	0.03	0.50
<b>S</b> Heat Resistant material	High Temperature Alloys	Annealed (iron based)	200	0.04	0.01	0.20
		Aged (iron based)	280	0.03	0.01	0.15
		Annealed (nickel or cobalt based)	250	0.01	0.01	0.15
		Aged (nickel or cobalt based)	350	0.01	0.01	0.15
	Titanium Alloys	Pure 99.5 Ti	400Rm	0.02	0.02	0.15
		α+β alloys	1050Rm	0.02	0.02	0.15
<b>H</b> Hardened Material	Extra Hard Steel	Hardened & Tempered	45-50HRC	0.01	0.01	0.05
		51-55HRC	0.01	0.01	0.05	



## TT□BR/L

For Micro Diameter Boring

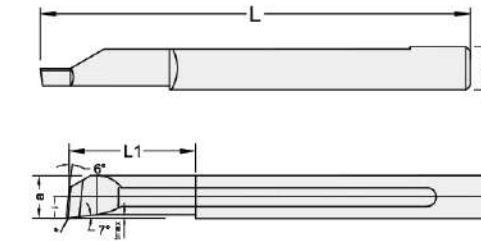
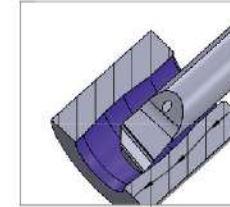


Designation	a	d	f	L1	L	tmax	R	Dmin
TT 006BR/L03-R0.03	0.50	3	0.25	3	40	0.01	0.03	0.7
008BR/L04-R0.05	0.70	3	0.35	4	40	0.02	0.05	0.9
010BR/L04-R0.05	0.90	3	0.45	4	40	0.03	0.05	1.1
015BR/L06-R0.15	1.35	3	0.75	6	40	0.05	0.15	1.6
015BR/L09-R0.15	1.35	3	0.75	9	40	0.05	0.15	1.6
020BR/L06-R0.05	1.80	3	0.90	6	40	0.10	0.05	2.1
020BR/L10-R0.05	1.80	3	0.90	10	40	0.10	0.05	2.1
020BR/L10-R0.10	1.80	3	0.90	10	40	0.10	0.10	2.1
020BR/L15-R0.10	1.80	3	0.90	15	40	0.10	0.10	2.1
020BR/L06-R0.15	1.80	3	0.90	6	40	0.10	0.15	2.1
020BR/L10-R0.15	1.80	3	0.90	10	40	0.10	0.15	2.1
020BR/L15-R0.15	1.80	3	0.90	15	40	0.10	0.15	2.1
025BR/L10-R0.15	2.30	3	1.15	10	40	0.12	0.15	2.6
025BR/L15-R0.15	2.30	3	1.15	15	40	0.12	0.15	2.6
030BR/L10-R0.05	2.70	3	1.40	10	40	0.15	0.05	3.1
030BR/L15-R0.05	2.70	3	1.40	15	40	0.15	0.05	3.1
030BR/L10-R0.10	2.70	3	1.40	10	40	0.15	0.10	3.1
030BR/L15-R0.10	2.70	3	1.40	15	40	0.15	0.10	3.1
030BR/L10-R0.20	2.70	3	1.40	10	40	0.15	0.20	3.1
030BR/L15-R0.20	2.70	3	1.40	15	40	0.15	0.20	3.1
035BR/L10-R0.05	3.10	4	1.65	10	50	0.18	0.05	3.6
035BR/L22-R0.05	3.10	4	1.65	22	50	0.18	0.05	3.6
035BR/L10-R0.20	3.10	4	1.65	10	50	0.18	0.20	3.6
035BR/L15-R0.20	3.10	4	1.65	15	50	0.18	0.20	3.6
035BR/L22-R0.20	3.10	4	1.65	22	50	0.18	0.20	3.6
040BR/L10-R0.05	3.60	4	1.90	10	50	0.20	0.05	4.1
040BR/L15-R0.05	3.60	4	1.90	15	50	0.20	0.05	4.1
040BR/L22-R0.05	3.60	4	1.90	22	50	0.20	0.05	4.1
040BR/L10-R0.10	3.60	4	1.90	10	50	0.20	0.10	4.1
040BR/L15-R0.10	3.60	4	1.90	15	50	0.20	0.10	4.1
040BR/L22-R0.10	3.60	4	1.90	22	50	0.20	0.10	4.1
040BR/L10-R0.20	3.60	4	1.90	10	50	0.20	0.20	4.1

Ordering code example: TT060BR22-R0.20 TTIM45 for without coolant style, TT060BR22-R0.20-C TTIM45 for coolant style  
Additional sizes available by request.

## TT□BR/L

For Micro Diameter Boring



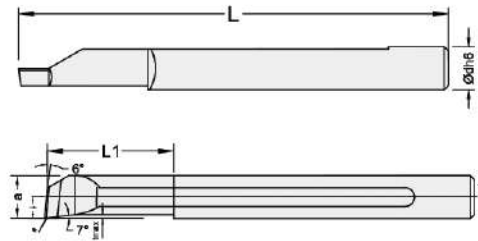
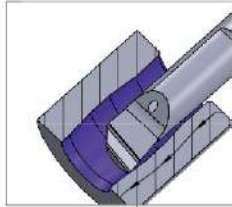
Designation	a	d	f	L1	L	tmax	R	Dmin
TT 040BR/L15-R0.20	3.60	4	1.90	15	50	0.20	0.20	4.1
040BR/L22-R0.20	3.60	4	1.90	22	50	0.20	0.20	4.1
040BR/L30-R0.20	3.60	4	1.90	30	65	0.20	0.20	4.1
050BR/L15-R0.05	4.60	5	2.40	15	50	0.30	0.05	5.1
050BR/L22-R0.05	4.60	5	2.40	22	50	0.30	0.05	5.1
050BR/L15-R0.10	4.60	5	2.40	15	50	0.30	0.10	5.1
050BR/L22-R0.10	4.60	5	2.40	22	50	0.30	0.10	5.1
050BR/L30-R0.10	4.60	5	2.40	30	65	0.30	0.10	5.1
050BR/L15-R0.20	4.60	5	2.40	15	50	0.30	0.20	5.1
050BR/L22-R0.20	4.60	5	2.40	22	50	0.30	0.20	5.1
050BR/L30-R0.20	4.60	5	2.40	30	65	0.30	0.20	5.1
050BR/L35-R0.20	4.60	5	2.40	35	65	0.30	0.20	5.1
050BR/L15-R0.40	4.60	5	2.40	15	50	0.30	0.40	5.1
050BR/L22-R0.40	4.60	5	2.40	22	50	0.30	0.40	5.1
050BR/L30-R0.40	4.60	5	2.40	30	65	0.30	0.40	5.1
060BR/L15-R0.05	5.50	6	2.90	15	50	0.40	0.05	6.1
060BR/L22-R0.05	5.50	6	2.90	22	50	0.40	0.05	6.1
060BR/L15-R0.10	5.50	6	2.90	15	50	0.40	0.10	6.1
060BR/L22-R0.10	5.50	6	2.90	22	50	0.40	0.10	6.1
060BR/L15-R0.20	5.50	6	2.90	15	50	0.40	0.10	6.1
060BR/L22-R0.20	5.50	6	2.90	22	50	0.40	0.20	6.1
060BR/L30-R0.20	5.50	6	2.90	30	65	0.40	0.20	6.1
060BR/L35-R0.20	5.50	6	2.90	35	65	0.40	0.20	6.1
060BR/L40-R0.20	5.50	6	2.90	40	65	0.40	0.20	6.1
060BR/L15-R0.40	5.50	6	2.90	15	50	0.40	0.40	6.1
060BR/L22-R0.40	5.50	6	2.90	22	50	0.40	0.40	6.1
060BR/L30-R0.40	5.50	6	2.90	30	65	0.40	0.40	6.1
070BR/L15-R0.20	6.50	7	3.40	15	50	0.50	0.20	7.1
070BR/L22-R0.20	6.50	7	3.40	22	50	0.50	0.20	7.1
070BR/L30-R0.20	6.50	7	3.40	30	65	0.50	0.20	7.1
070BR/L35-R0.20	6.50	7	3.40	35	65	0.50	0.20	7.1
070BR/L42-R0.20	6.50	7	3.40	42	80	0.50	0.20	7.1

Ordering code example: TT060BR22-R0.20 TTIM45 for without coolant style, TT060BR22-R0.20-C TTIM45 for coolant style  
Additional sizes available by request.



## TT□BR/L

For Micro Diameter Boring

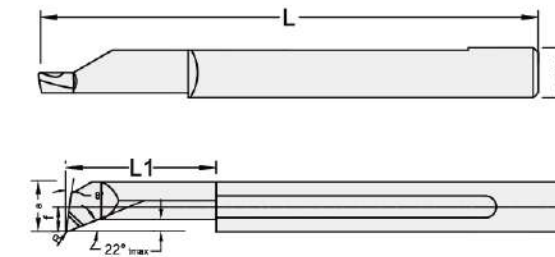
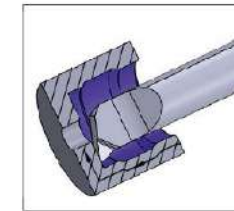


Designation	a	d	f	L1	L	tmax	R	Dmin
TT 070BR/L50-R0.20	6.50	7	3.40	50	80	0.50	0.20	7.1
070BR/L22-R0.40	6.50	7	3.40	22	50	0.50	0.40	7.1
070BR/L30-R0.40	6.50	7	3.40	30	65	0.50	0.40	7.1
080BR/L22-R0.20	7.50	8	3.90	22	50	0.60	0.20	8.1
080BR/L30-R0.20	7.50	8	3.90	30	65	0.60	0.20	8.1
080BR/L40-R0.20	7.50	8	3.90	40	80	0.60	0.20	8.1
080BR/L55-R0.20	7.50	8	3.90	55	80	0.60	0.20	8.1
080BR/L22-R0.40	7.50	8	3.90	22	50	0.60	0.40	8.1
080BR/L30-R0.40	7.50	8	3.90	30	65	0.60	0.40	8.1
100BR/L35-R0.20	9.50	10	4.90	35	65	0.80	0.20	10.1
100BR/L50-R0.20	9.50	10	4.90	50	80	0.80	0.20	10.1
100BR/L35-R0.40	9.50	10	4.90	35	65	0.80	0.40	10.1
100BR/L50-R0.40	9.50	10	4.90	50	80	0.80	0.40	10.1

Ordering code example: TT060BR22-R0.20 TTIM45 for without coolant style. TT060BR22-R0.20-C TTIM45 for coolant style  
Additional sizes available by request.

## TT□BPR/L

For Micro Diameter Boring & Profiling

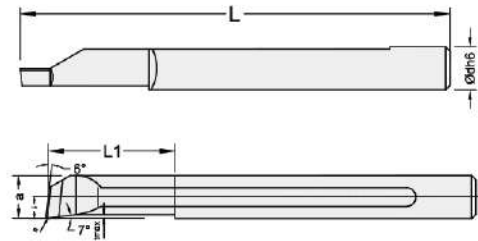
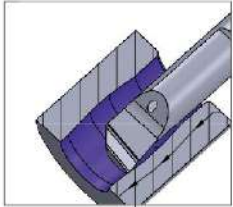


Designation	a	d	f	L1	L	tmax	R	Dmin
TT 010BPR/L04-R0.05	0.90	3	0.45	4	40	0.20	0.05	1.1
015BPR/L06-R0.10	1.30	3	0.75	6	40	0.30	0.10	1.6
020BPR/L05-R0.15	1.70	3	0.90	5	40	0.50	0.15	2.1
020BPR/L10-R0.15	1.70	3	0.90	10	40	0.50	0.15	2.1
030BPR/L10-R0.05	2.60	3	1.40	10	40	0.70	0.05	3.1
030BPR/L15-R0.05	2.60	3	1.40	15	40	0.70	0.05	3.1
030BPR/L10-R0.10	2.60	3	1.40	10	40	0.70	0.10	3.1
030BPR/L15-R0.10	2.60	3	1.40	15	40	0.70	0.10	3.1
030BPR/L10-R0.20	2.60	3	1.40	10	40	0.70	0.20	3.1
030BPR/L15-R0.20	2.60	3	1.40	15	40	0.70	0.20	3.1
040BPR/L10-R0.10	3.50	4	1.90	10	50	0.80	0.10	4.1
040BPR/L15-R0.10	3.50	4	1.90	15	50	0.80	0.10	4.1
040BPR/L22-R0.10	3.50	4	1.90	22	50	0.80	0.10	4.1
040BPR/L10-R0.20	3.50	4	1.90	10	50	0.80	0.20	4.1
040BPR/L15-R0.20	3.50	4	1.90	15	50	0.80	0.20	4.1
040BPR/L22-R0.20	3.50	4	1.90	22	50	0.80	0.20	4.1
050BPR/L15-R0.10	4.40	5	2.40	15	50	1.20	0.10	5.1
050BPR/L22-R0.10	4.40	5	2.40	22	50	1.20	0.10	5.1
050BPR/L30-R0.10	4.40	5	2.40	30	65	1.20	0.10	5.1
050BPR/L15-R0.20	4.40	5	2.40	15	50	1.20	0.20	5.1
050BPR/L22-R0.20	4.40	5	2.40	22	50	1.20	0.20	5.1
050BPR/L30-R0.20	4.40	5	2.40	30	65	1.20	0.20	5.1
060BPR/L15-R0.20	5.30	6	2.90	15	50	1.40	0.20	6.1
060BPR/L22-R0.20	5.30	6	2.90	22	50	1.40	0.20	6.1
060BPR/L30-R0.20	5.30	6	2.90	30	65	1.40	0.20	6.1
070BPR/L22-R0.20	6.30	7	3.40	22	50	1.50	0.20	7.1
070BPR/L30-R0.20	6.30	7	3.40	30	65	1.50	0.20	7.1
080BPR/L22-R0.20	7.30	8		22	50	1.60	0.20	8.1
080BPR/L35-R0.20	7.30	8		35	65	1.60	0.20	8.1
100BPR/L35-R0.20	9.20	10		35	65	2.00	0.20	10.1

Ordering code example: TT040BPR22-R0.10 TTIS30 for without coolant style. TT040BPR22-R0.10-C TTIS30 for coolant style  
Additional sizes available by request.

## TT□BR/L

For Micro Diameter Boring

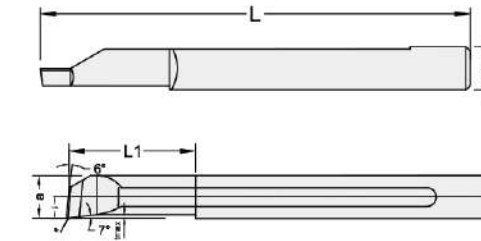
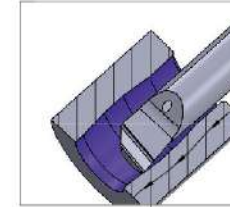


Designation	a	d	f	L1	L	tmax	R	Dmin
TT 006BR/L03-R0.03	0.50	3	0.25	3	40	0.01	0.03	0.7
008BR/L04-R0.05	0.70	3	0.35	4	40	0.02	0.05	0.9
010BR/L04-R0.05	0.90	3	0.45	4	40	0.03	0.05	1.1
015BR/L06-R0.15	1.35	3	0.75	6	40	0.05	0.15	1.6
015BR/L09-R0.15	1.35	3	0.75	9	40	0.05	0.15	1.6
020BR/L06-R0.05	1.80	3	0.90	6	40	0.10	0.05	2.1
020BR/L10-R0.05	1.80	3	0.90	10	40	0.10	0.05	2.1
020BR/L10-R0.10	1.80	3	0.90	10	40	0.10	0.10	2.1
020BR/L15-R0.10	1.80	3	0.90	15	40	0.10	0.10	2.1
020BR/L06-R0.15	1.80	3	0.90	6	40	0.10	0.15	2.1
020BR/L10-R0.15	1.80	3	0.90	10	40	0.10	0.15	2.1
020BR/L15-R0.15	1.80	3	0.90	15	40	0.10	0.15	2.1
025BR/L10-R0.15	2.30	3	1.15	10	40	0.12	0.15	2.6
025BR/L15-R0.15	2.30	3	1.15	15	40	0.12	0.15	2.6
030BR/L10-R0.05	2.70	3	1.40	10	40	0.15	0.05	3.1
030BR/L15-R0.05	2.70	3	1.40	15	40	0.15	0.05	3.1
030BR/L10-R0.10	2.70	3	1.40	10	40	0.15	0.10	3.1
030BR/L15-R0.10	2.70	3	1.40	15	40	0.15	0.10	3.1
030BR/L10-R0.20	2.70	3	1.40	10	40	0.15	0.20	3.1
030BR/L15-R0.20	2.70	3	1.40	15	40	0.15	0.20	3.1
035BR/L10-R0.05	3.10	4	1.65	10	50	0.18	0.05	3.6
035BR/L22-R0.05	3.10	4	1.65	22	50	0.18	0.05	3.6
035BR/L10-R0.20	3.10	4	1.65	10	50	0.18	0.20	3.6
035BR/L15-R0.20	3.10	4	1.65	15	50	0.18	0.20	3.6
035BR/L22-R0.20	3.10	4	1.65	22	50	0.18	0.20	3.6
040BR/L10-R0.05	3.60	4	1.90	10	50	0.20	0.05	4.1
040BR/L15-R0.05	3.60	4	1.90	15	50	0.20	0.05	4.1
040BR/L22-R0.05	3.60	4	1.90	22	50	0.20	0.05	4.1
040BR/L10-R0.10	3.60	4	1.90	10	50	0.20	0.10	4.1
040BR/L15-R0.10	3.60	4	1.90	15	50	0.20	0.10	4.1
040BR/L22-R0.10	3.60	4	1.90	22	50	0.20	0.10	4.1
040BR/L10-R0.20	3.60	4	1.90	10	50	0.20	0.20	4.1

Ordering code example: TT060BR22-R0.20 TTIM45 for without coolant style, TT060BR22-R0.20-C TTIM45 for coolant style  
Additional sizes available by request.

## TT□BR/L

For Micro Diameter Boring



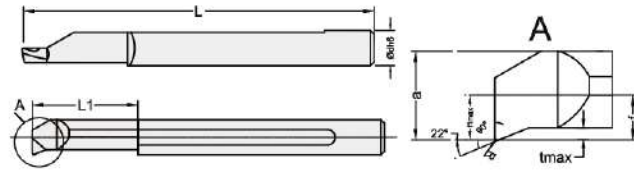
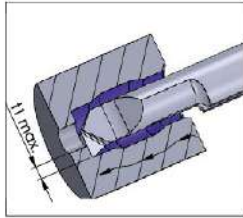
Designation	a	d	f	L1	L	tmax	R	Dmin
TT 040BR/L15-R0.20	3.60	4	1.90	15	50	0.20	0.20	4.1
040BR/L22-R0.20	3.60	4	1.90	22	50	0.20	0.20	4.1
040BR/L30-R0.20	3.60	4	1.90	30	65	0.20	0.20	4.1
050BR/L15-R0.05	4.60	5	2.40	15	50	0.30	0.05	5.1
050BR/L22-R0.05	4.60	5	2.40	22	50	0.30	0.05	5.1
050BR/L15-R0.10	4.60	5	2.40	15	50	0.30	0.10	5.1
050BR/L22-R0.10	4.60	5	2.40	22	50	0.30	0.10	5.1
050BR/L30-R0.10	4.60	5	2.40	30	65	0.30	0.10	5.1
050BR/L15-R0.20	4.60	5	2.40	15	50	0.30	0.20	5.1
050BR/L22-R0.20	4.60	5	2.40	22	50	0.30	0.20	5.1
050BR/L30-R0.20	4.60	5	2.40	30	65	0.30	0.20	5.1
050BR/L35-R0.20	4.60	5	2.40	35	65	0.30	0.20	5.1
050BR/L15-R0.40	4.60	5	2.40	15	50	0.30	0.40	5.1
050BR/L22-R0.40	4.60	5	2.40	22	50	0.30	0.40	5.1
050BR/L30-R0.40	4.60	5	2.40	30	65	0.30	0.40	5.1
060BR/L15-R0.05	5.50	6	2.90	15	50	0.40	0.05	6.1
060BR/L22-R0.05	5.50	6	2.90	22	50	0.40	0.05	6.1
060BR/L15-R0.10	5.50	6	2.90	15	50	0.40	0.10	6.1
060BR/L22-R0.10	5.50	6	2.90	22	50	0.40	0.10	6.1
060BR/L15-R0.20	5.50	6	2.90	15	50	0.40	0.10	6.1
060BR/L22-R0.20	5.50	6	2.90	22	50	0.40	0.20	6.1
060BR/L30-R0.20	5.50	6	2.90	30	65	0.40	0.20	6.1
060BR/L35-R0.20	5.50	6	2.90	35	65	0.40	0.20	6.1
060BR/L40-R0.20	5.50	6	2.90	40	65	0.40	0.20	6.1
060BR/L15-R0.40	5.50	6	2.90	15	50	0.40	0.40	6.1
060BR/L22-R0.40	5.50	6	2.90	22	50	0.40	0.40	6.1
060BR/L30-R0.40	5.50	6	2.90	30	65	0.40	0.40	6.1
070BR/L15-R0.20	6.50	7	3.40	15	50	0.50	0.20	7.1
070BR/L22-R0.20	6.50	7	3.40	22	50	0.50	0.20	7.1
070BR/L30-R0.20	6.50	7	3.40	30	65	0.50	0.20	7.1
070BR/L35-R0.20	6.50	7	3.40	35	65	0.50	0.20	7.1
070BR/L42-R0.20	6.50	7	3.40	42	80	0.50	0.20	7.1

Ordering code example: TT060BR22-R0.20 TTIM45 for without coolant style, TT060BR22-R0.20-C TTIM45 for coolant style  
Additional sizes available by request.



## TT□BUR/L

For Micro Diameter Boring & Profiling with geometry 90°

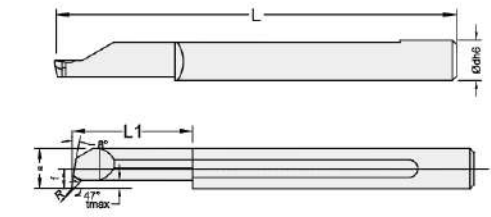
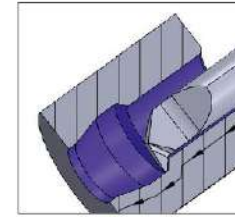


Designation	a	d	f	f1 max	L1	L	tmax	R	Dmin
TT 030BUR/L10-R0.05	2.60	3	1.40	1.40	10	40	0.40	0.05	3.1
030BUR/L15-R0.05	2.60	3	1.40	1.40	15	40	0.40	0.05	3.1
040BUR/L10-R0.10	3.50	4	1.90	1.90	10	50	0.50	0.10	4.1
040BUR/L15-R0.10	3.50	4	1.90	1.90	15	50	0.50	0.10	4.1
050BUR/L15-R0.15	4.40	5	2.40	2.30	15	50	0.70	0.15	5.1
050BUR/L22-R0.15	4.40	5	2.40	2.30	22	50	0.70	0.15	5.1
060BUR/L15-R0.15	5.30	6	2.90	2.80	15	50	0.90	0.15	6.1
060BUR/L22-R0.15	5.30	6	2.90	2.80	22	50	0.90	0.15	6.1
080BUR/L22-R0.20	7.30	8	3.90	3.80	22	50	1.10	0.20	8.1

Ordering code example: TT040BUR15-R0.10 TTIS30 for without coolant style, TT040BUR15-R0.10-C TTIS30 for coolant style  
Additional sizes available by request.

## TT□BCR/L

For Micro Diameter Copying & Boring with geometry 47°

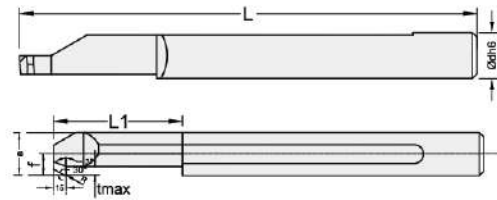
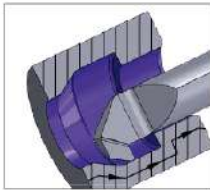


Designation	a	d	f	L1	L	tmax	R	Dmin
TT 020BCR/L10-R0.05	1.70	2	0.90	10	40	0.50	0.05	2.1
030BCR/L10-R0.10	2.60	3	1.40	10	40	0.70	0.10	3.1
030BCR/L15-R0.10	2.60	3	1.40	15	40	0.70	0.10	3.1
030BCR/L10-R0.20	2.60	3	1.40	10	40	0.70	0.20	3.1
030BCR/L15-R0.20	2.60	3	1.40	15	40	0.70	0.20	3.1
040BCR/L10-R0.20	3.50	4	1.90	10	50	0.80	0.20	4.1
040BCR/L15-R0.20	3.50	4	1.90	15	50	0.80	0.20	4.1
040BCR/L22-R0.20	3.50	4	1.90	22	50	0.80	0.20	4.1
050BCR/L15-R0.20	4.40	5	2.40	15	50	1.00	0.20	5.1
050BCR/L22-R0.20	4.40	5	2.40	22	50	1.00	0.20	5.1
060BCR/L15-R0.20	5.30	6	2.90	15	50	1.40	0.20	6.1
060BCR/L22-R0.20	5.30	6	2.90	22	50	1.40	0.20	6.1
080BCR/L22-R0.20	5.30	8	3.90	22	50	1.80	0.20	8.1
080BCR/L27-R0.20	7.30	8	3.90	27	65	2.00	0.20	8.1

Ordering code example: TT040BCR15-R0.20 TTIS30 for without coolant style, TT040BCR15-R0.20-C TTIS30 for coolant style  
Additional sizes available by request.

## TT□BBR/L

For Micro Diameter Back Boring

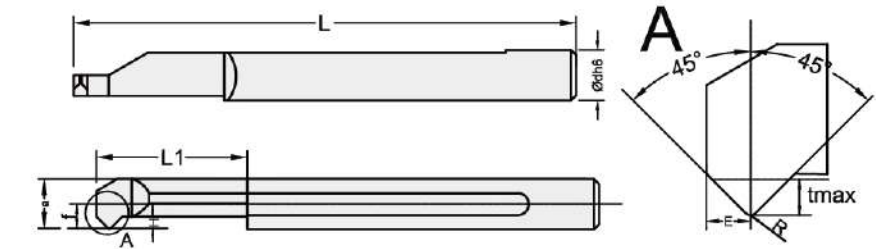
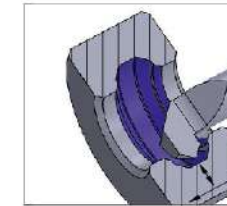


Designation	a	d	f	L1	L	tmax	R	Dmin
<b>TT</b> 030BBR/L10-R0.10	2.60	3	1.40	10	40	0.50	0.10	3.1
040BBR/L10-R0.15	3.50	4	1.90	10	50	0.80	0.15	4.1
040BBR/L15-R0.15	3.50	4	1.90	15	50	0.80	0.15	4.1
050BBR/L15-R0.20	4.40	5	2.40	15	50	1.00	0.20	5.1
050BBR/L22-R0.20	4.40	5	2.40	22	50	1.00	0.20	5.1
060BBR/L15-R0.20	5.30	6	2.90	15	50	1.80	0.20	6.1
060BBR/L22-R0.20	5.30	6	2.90	22	50	1.80	0.20	6.1
070BBR/L22-R0.20	6.30	7	3.40	22	50	2.50	0.20	7.1
070BBR/L30-R0.20	6.30	7	3.40	30	65	2.50	0.20	7.1

Ordering code example: TT040BBR15-R0.15 TTIS30 for without coolant style. TT040BBR15-R0.15-C TTIS30 for coolant style  
Additional sizes available by request.

## TT□BFR/L

For Micro Diameter Chamfering & Boring

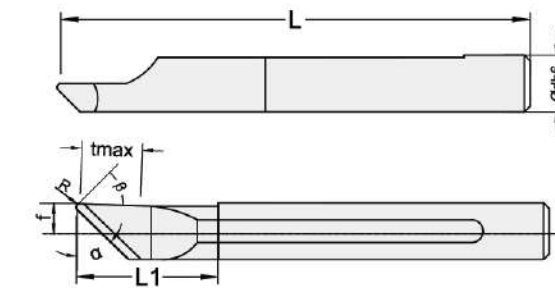
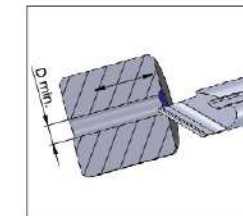


Designation	a	d	f	L1	L	tmax	R	Dmin
<b>TT</b> 030BFR/L10-R0.20	2.70	3	1.40	10	40	0.30	0.20	3.1
040BFR/L15-R0.20	3.50	4	1.90	15	50	0.40	0.20	4.1
050BFR/L15-R0.20	4.40	5	2.40	15	50	0.70	0.20	5.1
060BFR/L15-R0.20	5.30	6	2.90	15	50	0.70	0.20	6.1

Ordering code example: TT040BFR15-R0.20 TTIS30 for without coolant style. TT040BFR15-R0.20-C TTIS30 for coolant style  
Additional sizes available by request.

## TT□BWR/L

For Micro Diameter Chamfering & Profiling



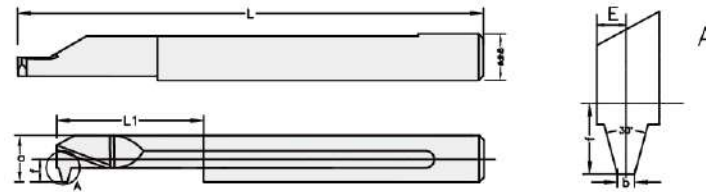
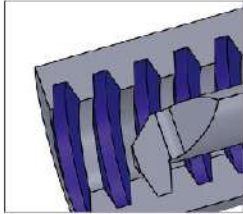
Designation	α	β	d	f	L1	L	tmax	R	Dmin
<b>TT</b> 060BWR/L15-R0.20-A45	45°	45°	6	2.3	15	50	3.50	0.20	1.0
060BWR/L15-R0.20-A60	60°	30°	6	2.3	15	50	4.00	0.20	1.0
060BWR/L22-R0.20-A45	45°	45°	6	2.3	22	50	3.50	0.20	6.0
060BWR/L00-R0.20-A60	60°	30°	6	2.3	22	50	4.00	0.20	6.0

Ordering code example: TT060BWR15-0.20 A45 TTIS30 for without coolant style. TT060BWR15-0.20 A45 -C TTIS30 for coolant style  
Can be used also for boring.



## TT□TR/L

For Micro Diameter Threading - Trapezoidal Thread

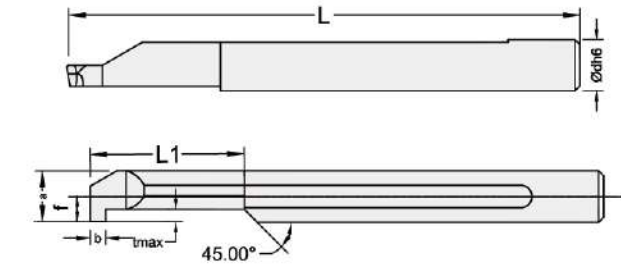
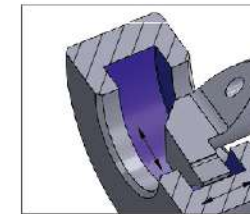


Designation	α	Pitch		a	d	f	L1	L	tmax	E	b	Dmin
		mm	TPI									
TT 060TR/L22-150TR	30°	1.5	-	5.70	6	2.90	22	50	0.90	0.60	0.42	6.1
070TR/L25-200TR	30°	2.0	-	6.30	7	3.50	25	65	1.25	0.75	0.60	6.9
070TR/L35-300TR	30°	3.0	-	6.30	7	4.90	35	65	1.75	1.10	0.96	11.0
100TR/L35-200TR	30°	2.0	-	9.20	10	4.90	35	65	1.25	0.75	0.60	7.5
100TR/L35-300TR	30°	3.0	-	9.20	10	4.90	35	65	1.75	1.10	0.96	10.5

Ordering code example: TT070TR25-200TR TTIS30 for without coolant style. TT070TR25-200TR-C TTIS30 for coolant style  
Can be used also for boring.

## TT□GR/L

For Micro Diameter Grooving

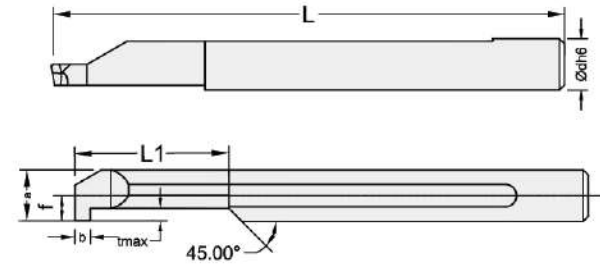
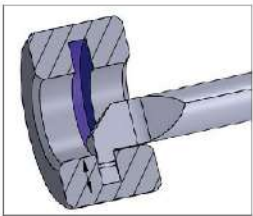


Designation	b	a	d	f	L1	L	tmax	Dmin
TT 010GR/L04-B030	0.3	0.9	3	0.45	4	40	0.2	1.1
010GR/L07-B030	0.3	0.9	3	0.45	7	40	0.2	1.1
015GR/L05-B040	0.4	1.4	3	0.75	5	40	0.4	1.6
015GR/L10-B040	0.4	1.4	3	0.75	10	40	0.4	1.6
015GR/L12-B040	0.4	1.4	3	0.75	12	40	0.4	1.6
020GR/L06-B050	0.5	1.8	3	0.95	6	40	0.4	2.1
020GR/L10-B050	0.5	1.8	3	0.95	10	40	0.4	2.1
020GR/L15-B050	0.5	1.8	3	0.95	15	40	0.4	2.1
030GR/L10-B070	0.7	2.7	3	1.40	10	40	0.6	3.1
030GR/L15-B070	0.7	2.7	3	1.40	15	40	0.6	3.1
040GR/L10-B100	1.0	3.5	4	1.90	10	50	1.0	4.1
040GR/L10-B150	1.5	3.5	4	1.90	10	50	1.0	4.1
040GR/L15-B100	1.0	3.5	4	1.90	15	50	1.0	4.1
040GR/L15-B150	1.5	3.5	4	1.90	15	50	1.0	4.1
040GR/L22-B100	1.0	3.5	4	1.90	22	50	1.0	4.1
040GR/L22-B150	1.5	3.5	4	1.90	22	50	1.0	4.1
050GR/L10-B100	1.0	4.4	5	2.40	10	50	1.2	5.1
050GR/L10-B150	1.5	4.4	5	2.40	10	50	1.2	5.1
050GR/L10-B200	2.0	4.4	5	2.40	10	50	1.2	5.1
050GR/L15-B100	1.0	4.4	5	2.40	15	50	1.2	5.1
050GR/L15-B150	1.5	4.4	5	2.40	15	50	1.2	5.1
050GR/L15-B200	2.0	4.4	5	2.40	15	50	1.2	5.1
050GR/L22-B100	1.0	4.4	5	2.40	22	50	1.2	5.1
050GR/L22-B150	1.5	4.4	5	2.40	22	50	1.2	5.1
050GR/L22-B200	2.0	4.4	5	2.40	22	50	1.2	5.1
050GR/L30-B100	1.0	4.4	5	2.40	30	65	1.2	5.1
050GR/L30-B150	1.5	4.4	5	2.40	30	65	1.2	5.1
050GR/L30-B200	2.0	4.4	5	2.40	30	65	1.2	5.1
050GR/L35-B100	1.0	4.4	5	2.40	35	65	1.2	5.1
050GR/L35-B150	1.5	4.4	5	2.40	35	65	1.2	5.1

Ordering code example: TT060GR22-B100 TTIM45 for without coolant style. TT060GR22-B100-C TTIM45 for coolant style  
Additional sizes available by request.

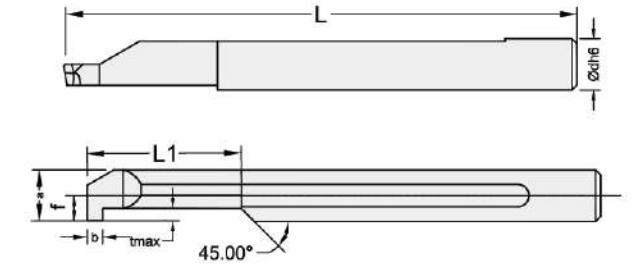
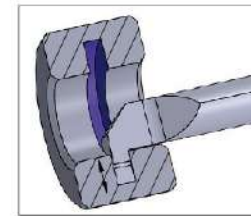
## TT GR/L

For Micro Diameter Grooving



## TT GR/L

For Micro Diameter Grooving



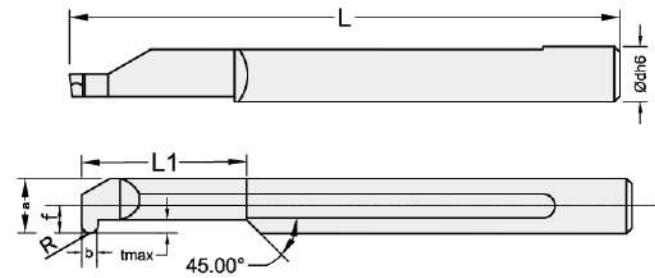
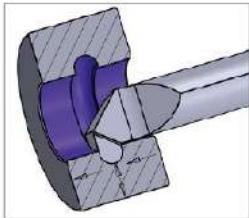
Designation	b	a	d	f	L1	L	tmax	Dmin
TT 050GR/L35-B200	2.0	4.4	5	2.40	35	65	1.2	5.1
060GR/L10-B100	1.0	5.3	6	2.90	10	50	1.8	6.1
060GR/L10-B150	1.5	5.3	6	2.90	10	50	1.8	6.1
060GR/L10-B200	2.0	5.3	6	2.90	10	50	1.8	6.1
060GR/L15-B100	1.0	5.3	6	2.90	15	50	1.8	6.1
060GR/L15-B150	1.5	5.3	6	2.90	15	50	1.8	6.1
060GR/L15-B200	2.0	5.3	6	2.90	15	50	1.8	6.1
060GR/L22-B100	1.0	5.3	6	2.90	22	50	1.8	6.1
060GR/L22-B150	1.5	5.3	6	2.90	22	50	1.8	6.1
060GR/L22-B200	2.0	5.3	6	2.90	22	50	1.8	6.1
060GR/L30-B100	1.0	5.3	6	2.90	30	65	1.8	6.1
060GR/L30-B150	1.5	5.3	6	2.90	30	65	1.8	6.1
060GR/L30-B200	2.0	5.3	6	2.90	30	65	1.8	6.1
060GR/L35-B100	1.0	5.3	6	2.90	35	65	1.8	6.1
060GR/L35-B150	1.5	5.3	6	2.90	35	65	1.8	6.1
060GR/L35-B200	2.0	5.3	6	2.90	35	65	1.8	6.1
070GR/L15-B100	1.0	6.3	7	3.40	15	50	2.5	7.1
070GR/L15-B150	1.5	6.3	7	3.40	15	50	2.5	7.1
070GR/L15-B200	2.0	6.3	7	3.40	15	50	2.5	7.1
070GR/L22-B100	1.0	6.3	7	3.40	22	50	2.5	7.1
070GR/L22-B150	1.5	6.3	7	3.40	22	50	2.5	7.1
070GR/L22-B200	2.0	6.3	7	3.40	22	50	2.5	7.1
070GR/L30-B100	1.0	6.3	7	3.40	30	65	2.5	7.1
070GR/L30-B150	1.5	6.3	7	3.40	30	65	2.5	7.1
070GR/L30-B200	2.0	6.3	7	3.40	30	65	2.5	7.1
070GR/L40-B100	1.0	6.3	7	3.40	40	65	2.5	7.1
070GR/L40-B150	1.5	6.3	7	3.40	40	65	2.5	7.1
070GR/L40-B200	2.0	6.3	7	3.40	40	65	2.5	7.1
080GR/L22-B100	1.0	7.3	8	3.90	22	50	3.1	8.1
080GR/L22-B150	1.5	7.3	8	3.90	22	50	3.1	8.1

Designation	b	a	d	f	L1	L	tmax	Dmin
TT 080GR/L22-B200	2.0	7.3	8	3.90	22	50	3.1	8.1
080GR/L30-B100	1.0	7.3	8	3.90	30	65	3.1	8.1
080GR/L30-B150	1.5	7.3	8	3.90	30	65	3.1	8.1
080GR/L30-B200	2.0	7.3	8	3.90	30	65	3.1	8.1
080GR/L40-B100	1.0	7.3	8	3.90	40	65	3.1	8.1
080GR/L40-B150	1.5	7.3	8	3.90	40	65	3.1	8.1
080GR/L40-B200	2.0	7.3	8	3.90	40	65	3.1	8.1
100GR/L30-B100	1.0	9.9	10	4.90	30	65	4.0	10.1
100GR/L30-B200	2.0	9.9	10	4.90	30	65	4.0	10.1
100GR/L30-B300	3.0	9.9	10	4.90	30	65	4.0	10.1
100GR/L50-B100	1.0	9.9	10	4.90	50	80	4.0	10.1
100GR/L50-B200	2.0	9.9	10	4.90	50	80	4.0	10.1
100GR/L50-B300	3.0	9.9	10	4.90	50	80	4.0	10.1



## TT □ GRR/L

For Micro Diameter Grooving with Full Radius

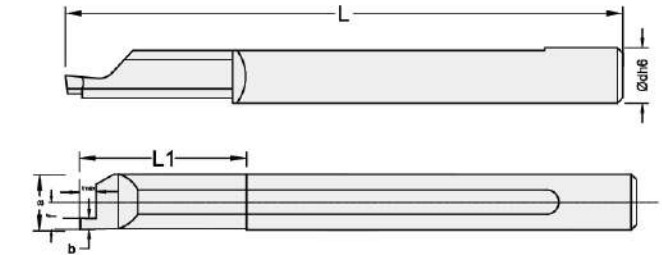
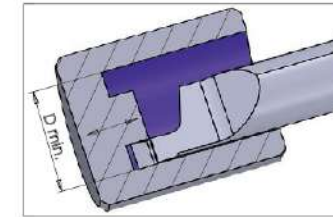


Designation	b	a	d	f	L1	L	tmax	Dmin	R
TT 030GRR/L10-B100	1.00	2.70	3	1.40	10	50	0.60	3.1	0.50
040GRR/L10-B100	1.00	3.50	4	1.90	10	50	1.00	4.1	0.50
040GRR/L10-B150	1.50	3.50	4	1.90	10	50	1.00	4.1	0.75
050GRR/L15-B100	1.00	4.40	5	2.40	15	50	1.20	5.1	0.50
050GRR/L15-B150	1.50	4.40	5	2.40	15	50	1.20	5.1	0.75
050GRR/L15-B200	2.00	4.40	5	2.40	15	50	1.20	5.1	1.00
060GRR/L15-B100	1.00	5.30	6	2.90	15	50	1.60	6.1	0.50
060GRR/L15-B150	1.50	5.30	6	2.90	15	50	1.60	6.1	0.75
060GRR/L15-B200	2.00	5.30	6	2.90	15	50	1.60	6.1	1.00
070GRR/L22-B100	1.00	6.30	7	3.40	22	50	2.50	7.1	0.50
070GRR/L22-B150	1.50	6.30	7	3.40	22	50	2.50	7.1	0.75
070GRR/L22-B200	2.00	6.30	7	3.40	22	50	2.50	7.1	1.00

Ordering code example: TT060GRR15-B150 TTIS30 for without coolant style. TT060GRR15-B150-C TTIS30 for coolant style  
Additional sizes available by request.

## TT □ GFR

For Micro Diameter Face Grooving

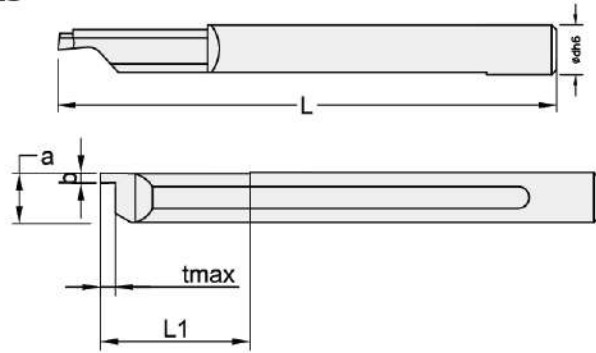
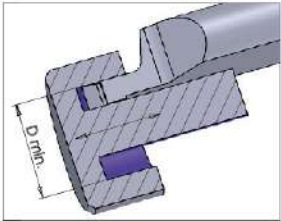


Designation	b	a	d	f	L1	L	tmax	Dmin
TT 040GFR15-B075	0.75	3.50	4	1.95	15	50	1.20	5.0
040GFR15-B100	1.00	3.50	4	1.95	15	50	1.50	5.0
040GFR15-B150	1.50	3.50	4	1.95	15	50	2.80	5.0
050GFR22-B075	0.75	4.30	5	2.45	22	50	1.20	6.0
050GFR22-B100	1.00	4.30	5	2.45	22	50	1.50	6.0
050GFR22-B150	1.50	4.30	5	2.45	22	50	2.50	6.0
050GFR22-B200	2.00	4.30	5	2.45	22	50	3.80	6.0
060GFR22-B100	1.00	5.20	6	2.95	22	50	1.50	8.0
060GFR22-B150	1.50	5.20	6	2.95	22	50	2.50	8.0
060GFR22-B200	2.00	5.20	6	2.95	22	50	3.00	8.0
060GFR22-B250	2.50	5.20	6	2.95	22	50	4.80	8.0
060GFR30-B300	3.00	5.20	6	2.95	30	65	6.00	8.0
080GFR22-B250	2.50	6.90	8	3.95	22	50	3.50	10.0

Ordering code example: TT040GFR15-B150 TTIS30 for without coolant style. TT040GFR15-B150-C TTIS30 for coolant style  
Additional sizes available by request.

## TT □ GFL

For Micro Diameter Face Grooving in Pivots

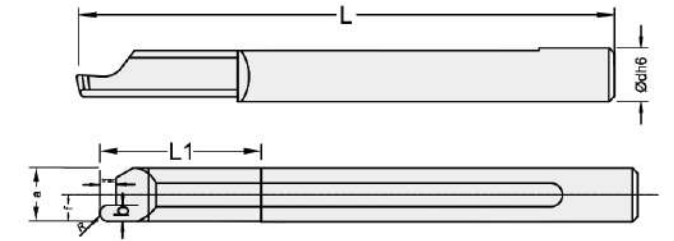
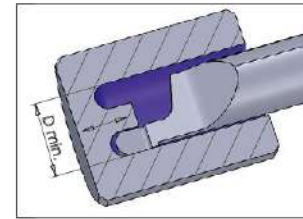


Designation	b	a	d	f	L1	L	tmax	Dmin
TT 040GFL15-B075	0.75	3.50	4	1.75	15	50	1.20	5.0
040GFL15-B100	1.00	3.50	4	1.75	15	50	1.50	5.0
040GFL15-B150	1.50	3.50	4	1.75	15	50	2.80	5.0
050GFL22-B075	0.75	4.30	5	2.25	22	50	1.20	6.0
050GFL22-B100	1.00	4.30	5	2.25	22	50	1.50	6.0
050GFL22-B150	1.50	4.30	5	2.25	22	50	2.50	6.0
050GFL22-B200	2.00	4.30	5	2.25	22	50	3.80	6.0
060GFL22-B100	1.00	5.20	6	2.75	22	50	1.50	8.0
060GFL22-B150	1.50	5.20	6	2.75	22	50	2.50	8.0
060GFL22-B200	2.00	5.20	6	2.75	22	50	3.00	8.0
060GFL22-B250	2.50	5.20	6	2.75	22	50	4.80	8.0
060GFL30-B300	3.00	5.20	6	2.75	30	65	6.00	8.0
080GFL22-B250	2.50	6.90	8	3.75	22	50	3.50	10.0

Ordering code example: TT050GFL22-B150 TTIS30 for without coolant style. TT050GFL22-B150-C TTIS30 for coolant style  
Additional sizes available by request.

## TT □ GRFR

For Micro Diameter Face Grooving with Full Radius



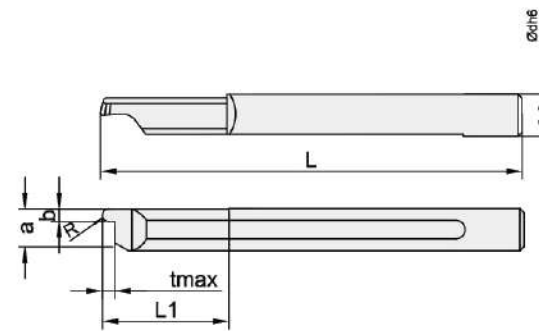
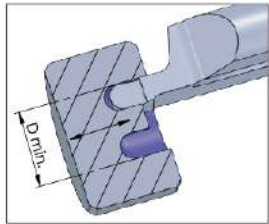
Designation	b	a	d	f	L1	L	tmax	Dmin	R
TT 040GRFR/15-B100	1.00	3.50	4	1.95	15	50	1.20	5.0	0.50
040GRFR/15-B150	1.50	3.50	4	1.95	15	50	1.50	5.0	0.75
050GRFR/22-B100	1.00	4.30	5	2.45	22	50	1.20	6.0	0.50
050GRFR/22-B150	1.50	4.30	5	2.45	22	50	1.50	6.0	0.75
050GRFR/22-B200	2.00	4.30	5	2.45	22	50	2.50	6.0	1.00
060GRFR/22-B100	1.00	5.20	6	2.95	22	50	1.20	8.0	0.50
060GRFR/22-B150	1.50	5.20	6	2.95	22	50	1.50	8.0	0.75
060GRFR/22-B200	2.00	5.20	6	2.95	22	50	2.50	8.0	1.00

Ordering code example: TT040GRFR15-B100 TTIS30 for without coolant style. TT040GRFR15-B100-C TTIS30 for coolant style  
Additional sizes available by request.



## TT GRFL

For Micro Diameter Face Grooving in Pivots with Full Radius

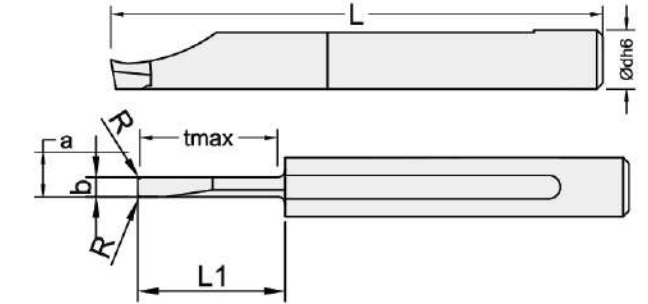
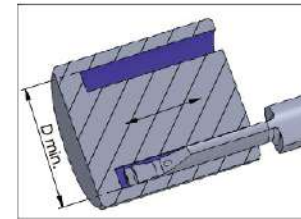


Designation	b	a	d	f	L1	L	tmax	R	Dmin
TT 040GRFL15-B100	1.0	3.50	4	1.75	15	50	1.2	0.50	5.0
040GRFL15-B150	1.5	3.50	4	1.75	15	50	1.5	0.75	5.0
050GRFL22-B100	1.0	4.30	5	2.25	22	50	1.2	0.50	6.0
050GRFL22-B150	1.5	4.30	5	2.25	22	50	1.5	0.75	6.0
050GRFL22-B200	2.0	4.30	5	2.25	22	50	2.5	1.00	6.0
060GRFL22-B100	1.0	5.20	6	2.75	22	50	1.2	0.50	8.0
060GRFL22-B150	1.5	5.20	6	2.75	22	50	1.5	0.75	8.0
060GRFL22-B200	2.0	5.20	6	2.75	22	50	2.5	1.00	8.0

Ordering code example: TT060GRFL22-B100 TTIM45 for without coolant style. TT060GRFL22-B100-C TTIM45 for coolant style  
Additional sizes available by request.

## TT VR/L

For deep face grooving

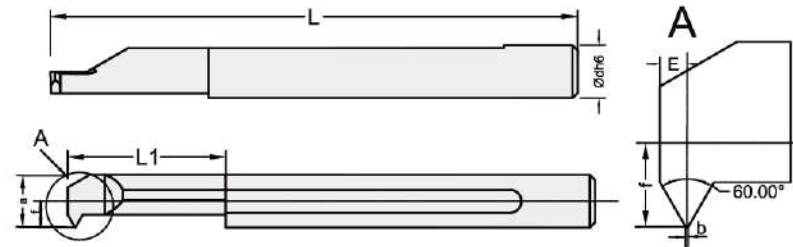
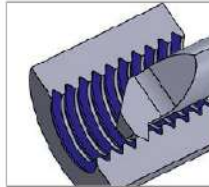


Designation	b	a	d	f	L1	L	tmax	Dmin	R
TT 060GVR/L10-B200	2.0	4.00	6	1.10	10	50	10	10.0	0.20
060GVR/L15-B200	2.0	4.00	6	1.10	15	50	15	12.0	0.20
060GVR/L22-B200	2.0	4.00	6	1.10	22	50	22	12.0	0.20
060GVR/L15-B250	2.5	4.25	6	1.40	15	50	15	10.0	0.20
060GVR/L22-B250	2.5	4.25	6	1.40	22	50	22	12.0	0.20
060GVR/L22-B300	3.0	4.50	6	1.40	22	50	22	10.0	0.20
070GVR/L10-B150	1.5	5.90	7	3.50	10	50	10	8.0	0.20
070GVR/L15-B200	2.0	5.90	7	3.50	15	50	15	8.0	0.20
070GVR/L22-B300	3.0	5.90	7	3.50	22	50	22	8.0	0.20
080GVR/L10-B200	2.0	5.00	8	1.00	10	50	10	12.0	0.20
080GVR/L15-B200	2.0	5.00	8	1.00	15	50	15	12.0	0.20
080GVR/L10-B300	3.0	5.50	8	1.50	10	50	10	12.0	0.20
080GVR/L15-B300	3.0	5.50	8	1.50	15	50	15	12.0	0.20
080GVR/L27-B300	3.0	5.50	8	1.60	27	65	27	15.0	0.20
080GVR/L43-B300	3.0	5.50	8	1.60	43	80	43	15.0	0.20
080GVR/L25-B400	4.0	6.00	8	2.00	25	65	25	20.0	0.20
080GVR/L43-B400	4.0	6.00	8	2.10	43	80	43	20.0	0.20

Ordering code example: TT060GVR22-B200 TTIM45 for without coolant style. TT060GVR22-B200-C TTIM45 for coolant style  
Additional sizes available by request.

## TT□TR/L

For Micro Diameter Threading - Partial Profile

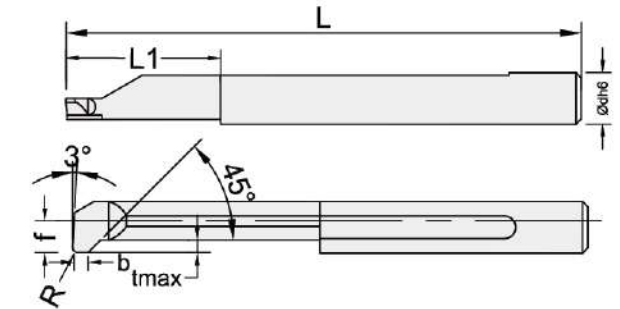
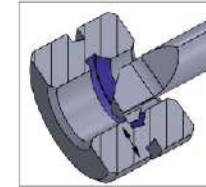


Designation	α	Pitch		a	d	f	L1	L	tmax	E	b	Dmin
		mm	TPI									
TT 020TR/L08-A60	60°	0.45-0.70	56-32	1.45	2	0.90	8	40	0.24	0.22	0.06	2.1
030TR/L15-A55	55°	0.50-1.00	48-24	2.30	3	1.40	15	40	0.27	0.33	0.04	3.2
030TR/L15-A60	60°	0.70-1.00	32-24	2.30	3	1.40	15	40	0.27	0.33	0.04	3.2
040TR/L15-A55	55°	0.50-1.00	48-24	3.50	4	1.90	15	50	0.43	0.45	0.10	4.1
040TR/L15-A60	60°	0.80-1.00	32-24	3.50	4	1.90	15	50	0.43	0.45	0.10	4.1
050TR/L15-A55	55°	0.50-1.25	48-20	4.40	5	2.40	15	50	0.40	0.45	0.06	5.1
050TR/L22-A55	55°	0.50-1.25	48-20	4.40	5	2.40	22	50	0.40	0.45	0.06	5.1
050TR/L15-A60	60°	1.00-1.25	24-20	4.40	5	2.40	15	50	0.55	0.55	0.12	5.1
050TR/L22-A60	60°	1.00-1.25	24-20	4.40	5	2.40	22	50	0.55	0.55	0.12	5.1
060TR/L15-A55	55°	0.50-1.50	48-16	5.30	6	2.90	15	50	0.81	0.75	0.12	6.0
060TR/L22-A55	55°	0.50-1.50	48-16	5.30	6	2.90	22	50	0.81	0.75	0.12	6.0
060TR/L15-A60	60°	1.00-1.50	24-16	5.30	6	2.90	15	50	0.68	0.65	0.15	6.0
060TR/L22-A60	60°	1.00-1.50	24-16	5.30	6	2.90	22	50	0.68	0.65	0.15	6.0
080TR/L22-A60	60°	1.00-2.00	24-13	7.30	8	3.90	22	50	0.94	0.85	0.21	8.0

Ordering code example: TT050TR22-A60 TTIM30 for without coolant style. TT050TR22-A60-C TTIM30 for coolant style  
Additional sizes available by request.

## TT□TDR/L

For Thread Relief, Chamfering and Grooving



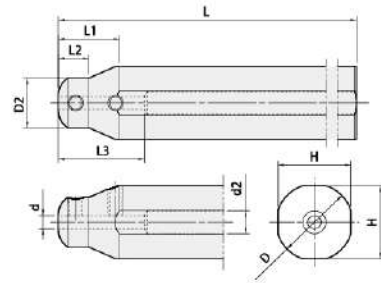
Designation	α	Pitch		a	d	f	L1	L	tmax	E	b	Dmin
		mm	TPI									
TT 020TR/L08-A60	60°	0.45-0.70	56-32	1.45	2	0.90	8	40	0.24	0.22	0.06	2.1
030TR/L15-A55	55°	0.50-1.00	48-24	2.30	3	1.40	15	40	0.27	0.33	0.04	3.2
030TR/L15-A60	60°	0.70-1.00	32-24	2.30	3	1.40	15	40	0.27	0.33	0.04	3.2
040TR/L15-A55	55°	0.50-1.00	48-24	3.50	4	1.90	15	50	0.43	0.45	0.10	4.1
040TR/L15-A60	60°	0.80-1.00	32-24	3.50	4	1.90	15	50	0.43	0.45	0.10	4.1
050TR/L15-A55	55°	0.50-1.25	48-20	4.40	5	2.40	15	50	0.40	0.45	0.06	5.1
050TR/L22-A55	55°	0.50-1.25	48-20	4.40	5	2.40	22	50	0.40	0.45	0.06	5.1
050TR/L15-A60	60°	1.00-1.25	24-20	4.40	5	2.40	15	50	0.55	0.55	0.12	5.1
050TR/L22-A60	60°	1.00-1.25	24-20	4.40	5	2.40	22	50	0.55	0.55	0.12	5.1
060TR/L15-A55	55°	0.50-1.50	48-16	5.30	6	2.90	15	50	0.81	0.75	0.12	6.0
060TR/L22-A55	55°	0.50-1.50	48-16	5.30	6	2.90	22	50	0.81	0.75	0.12	6.0
060TR/L15-A60	60°	1.00-1.50	24-16	5.30	6	2.90	15	50	0.68	0.65	0.15	6.0
060TR/L22-A60	60°	1.00-1.50	24-16	5.30	6	2.90	22	50	0.68	0.65	0.15	6.0
080TR/L22-A60	60°	1.00-2.00	24-13	7.30	8	3.90	22	50	0.94	0.85	0.21	8.0

Ordering code example: TT060TDR27-B150 TTIM45 for without coolant style. TT060TDR27-B150-C TTIM45 for coolant style  
Additional sizes available by request.



## Sleeve

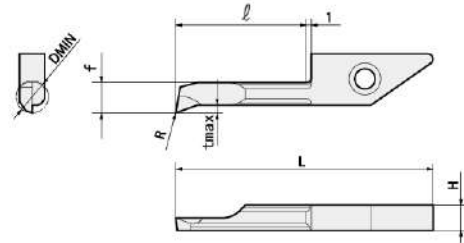
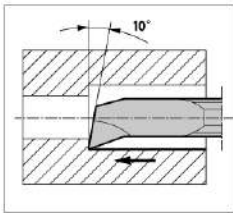
For Micro Diameter Tools



Designation	d	D	H	d2	D2	L1	L2	L3	L	Spare Parts	
										Screw	Wrench
TCL 1203-100L-2N	3	12	11	6.0	12.0	16	8	21	100	HS3040P	HW15L
1204-100L-2N	4	12	11	6.0	12.0	16	8	24	100	HS4040P	HW20L
1205-100L-2N	5	12	11	8.0	12.0	-	-	29	100	HS4040P	HW20L
1206-100L-2N	6	12	11	8.0	12.0	-	-	31	100	HS5050P	HW25L
1603-100L-2N	3	16	15	6.0	12.0	16	8	21	100	HS3040P	HW15L
1604-100L-2N	4	16	15	6.0	13.0	16	8	24	100	HS4040P	HW20L
1605-100L-2N	5	16	15	8.0	14.7	-	-	29	100	HS4040P	HW20L
1606-100L-2N	6	16	15	8.0	15.0	-	-	31	100	HS5050P	HW25L
1607-100L-2N	7	16	15	8.0	15.7	-	-	33	100	HS6060P	HW30L
1608-100L-2N	8	16	15	8.4	15.7	-	-	37	100	HS6060P	HW30L
2003-100L-2N	3	20	19	6.0	13.0	16	8	21	100	HS4040P	HW20L
2004-100L-2N	4	20	19	6.0	13.0	16	8	24	100	HS4040P	HW20L
2005-100L-2N	5	20	19	8.0	16.0	-	-	29	100	HS4040P	HW20L
2006-100L-2N	6	20	19	8.0	17.0	18	9	31	100	HS5050P	HW25L
2007-100L-2N	7	20	19	8.0	17.5	18	9	33	100	HS6060P	HW30L
2008-100L-2N	8	20	19	8.4	19.0	18	9	37	100	HS6060P	HW30L
2010-100L-2N	10	20	19	8.4	19.7	-	10	45	100	HS6060P	HW30L
2012-100L-2N	12	20	19	8.4	19.7	-	10	48	100	HS6060P	HW30L
2504-100L-2N	4	25	23	6.0	18.0	16	8	24	100	HS4040P	HW20L
2505-100L-2N	5	25	23	8.0	18.0	18	9	29	100	HS5050P	HW25L
2506-100L-2N	6	25	23	8.0	18.0	18	9	31	100	HS5050P	HW25L
2507-100L-2N	7	25	23	8.0	18.0	18	9	33	100	HS6060P	HW30L
2508-100L-2N	8	25	23	8.4	18.0	18	9	37	100	HS6060P	HW30L
2510-100L-2N	10	25	23	8.4	18.0	18	9	45	100	HS6060P	HW30L
2512-100L-2N	12	25	23	8.4	18.0	20	10	48	100	HS6060P	HW30L

## VN□BR

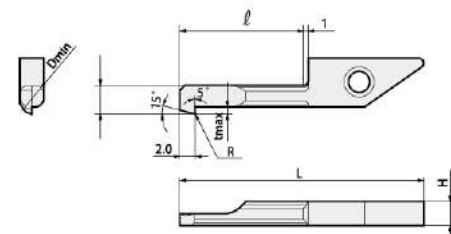
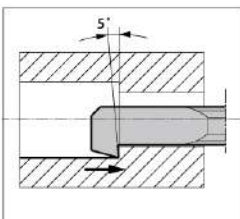
For Small Internal Boring & Profiling



Designation	ℓ	L	H	f	tmax	Dmin	R
VN 020BR06-R0.10	6	25.80	3.9	1.80	0.25	2.0	0.10-0.15
030BR11-R0.10	11	30.80	3.9	2.60	0.40	3.0	0.10-0.15
040BR11-R0.20	11	30.80	3.9	3.50	0.50	4.0	0.20
050BR11-R0.20	11	30.80	3.9	4.50	0.70	5.0	0.20
050BR20-R0.20	20	39.80	3.9	4.50	0.70	5.0	0.20
060BR20-R0.20	20	39.80	3.9	5.30	1.00	6.0	0.20
060BR30-R0.20	30	49.80	3.9	5.30	1.00	6.0	0.20
070BR30-R0.20	30	49.80	3.9	6.20	1.00	7.0	0.20

## VN□BBR

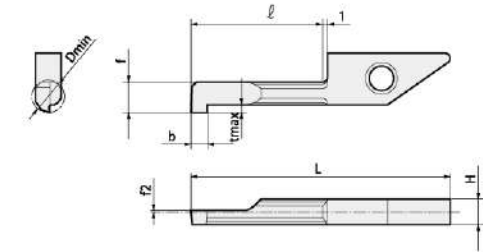
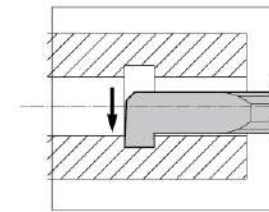
For Small Internal Back Boring



Designation	ℓ	L	H	f	tmax	Dmin	R
VN 040BBR11-R0.15	11	30.80	3.9	3.60	1.00	4.0	0.15
050BBR11-R0.20	11	30.80	3.9	4.60	1.30	5.0	0.20
050BBR20-R0.20	20	39.80	3.9	4.60	1.30	5.0	0.20
060BBR11-R0.20	11	30.80	3.9	5.40	1.80	6.0	0.20
060BBR20-R0.20	20	39.80	3.9	5.40	1.80	6.0	0.20

## VN□GR

For Small Internal Grooving

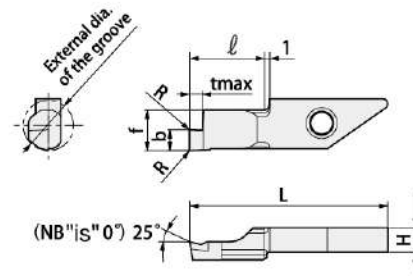
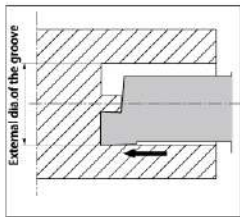


Designation	b	ℓ	L	H	f	f2	tmax	Dmin
VN 040GR11-B100	1.00	11	30.8	3.9	3.50	0.1	1.00	4.0
040GR11-B150	1.50	11	30.8	3.9	3.50	0.1	1.00	4.0
050GR11-B100	1.00	11	30.8	3.9	4.40	0.1	1.20	5.0
050GR11-B150	1.50	11	30.8	3.9	4.40	0.1	1.20	5.0
050GR11-B200	2.00	11	30.8	3.9	4.40	0.1	1.20	5.0
060GR20-B100	1.00	20	39.8	3.9	5.20	0.3	1.40	6.0
060GR20-B150	1.50	20	39.8	3.9	5.20	0.3	1.40	6.0
060GR20-B200	2.00	20	39.8	3.9	5.20	0.3	1.40	6.0
070GR20-B100	1.00	20	39.8	3.9	6.20	0.3	2.00	7.0
070GR20-B150	1.50	20	39.8	3.9	6.20	0.3	2.00	7.0
070GR20-B200	2.00	20	39.8	3.9	6.20	0.3	2.00	7.0



## VN□GFR

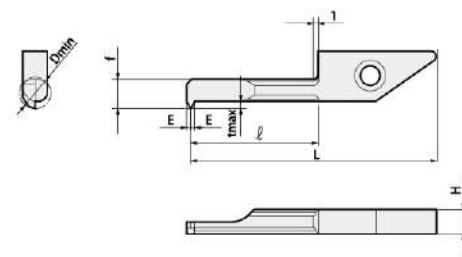
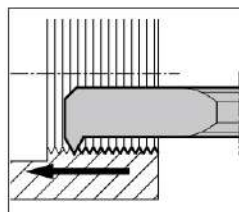
For Small Internal Face Grooving



Designation	b	ℓ	L	H	f	tmax	Dmin	Dmax	R
VN 050GFR11-B100	1.00	11	30.8	3.9	4.40	2.0	6.00	∞	0.03-0.05
050GFR11-B200	2.00	11	30.8	3.9	4.40	4.0	6.00	∞	0.03-0.05
050GFR11-B300	3.00	11	30.8	3.9	4.40	6.0	6.00	∞	0.03-0.05
060GFR20-B100	1.00	20	39.8	3.9	5.20	1.5	7.00	∞	0.03-0.05
060GFR20-B200	2.00	20	39.8	3.9	5.20	3.0	7.00	∞	0.03-0.05
060GFR20-B300	3.00	20	39.8	3.9	5.20	4.0	7.00	∞	0.03-0.05

## VN□TR

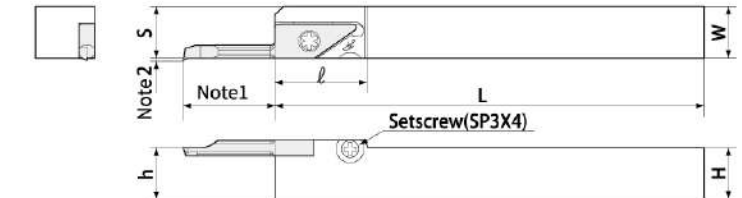
For Small Internal Threading



Designation	Pitch		ℓ	L	H	f	tmax	E	Dmin
	mm	TPI							
VN 050TR11-A60	1.00-1.25	24-20	11	30.8	3.90	3.8	1.30	0.6	5.00
060TR11-A60	1.00-1.50	24-16	11	30.8	3.90	4.6	1.60	0.8	6.00
060TR20-A60	1.00-1.50	24-16	20	39.8	3.90	4.6	1.60	0.8	6.00
050TR11-A55	0.50-1.25	48-20	11	30.8	3.90	3.8	1.30	0.6	5.00
060TR11-A55	0.50-1.25	48-20	11	30.8	3.90	4.6	1.60	0.8	6.00
060TR20-A55	0.50-1.25	48-20	20	39.8	3.90	4.6	1.60	0.8	6.00

## SVNR-N

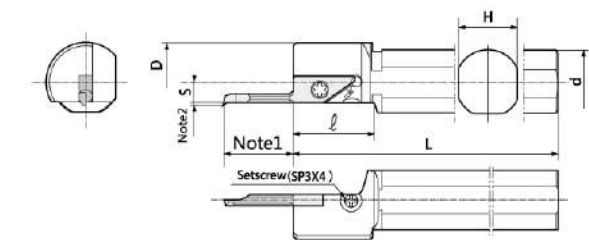
Without side stopper



Designation	H	W	L	S	h	ℓ	Spare Parts	
							Screw	Wrench
SVNR 1010-H12N	10	10	100	10	10	22	BFTX30080-Y50	TPF-08
1212-X12N	12	12	120	12	12	22		
1616-X12N	16	16	120	16	16	22		
2020-X12N	20	20	120	20	20	22		
2525-M12N	25	25	150	25	25	22		

## S-SVNR-N

Without side stopper



Designation	D	d	L	S	H	ℓ	Spare Parts	
							Screw	Wrench
S12F-SVNR12N	20	12	80	4	11	23	BFTX30080-Y50	TPF-08
S14G-SVNR12N	20	14	90	4	13	23		
S16H-SVNR12N	24	16	100	6	15	23		
S20H-SVNR12N	24	20	100	6	18	24		
S25H-SVNR12N	30	25	100	6	23	24		

## Mini Carbide Boring Tools Code System

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

### 1 Connector size

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

### 2 Type of operation

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

GR:grooving PR:Profiling& boring  
 QR:Copying XR:Back boring  
 IR:Threading CR:Chamfering  
 FR:Face cutting

### 3 Hand

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

R: right hand  
 L: left hand

### 4 Width of cutting edge (Pitch of thread insert)

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

B: Square groove  
 R: Round groove

### 5 Max. processing length

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

### 6 Min. boring dia

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

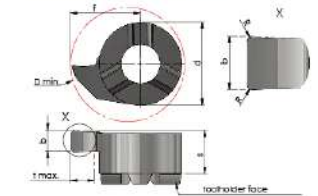
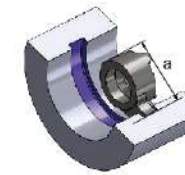
### 7 Radius

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

### 8 Grade

05 G R - B100 - 1.5 D07 - R0.50 TTIM45B

## Internal Grooving (Square)

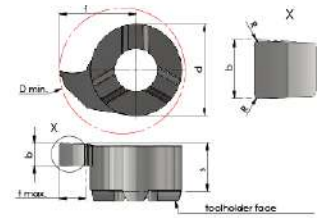
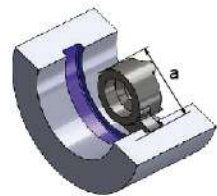


Designation (Internal)	b	s	f	a	d	tmax	Dmin	R
MB 04GR-B050-1.0D055	0.50	2.6	3.2	5.2	4	1.0	5.5	-
04GR-B070-1.0D055	0.70	2.6	3.2	5.2	4	1.0	5.5	-
04GR-B100-1.0D055	1.00	2.6	3.2	5.2	4	1.0	5.5	-
04GR-B150-1.0D055	1.50	2.6	3.2	5.2	4	1.0	5.5	-
04GR-B200-1.0D055	2.00	2.6	3.2	5.2	4	1.0	5.5	-
04GR-B100-1.4D06	1.00	2.6	3.7	5.7	4	1.4	6.0	-
04GR-B120-1.4D06	1.20	2.6	3.7	5.7	4	1.4	6.0	-
04GR-B150-1.4D06	1.50	2.6	3.7	5.7	4	1.4	6.0	-
04GR-B200-1.4D06	2.00	2.6	3.7	5.7	4	1.4	6.0	-
04GR-B100-2.3D07	1.00	2.6	4.7	6.7	4	2.3	6.0	-
04GR-B150-2.3D07	1.50	2.6	4.7	6.7	4	2.3	6.0	-
04GR-B200-2.3D07	2.00	2.6	4.7	6.7	4	2.3	6.0	-
05GR/L-B050-1.4D07	0.50	3.3	4.3	6.8	4	1.4	7.0	-
05GR/L-B075-1.4D07	0.75	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B080-1.4D07	0.83	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B090-1.4D07	0.93	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B100-1.4D07	1.00	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B120-1.4D07	1.20	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B140-1.4D07	1.40	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B150-1.4D07	1.50	3.3	4.3	6.8	4	1.4	7.0	-
05GR/L-B170-1.4D07	1.60	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B200-1.4D07	2.00	3.3	4.3	6.8	5	1.4	7.0	-
05GR/L-B100-2.3D08	1.00	3.3	5.2	7.7	5	2.3	8.0	-
05GR/L-B150-2.3D08	1.50	3.3	5.2	7.7	5	2.3	8.0	-
05GR/L-B200-2.3D08	2.00	3.3	5.2	7.7	5	2.3	8.0	-
05GR/L-B100-2.8D09	1.00	3.3	5.8	8.3	5	2.8	9.0	-
05GR/L-B150-2.8D09	1.50	3.3	5.8	8.3	5	2.8	9.0	-
05GR/L-B200-2.8D09	2.00	3.3	5.8	8.3	5	2.8	9.0	-
05GR/L-B250-2.8D09	2.50	3.3	5.8	8.3	5	2.8	9.0	-
05GR/L-B300-2.8D09	3.00	3.3	5.8	8.3	5	2.8	9.0	-
07GR/L-B075-2.0D10	0.73	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B080-2.0D10	0.83	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B090-2.0D10	0.93	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B100-2.0D10	1.00	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B120-2.0D10	1.20	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B140-2.0D10	1.40	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B150-2.0D10	1.50	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B170-2.0D10	1.70	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B200-2.0D10	2.00	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B250-2.0D10	2.50	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B300-2.0D10	3.00	3.5	6.0	9.5	7	2.0	10.0	-
07GR/L-B100-3.0D11	1.00	3.5	7.0	10.5	7	3.0	11.0	-
07GR/L-B150-3.0D11	1.50	3.5	7.0	10.5	7	3.0	11.0	-
07GR/L-B200-3.0D11	2.00	3.5	7.0	10.5	7	3.0	11.0	-
07GR/L-B250-3.0D11	2.50	3.5	7.0	10.5	7	3.0	11.0	-
07GR/L-B300-3.0D11	3.00	3.5	7.0	10.5	7	3.0	11.0	-
07GR/L-B100-3.5D12	1.00	3.5	7.5	11.0	7	3.5	12.0	-
07GR/L-B150-3.5D12	1.50	3.5	7.5	11.0	7	3.5	12.0	-

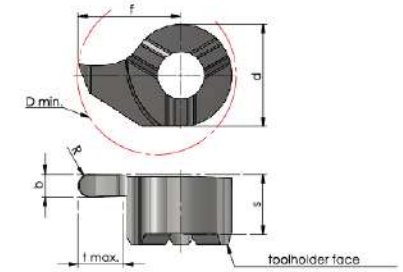
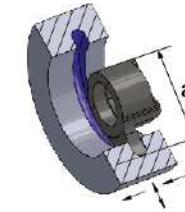
Note: 1. 05GR type insert is not in the standard inventory, for deeper and smaller sizes, please contact the supplier to ask whether can be grinded or not?  
 2. 09 type insert can be drilled 16mm hole by grinding the insert and the holder, the cutting depth can reach 6.0mm, and 17mm hole can cut the depth up to 7.0mm. When using the insert, try to choose the holder with a short and thick overhang and the wider insert  
 3. You can contact the supplier if you have special requirements for the radius.



## Internal Grooving (Square)



## Internal Grooving (Round)



Designation (Internal)	b	S	f	a	d	tmax	Dmin	R
<b>MB</b> 07GR/L-B200-3.5D12	2.00	3.5	7.5	11.0	7	3.5	12.0	-
07GR/L-B250-3.5D12	2.50	3.5	7.5	11.0	7	3.5	12.0	-
07GR/L-B300-3.5D12	3.00	3.5	7.5	11.0	7	3.5	12.0	-
09GR/L-B100-4.0D14	1.00	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B120-4.0D14	1.20	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B140-4.0D14	1.40	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B150-4.0D14	1.50	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B170-4.0D14	1.70	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B200-4.0D14	2.00	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B250-4.0D14	2.50	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B300-4.0D14	3.00	4.7	9.0	13.5	9	4.0	14.0	-
09GR/L-B200-4.0D14-R0.20	2.00	4.7	9.0	13.5	9	4.0	14.0	0.2
09GR/L-B150-5.5D16	1.50	4.7	10.5	15.0	9	5.5	16.0	-
09GR/L-B200-5.5D16	2.00	4.7	10.5	15.0	9	5.5	16.0	-
09GR/L-B250-5.5D16	2.50	4.7	10.5	15.0	9	5.5	16.0	-
09GR/L-B300-5.5D16	3.00	4.7	10.5	15.0	9	5.5	16.0	-
09GR/L-B150-5.5D16-R0.20	1.50	4.7	10.5	15.0	9	5.5	16.0	0.2
09GR/L-B200-5.5D16-R0.20	2.00	4.7	10.5	15.0	9	5.5	16.0	0.2
09GR/L-B250-5.5D16-R0.20	2.50	4.7	10.5	15.0	9	5.5	16.0	0.2
09GR/L-B300-5.5D16-R0.20	3.00	4.7	10.5	15.0	9	5.5	16.0	0.2
09GR/L-B150-6.5D17	1.50	4.7	11.5	16.0	9	6.5	17.0	-
09GR/L-B200-6.5D17	2.00	4.7	11.5	16.0	9	6.5	17.0	-
09GR/L-B250-6.5D17	2.50	4.7	11.5	16.0	9	6.5	17.0	-
09GR/L-B300-6.5D17	3.00	4.7	11.5	16.0	9	6.5	17.0	-
11GR/L-B120-4.3D16	1.20	5.3	10.2	15.7	11	4.3	16.0	-
11GR/L-B140-4.3D16	1.40	5.3	10.2	15.7	11	4.3	16.0	-
11GR/L-B150-4.3D16-R0.20	1.50	5.3	10.2	15.7	11	4.3	16.0	0.2
11GR/L-B170-4.3D16-R0.20	1.70	5.3	10.2	15.7	11	4.3	16.0	0.2
11GR/L-B200-4.3D16-R0.20	2.00	5.3	10.2	15.7	11	4.3	16.0	0.2
11GR/L-B250-4.3D16-R0.20	2.50	5.3	10.2	15.7	11	4.3	16.0	0.2
11GR/L-B300-4.3D16-R0.20	3.00	5.3	10.2	15.7	11	4.3	16.0	0.2
11GR/L-B400-4.3D16-R0.20	4.00	5.3	10.2	15.7	11	4.3	16.0	0.2
11GR/L-B150-6.0D18-R0.20	1.50	5.3	12.0	17.5	11	6.0	18.0	0.2
11GR/L-B200-6.0D18-R0.20	2.00	5.3	12.0	17.5	11	6.0	18.0	0.2
11GR/L-B250-6.0D18-R0.20	2.50	5.3	12.0	17.5	11	6.0	18.0	0.2
11GR/L-B300-6.0D18-R0.20	3.00	5.3	12.0	17.5	11	6.0	18.0	0.2
11GR/L-B400-6.0D18-R0.20	4.00	5.3	12.0	17.5	11	6.0	18.0	0.2
11GR/L-B150-8.0D20-R0.20	1.50	5.3	14.0	19.5	11	8.0	20.0	0.2
11GR/L-B200-8.0D20-R0.20	2.00	5.3	14.0	19.5	11	8.0	20.0	0.2
11GR/L-B250-8.0D20-R0.20	2.50	5.3	14.0	19.5	11	8.0	20.0	0.2
11GR/L-B300-8.0D20-R0.20	3.00	5.3	14.0	19.5	11	8.0	20.0	0.2
11GR/L-B400-8.0D20-R0.20	4.00	5.3	14.0	19.5	11	8.0	20.0	0.2

Note: 1. 05GR type insert is not in the standard inventory, for deeper and smaller sizes, please contact the supplier to ask whether can be grinded or not?  
 2. 09 type insert can be drilled 16mm hole by grinding the insert and the holder, the cutting depth can reach 6.0mm, and 17mm hole can cut the depth up to 7.0mm. When using the insert, try to choose the holder with a short and thick overhang and the wider insert  
 3. You can contact the supplier if you have special requirements for the radius.

Designation (Internal)	b	S	f	a	d	tmax	Dmin	R
<b>MB</b> 04GR-B100-1.4D06-R0.50	1.00	2.6	3.7	5.7	4	1.4	6.0	0.50
04GR-B150-1.4D06-R0.75	1.50	2.6	3.7	5.7	4	1.4	6.0	0.75
04GR-B200-1.4D06-R1.00	2.00	2.6	3.7	5.7	4	1.4	6.0	1.00
04GR-B100-2.3D07-R0.50	1.00	2.6	4.7	6.7	4	2.3	6.0	0.50
04GR-B150-2.3D07-R0.75	1.50	2.6	4.7	6.7	4	2.3	6.0	0.75
04GR-B200-2.3D07-R1.00	2.00	2.6	4.7	6.7	4	2.3	6.0	1.00
05GR/L-B100-1.4D07-R0.50	1.00	3.3	4.3	6.8	5	1.4	7.0	0.50
05GR/L-B150-1.4D07-R0.75	1.50	3.3	4.3	6.8	4	1.4	7.0	0.75
05GR/L-B200-1.4D07-R1.00	2.00	3.3	4.3	6.8	5	1.4	7.0	1.00
05GR/L-B100-2.3D08-R0.50	1.00	3.3	5.2	7.7	5	2.3	8.0	0.50
05GR/L-B150-2.3D08-R0.75	1.50	3.3	5.2	7.7	5	2.3	8.0	0.75
05GR/L-B200-2.3D08-R1.00	2.00	3.3	5.2	7.7	5	2.3	8.0	1.00
05GR/L-B100-2.8D09-R0.50	1.00	3.3	5.8	8.3	5	2.8	9.0	0.50
05GR/L-B150-2.8D09-R0.75	1.50	3.3	5.8	8.3	5	2.8	9.0	0.75
05GR/L-B200-2.8D09-R1.00	2.00	3.3	5.8	8.3	5	2.8	9.0	1.00
07GR/L-B100-2.0D10-R0.50	1.00	3.5	6.0	9.5	7	2.0	10.0	0.50
07GR/L-B150-2.0D10-R0.75	1.50	3.5	6.0	9.5	7	2.0	10.0	0.75
07GR/L-B200-2.0D10-R1.00	2.00	3.5	6.0	9.5	7	2.0	10.0	1.00
07GR/L-B300-2.0D10-R1.50	3.00	3.5	6.0	9.5	7	2.0	10.0	1.50
07GR/L-B100-3.0D11-R0.50	1.00	3.5	7.0	10.5	7	3.0	11.0	0.50
07GR/L-B150-3.0D11-R0.75	1.50	3.5	7.0	10.5	7	3.0	11.0	0.75
07GR/L-B200-3.0D11-R1.00	2.00	3.5	7.0	10.5	7	3.0	11.0	1.00
07GR/L-B300-3.0D11-R1.50	3.00	3.5	7.0	10.5	7	3.0	11.0	1.50
07GR/L-B100-3.5D12-R0.50	1.00	3.5	7.5	11.0	7	3.5	12.0	0.50
07GR/L-B150-3.5D12-R0.75	1.50	3.5	7.5	11.0	7	3.5	12.0	0.75
07GR/L-B200-3.5D12-R1.00	2.00	3.5	7.5	11.0	7	3.5	12.0	1.00
07GR/L-B300-3.5D12-R1.50	3.00	3.5	7.5	11.0	7	3.5	12.0	1.50
09GR/L-B100-4.0D14-R0.50	1.00	4.7	9.0	13.5	9	4.0	14.0	0.50
09GR/L-B150-4.0D14-R0.75	1.50	4.7	9.0	13.5	9	4.0	14.0	0.75
09GR/L-B200-4.0D14-R1.00	2.00	4.7	9.0	13.5	9	4.0	14.0	1.00
09GR/L-B300-4.0D14-R1.50	3.00	4.7	9.0	13.5	9	4.0	14.0	1.50



## Internal Grooving (Round)



Designation (Internal)	b	S	f	a	d	tmax	Dmin	R
<b>MB</b> 09GR/L-B150-5.5D16-R0.75	1.50	4.7	10.5	15.0	9	5.5	16.0	0.75
09GR/L-B200-5.5D16-R1.00	2.00	4.7	10.5	15.0	9	5.5	16.0	1.00
09GR/L-B300-5.5D16-R1.50	3.00	4.7	10.5	15.0	9	5.5	16.0	1.50
09GR/L-B150-6.5D17-R0.75	1.50	4.7	11.5	16.0	9	6.5	17.0	0.75
09GR/L-B200-6.5D17-R1.00	2.00	4.7	11.5	16.0	9	6.5	17.0	1.00
09GR/L-B300-6.5D17-R1.50	3.00	4.7	11.5	16.0	9	6.5	17.0	1.50
11GR/L-B150-4.3D16-R0.75	1.50	5.3	10.2	15.7	11	4.3	16.0	0.75
11GR/L-B200-4.3D16-R1.00	2.00	5.3	10.2	15.7	11	4.3	16.0	1.00
11GR/L-B250-4.3D16-R1.25	2.50	5.3	10.2	15.7	11	4.3	16.0	1.25
11GR/L-B300-4.3D16-R1.50	3.00	5.3	10.2	15.7	11	4.3	16.0	1.50
11GR/L-B400-4.3D16-R2.00	4.00	5.3	10.2	15.7	11	4.3	16.0	2.00
11GR/L-B150-6.0D18-R0.75	1.50	5.3	12.0	17.5	11	6.0	18.0	0.75
11GR/L-B200-6.0D18-R1.00	2.00	5.3	12.0	17.5	11	6.0	18.0	1.00
11GR/L-B250-6.0D18-R1.25	2.50	5.3	12.0	17.5	11	6.0	18.0	1.25
11GR/L-B300-6.0D18-R1.50	3.00	5.3	12.0	17.5	11	6.0	18.0	1.50
11GR/L-B400-6.0D18-R2.00	4.00	5.3	12.0	17.5	11	6.0	18.0	2.00
11GR/L-B150-8.0D20-R0.75	1.50	5.3	14.0	19.5	11	8.0	20.0	0.75
11GR/L-B200-8.0D20-R1.00	2.00	5.3	14.0	19.5	11	8.0	20.0	1.00
11GR/L-B250-8.0D20-R1.25	2.50	5.3	14.0	19.5	11	8.0	20.0	1.25
11GR/L-B300-8.0D20-R1.50	3.00	5.3	14.0	19.5	11	8.0	20.0	1.50
11GR/L-B400-8.0D20-R2.00	4.00	5.3	14.0	19.5	11	8.0	20.0	2.00

## Boring and Profiling



Designation (Internal)	d	S	a	f	tmax	Dmin	R
<b>MB</b> 04PR/L-D06-R0.20	4	2.6	5.0	3.0	0.8	5.5	0.2
05PR/L-D07-R0.20	5	3.3	6.1	3.6	1.0	6.5	0.2
07PR/L-D10-R0.20	7	3.5	9.5	6.0	2.0	10.0	0.2
09PR/L-D14-R0.20	9	4.7	13.2	8.7	4.0	13.8	0.2

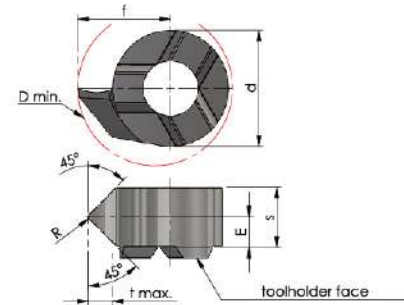
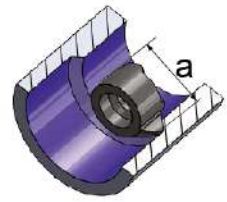
## Copying



Designation (Internal)	d	S	a	f	tmax	Dmin	R
<b>MB</b> 04QR-1.4D06-R0.20	4	2.6	5.7	3.7	1.4	6.0	0.2
05QR/L-1.5D07-R0.20	5	3.3	6.8	4.3	1.5	7.0	0.2
05QR/L-3.5D09-R0.20	5	3.3	8.5	5.5	3.5	9.0	0.2
07QR/L-2.0D10-R0.20	7	3.5	9.5	6.0	2.0	10.0	0.2
07QR/L-3.5D12-R0.20	7	3.5	11.0	7.5	3.5	12.0	0.2
09QR/L-4.0D14-R0.20	9	4.7	13.5	9.0	4.0	14.0	0.2
09QR/L-6.0D16-R0.20	9	4.7	15.5	11.0	6.0	16.0	0.2
09QR/L-7.0D17-R0.20	9	4.7	16.5	12.0	7.0	17.0	0.2
11QR/L-4.0D16-R0.20	11	5.3	15.5	10.0	4.0	16.0	0.2
11QR/L-8.0D20-R0.20	11	5.3	19.5	14.0	8.0	20.0	0.2

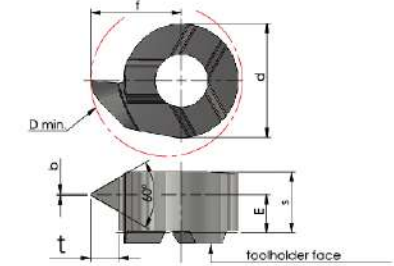
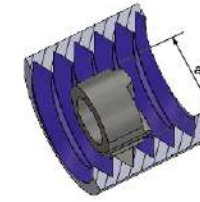


## Internal Chamfering



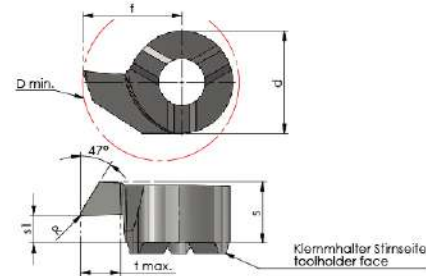
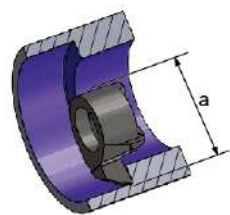
Designation (Internal)	d	S	a	f	E	tmax	Dmin	R
05CR-1.0D07-R0.20	5	3.3	6.5	3.7	1.4	1.0	7.0	0.2
07CR-2.0D09-R0.20	7	3.5	9.5	6.0	1.6	2.0	10.0	0.2

## Internal Threading ( Partial profile)



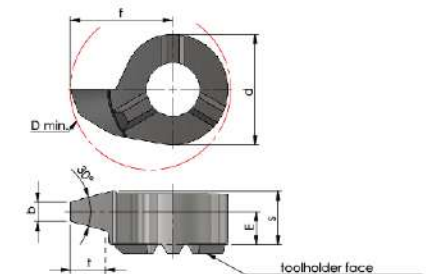
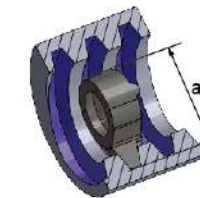
Designation (Internal)	Pitch		d	S	a	f	Size	E	tmax
	mm	TPI							
<b>MB</b> 04IR0.50-1.50-D07	0.50-1.50	48-16	4	2.6	5.3	3.7		2.8	0.81
05IR1.00-1.75-D07	1.00-1.75	24-14	5	3.3	6.8	4.3	M10x1.5, M12x1.5, M12x1.75	2.8	0.95
07IR1.00-2.00-D09	1.00-2.00	24-14	7	3.5	9.5	6.0	M12x1.75, M14x2	2.8	1.08
09IR1.50-3.00-D12	1.50-3.00	16-8	9	4.7	12.5	8.0	M20x2.5, M22x2.5, M24x3	3.55	1.35

## Back Boring



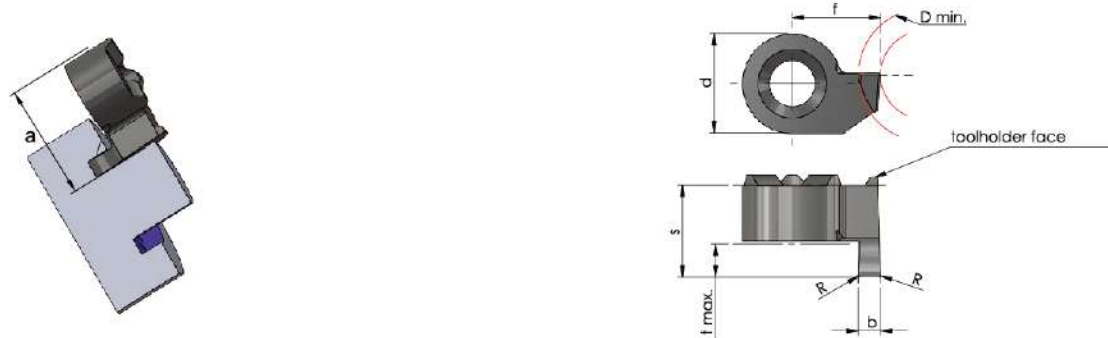
Designation (Internal)	d	S	S1	a	f	tmax	Dmin	R
05XR/L-1.5D07-R0.20	5	3.3	2.3	6.8	4.3	1.5	7.0	0.2
05XR/L-3.5D09-R0.20	5	3.3	2.3	8.5	5.5	3.5	9.0	0.2
07XR/L-2.0D10-R0.20	7	3.5	2.6	9.5	6.0	2.0	10.0	0.2
07XR/L-3.5D12-R0.20	7	3.5	2.6	11.0	7.5	3.5	12.0	0.2
09XR/L-4.0D14-R0.20	9	4.7	3.0	13.5	9.0	4.0	14.0	0.2
09XR/L-6.0D16-R0.20	9	4.7	3.0	15.5	11.0	6.0	16.0	0.2
09XR/L-7.0D17-R0.20	9	4.7	3.0	16.5	12.0	7.0	17.0	0.2
11XR/L-4.0D16-R0.20	11	5.3	3.5	15.5	10.0	4.0	16.0	0.2
11XR/L-8.0D20-R0.20	11	5.3	3.5	19.5	14.0	8.0	20.0	0.2

## Internal Threading ( Trapez DIN103)



Designation (Internal)	Pitch	b	d	S	a	f	tmax	Size	E
05IR/L-20TR-08R	2.0	0.60	5	3.3	7.2	4.7	1.25	Tr10x2, Tr11x2, Tr12x2	2.70
05IR/L-30TR-08R	3.0	0.96	5	3.3	7.5	5.0	1.75	Tr11x3, Tr12x3	2.40
07IR/L-30TR-10R	3.0	0.96	7	3.5	9.7	6.2	1.75	Tr14x3, Tr22x3, Tr26x3, Tr28x3	2.70
07IR/L-40TR-11R	4.0	1.33	7	3.5	10.2	6.7	2.25	Tr16x4, Tr18x4, Tr20x4	2.20
09IR/L-40TR-14R	4.0	1.33	9	4.7	12.5	8.0	2.25	Tr18x4, Tr20x4	2.20
09IR/L-50TR-14R	5.0	1.69	9	4.7	13.5	9.0	2.75	Tr22x5, Tr24x5, Tr26x5, Tr28x5	3.55
11IR/L-40TR-15R	4.0	1.33	11	5.3	14.5	9.0	2.25	Tr18x4, Tr20x4	4.00
11IR/L-50TR-16R	5.0	1.69	11	5.3	15.5	10.0	2.75	Tr22x5, Tr24x5, Tr26x5, Tr28x5	3.60
11IR/L-60TR-16R	6.0	1.92	11	5.3	15.7	10.2	3.50	Tr30x6, Tr36x6	3.30

## Face Grooving in Pivots(Square)



Designation (Internal)	b	S	f	a	d	tmax	Dmin	r
<b>MB</b> 09FER/L-B100-1.5D12	1.0	8.3	7.0	11.5	9	1.5	12	-
09FER/L-B150-2.5D12-R0.20	1.5	8.3	7.5	12.0	9	2.5	12	0.2
09FER/L-B200-3.0D12-R0.20	2.0	8.3	8.0	12.5	9	3.0	12	0.2
09FER/L-B300-3.0D12-R0.20	3.0	8.3	9.0	13.5	9	3.0	12	0.2
09FER/L-B200-5.0D12-R0.20	2.0	10.3	8.0	12.5	9	5.0	12	0.2
09FER/L-B300-5.0D12-R0.20	3.0	10.3	9.0	13.5	9	5.0	12	0.2
09FER/L-B300-6.0D12-R0.20	3.0	11.3	9.0	13.5	9	6.0	12	0.2

## Face Grooving in Pivots (Round)



Designation (Internal)	b	S	f	a	d	tmax	Dmin	r
<b>MB</b> 09FER/L-R100-1.5D12	1.0	8.3	7.0	11.5	9	1.5	12	0.50
09FER/L-R150-2.0D12	1.5	8.3	7.5	12.0	9	2.5	12	0.75
09FER/L-R200-3.0D12	2.0	8.3	8.0	12.5	9	3.0	12	1.00
09FER/L-R300-3.0D12	3.0	8.3	9.0	13.5	9	3.0	12	1.50
09FER/L-R200-5.0D12	2.0	10.3	8.0	12.5	9	5.0	12	1.00
09FER/L-R300-5.0D12	3.0	10.3	9.0	13.5	9	5.0	12	1.50
09FER/L-R300-6.0D12	3.0	11.3	9.0	13.5	9	6.0	12	1.50

## Face Grooving(Square)



Designation (Internal)	b	S	f	a	d	tmax	Dmin	r
<b>MB</b> 09FNR/L-B100-3.0D14	1.0	8.2	7.0	11.5	9	3	14	-
09FNR/L-B150-3.0D14-R0.20	1.5	8.2	7.5	12.0	9	3	14	0.2
09FNR/L-B200-3.0D14-R0.20	2.0	8.2	8.0	12.5	9	3	14	0.2
09FNR/L-B300-3.0D14-R0.20	3.0	8.2	9.0	13.5	9	3	14	0.2
09FNR/L-B200-5.0D14-R0.20	2.0	10.2	8.0	12.5	9	5	14	0.2
09FNR/L-B300-5.0D14-R0.20	3.0	10.2	9.0	13.5	9	5	14	0.2
09FNR/L-B300-6.0D14-R0.20	3.0	11.2	9.0	13.5	9	6	14	0.2

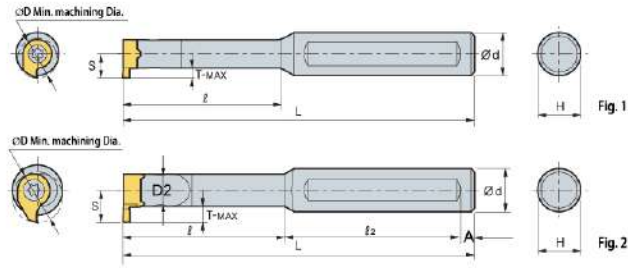
## Face Grooving(Round)



Designation (Internal)	b	S	f	a	d	tmax	Dmin	r
<b>MB</b> 09FNR/L-R100-3.0D14	1.0	8.3	7	11.5	9	3	14	0.50
09FNR/L-R150-3.0D14	1.5	8.3	7.5	12.0	9	3	14	0.75
09FNR/L-R200-3.0D14	2.0	8.3	8	12.5	9	3	14	1.00
09FNR/L-R300-3.0D14	3.0	8.3	9	13.5	9	3	14	1.50
09FNR/L-R200-5.0D14	2.0	10.3	8	12.5	9	5	14	1.00
09FNR/L-R300-5.0D14	3.0	10.3	9	13.5	9	5	14	1.50
09FNR/L-R300-6.0D14	3.0	10.3	9	13.5	9	6	14	1.50



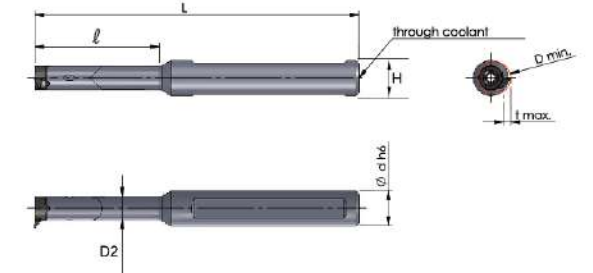
## Mini Carbide Boring Holder



### Internal grooving holder of steel shank

Designation	Stock		Dimensions(mm)								Insert	Spare parts	
	R	L	Dmin	d	D2	h	ℓ	ℓ2	L	S		screw	Wrench
MG H16-20-07R	●		10.0	16	7.0	15	20	50	120	6.0	MB-07	L0755SSTX3.0-4.0P	TPF-08
H16-30-09R	●		14.0	16	9.0	15	30	50	120	9.0	MB-09	L0960SSTX4.0-5.7P	TPF-15
H20-40-11R	●		18.0	20	11.0	19	40	50	130	12.0	MB-11	L1260SSTX5.0-7.0P	TPF-20
H12-18-05ST	●		7.0	12	6.7	11	18	45	80	4.3	MB-05	L0560SSTX2.2-3.0P	TPF-06
H16-20-07ST	●		10.0	16	8.5	15	20	50	120	6.0	MB-07	L0755SSTX3.0-4.0P	TPF-08
H16-30-09ST	●		14.0	16	11.0	15	30	50	120	9.0	MB-09	L0960SSTX4.0-5.7P	TPF-15
H20-40-11ST	●		18.0	20.0	13.5	19.0	40.0	50	130	12.0	MB-11	L1260SSTX5.0-7.0P	TPF-20
H12-16-04ST-N	●		6.0	12.0	5.2	11.0	16.0	45	80	3.7	MB-04	L0455SSTX1.8-2.7P	TPF-06
H12-18-05ST-N	●		7.0	12.0	6.7	11.0	18.0	45	80	4.3	MB-05	L0560SSTX2.2-3.0P	TPF-06
H16-20-07ST-N	●		10.0	16.0	8.5	15.0	20.0	50	120	6.0	MB-07	L0755SSTX3.0-4.0P	TPF-08
H16-30-09ST-N	●		14.0	16.0	11.0	15.0	30.0	50	120	9.0	MB-09	L0960SSTX4.0-5.7P	TPF-15
H20-40-11ST-N	●		18.0	20.0	13.5	19.0	40.0	50	130	12.0	MB-11	L1260SSTX5.0-7.0P	TPF-20

## Mini Carbide Boring Holder



### Internal grooving holder of carbide shank

Designation	Stock		Dimensions(mm)								Insert	Spare parts	
	R	L	Dmin	d	D2	H	ℓ	ℓ2	L	S		screw	Wrench
MG E12-20-05C	○		7.0	12	5	11	20	45	80	4.3	MB-05	L0560SSTX2.2-3.0P	TPF-06
E12-28-05C	○		7.0	12	5	11	28	45	90	4.3	MB-05	L0560SSTX2.2-3.0P	TPF-06
E12-36-05C	○		7.0	12	5	11	36	50	100	4.3	MB-05	L0560SSTX2.2-3.0P	TPF-06
E12-26-07C	○		10.0	12	7	11	26	45	90	6.0	MB-07	L0755SSTX3.0-4.0P	TPF-08
E12-37-07C	○		10.0	12	7	11	37	50	110	6.0	MB-07	L0755SSTX3.0-4.0P	TPF-08
E12-49-07C	○		10.0	12	7	11	49	50	110	6.0	MB-07	L0755SSTX3.0-4.0P	TPF-08
E12-34-09C	○		14.0	12	9	11	34	50	100	9.0	MB-09	L0960SSTX4.0-5.7P	TPF-15
E12-45-09C	○		14.0	12	9	11	45	50	110	9.0	MB-09	L0960SSTX4.0-5.7P	TPF-15
E12-56-09C	○		14.0	12	9	11	56	50	120	9.0	MB-09	L0960SSTX4.0-5.7P	TPF-15
E12-40-11C	○		18.0	9	9	8.5	-	50	120	12.0	MB-11	L1260SSTX5.0-7.0P	TPF-20
E12-56-11C	○		18.0	12	11	11	40	50	110	12.0	MB-11	L1260SSTX5.0-7.0P	TPF-20
E12-80-11C	○		18.0	12	11	11	56	50	120	12.0	MB-11	L1260SSTX5.0-7.0P	TPF-20
E04-00-04C	●		6.0	4	4	3.8	-	-	95	3.7	MB-04	L0455SSTX1.8-2.7P	TPF-06
E05-00-05C	●		7.0	5	5	4.7	-	-	95	4.3	MB-05	L0560SSTX2.2-3.0P	TPF-06
E07-00-07C	●		10.0	7	7	6.6	-	-	95	6.0	MB-07	L0755SSTX3.0-4.0P	TPF-08
E09-00-09C	●		14.0	9	9	8.5	-	-	125	9.0	MB-09	L0960SSTX4.0-5.7P	TPF-15
E11-00-11C	●		18.0	11	11	11.5	-	-	125	12.0	MB-11	L1260SSTX5.0-7.0P	TPF-20

## Grades System

### Cutting tool




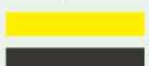


Tool Type	Grade	Material	Grades																																						
			TCP 9305	TCP 9215	TCP 9120	TCP 9225	TCP 9325	TCP 9335	TCP 9345	TPM 8115	TPM 8125	TPM 8135	TPM 8315	TPM 8325	TPM 8335	TPM 8345	TPM 8115	TPM 8125	TPM 8135	TPM 8315	TPM 8325	TPM 8335	TPM 8345	TPM 8115	TPM 8125	TPM 8135	TPM 8315	TPM 8325	TPM 8335	TPM 8345	TPM 8115	TPM 8125	TPM 8135	TPM 8315	TPM 8325	TPM 8335	TPM 8345	TPM 8115	TPM 8125	TPM 8135	TPM 8315
Uncoated carbide	P	Steel	TP20																																						
	M	Stainless steel	-																																						
	K	Cast iron	TPK01																																						
	N	Non-ferrous metal	TPK01																																						
	S	Heat resistant alloy, Titanium alloy	TPK01																																						
H	Hardened steel	-																																							
Coated carbide for turning	P	Steel	TCP 9305	TCP 9215	TCP 9120	TCP 9225	TCP 9325	TCP 9335	TCP 9345	TPM 8115	TPM 8125	TPM 8135																													
	M	Stainless steel	TPM 8115	TPM 8315	TPM 8125	TPM 8225	TPM 8135	TPM 930																																	
	K	Cast iron	TCK 5205	TCK 5305	TCK 5215	TCK 5315	TCK 5225	TCK 5325																																	
	N	Non-ferrous metal	TPDL 025																																						
	S	HRSA	TPM 8315	TPM 8125	TPM 8225	TPDL 025																																			
H	Hardened steel	HX 200	HX 400																																						
Coated carbide for milling	P	Steel	TCP 9330	TCP 9340	TCP 9350	TPM 8115	TPM 8125	TPM 8135	TPG 4235	TPK 4235H																															
	M	Stainless steel	TPM 8115	TPM 8315	TPM 8125	TPM 8225	TPM 8135	TPG 4235	TPK 4235H																																
	K	Cast iron	TCK 5205	TCK 5305	TCK 5215	TCK 5315	TCK 5225	TCK 5325	TPK 4235H																																
	N	Non-ferrous metal	TPDL 025																																						
	S	HRSA	TPM 8315	TPM 8125	TPM 8225	TPDL 025																																			
H	Hardened steel	HX 200	HX 400																																						
Turning cermet	P	Steel	TTIN 30	TTIN 3025																																					
	K	Cast iron	TTIN 30	TTIN 3025																																					

## The features of CVD turning grades


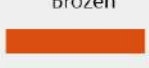



CVD Coated grades	ISO	Color	Recommend for application
TCP9305	P05 (P01-P10)	Black/Yellow 	<ul style="list-style-type: none"> <li>MT-TiCN+TiC+Al2O3+TiN</li> <li>Stable conditions for steel finishing can obtain high metal removal rate.</li> <li>Excellent resistance to crater wear and plastic deformation resistance. Recommended for stable conditions. Wet and dry processing</li> </ul>
TCP9215	P15 (P05-P20)	Black 	<ul style="list-style-type: none"> <li>MT-TiCN+Al2O3+TiN</li> <li>Wear-resistance materials coated on the gradient sintered substrate which has both good hardness and toughness. Can bear high temperatures.</li> <li>For steel and casting steel finishing to roughing processing. Continue cutting to light interrupted cutting.</li> </ul>
TCP9225	P25 (P15-P35) M15 (M10-M20)	Black 	<ul style="list-style-type: none"> <li>MT-TiCN+Al2O3+TiN</li> <li>Combining excellent fracture resistance substrate with chipping resistance and heat resistance Al2O3 increased stability, suitable for steel and cast steel continuous cutting and interrupted cutting finishing to roughing.</li> </ul>
TCP9325	P25 (P15-P35) M15 (M10-M20)	Black/Yellow 	<ul style="list-style-type: none"> <li>MT-TiCN+TiC+Al2O3+TiN</li> <li>Universal grade combining substrate with wear resistance and toughness and Al2O3 coating with oxidation resistance and fracture resistance, suitable for steel and cast steel continuous cutting and interrupted cutting finishing to roughing.</li> </ul>
TCP9120	P20 (P15-P25)	Yellow 	<ul style="list-style-type: none"> <li>MT-TiCN+TiC+Al2O3+TiN</li> <li>Universal grade combining substrate with wear resistance and toughness and Al2O3 coating with oxidation resistance and fracture resistance.</li> <li>Special treatment on the outermost layer. Suitable for steel and cast steel medium cutting to roughing.</li> </ul>
TCP9235	P35 (P25-P40) M35 (M25-M40)	Black 	<ul style="list-style-type: none"> <li>MT-TiCN+Al2O3+TiN High-strength alloy substrate with thick wear-resistant coating.</li> <li>interrupted cutting and roughing operations in steel and cast steel.</li> <li>Combining excellent fracture resistance substrate with chipping resistance and heat resistance Al2O3 increased stability in wide ranges of cutting conditions.</li> </ul>
TCP9335	P35 (P25-P40) M35 (M25-M40)	Black/Yellow 	<ul style="list-style-type: none"> <li>MT-TiCN+TiC+Al2O3+TiN High-strength alloy substrate with thick wear-resistant coating has good toughness and plastic deformation.</li> <li>Machining steel and cast steel in bad conditions, Edge line security for interrupted cutting and roughing operations high metal removal rate.</li> </ul>
TCP9345	P45 (P30-P50) M45 (M30-M50)	Black/Yellow 	<ul style="list-style-type: none"> <li>A tough carbide grade with a moderately thick TiN-MT-TiCN-Al2O3 coating for roughing operation of steel at lower cutting speed and unstable condition</li> <li>The substrate-coating combination provides unbelievable toughness and operational security allowing high metal removal rates even in most demanding interrupted cuts.</li> </ul>



## The features of CVD turning grades

CVD Coated grades	ISO	Color	Recommend for application
TCK5205	K10 (K05-K20)	Black 	<ul style="list-style-type: none"> <li>· MT-TiCN+Al<sub>2</sub>O<sub>3</sub>+TiN</li> <li>· CVD coated carbide combining extremely hard substrate can withstand high temperature without plastic deformation .</li> <li>· Recommended for ductile iron, high strength malleable cast iron and gray cast iron finish machining to semi finish machining.</li> </ul>
TCK5305	K10 (K05-K20)	Black/Yellow 	<ul style="list-style-type: none"> <li>· MT-TiCN+Al<sub>2</sub>O<sub>3</sub>+TiN</li> <li>· CVD coated carbide combining extremely hard substrate can withstand high temperature without plastic deformation .</li> <li>· Recommended for ductile iron, high strength malleable cast iron and gray cast iron finish machining to semi finish machining.</li> </ul>
TCK5215	K15 (K10-K25)	Black 	<ul style="list-style-type: none"> <li>· MT-TiCN+Al<sub>2</sub>O<sub>3</sub>+TiN</li> <li>· The excellent combination of high wear resistance substrate and MT-TiCN, thick Al<sub>2</sub>O<sub>3</sub>, TiN coating is the first choice of ductile iron and gray cast iron, which allows a higher cutting speed.</li> </ul>
TCK5315	K15 (K10-K25)	Black/Yellow 	<ul style="list-style-type: none"> <li>· MT-TiCN+Al<sub>2</sub>O<sub>3</sub>+TiN</li> <li>· The excellent combination of high wear resistance substrate and MT-TiCN, thick Al<sub>2</sub>O<sub>3</sub>, TiN coating is the first choice of ductile iron and gray cast iron, which allows a higher cutting speed.</li> </ul>
TCK5225	K25 (K20-K35)	Black 	<ul style="list-style-type: none"> <li>· MT-TiCN+Al<sub>2</sub>O<sub>3</sub>+TiN</li> <li>· The excellent combination of good wear resistance and toughness substrate and MT-TiCN, thick Al<sub>2</sub>O<sub>3</sub>, TiN coating is the first choice of ductile iron and gray cast iron for roughing cutting high metal remove rate.</li> </ul>
TCK5325	K25 (K20-K35)	Black/Yellow 	<ul style="list-style-type: none"> <li>· MT-TiCN+Al<sub>2</sub>O<sub>3</sub>+TiN</li> <li>· The excellent combination of good wear resistance and toughness substrate and MT-TiCN, thick Al<sub>2</sub>O<sub>3</sub>, TiN coating is the first choice of ductile iron and gray cast iron for roughing cutting high metal remove rate.</li> </ul>

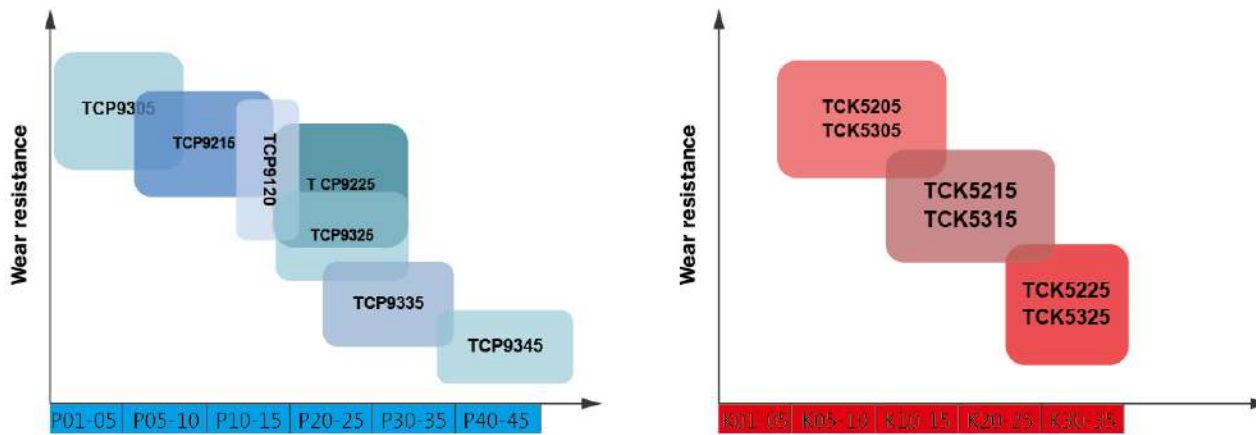
## The features of PVD turning grades

PVD Coated grades	ISO	Color	Recommend for application
TPM8115	P15 (P05-P25) M15 (M05-M25)	Gray dark 	<ul style="list-style-type: none"> <li>· 2-4μm TiAlN PVD coating combined with the submicron crystal matrix, it has excellent film-base adhesion, abrasion resistance and heat resistance.</li> <li>· Suitable for stainless steel, heat-resistant alloy and other materials under stable working conditions finishing.</li> </ul>
TPM8315	P15 (P05-P25) M15 (M05-M25) S10 (S05-S25)	Brozen 	<ul style="list-style-type: none"> <li>· 3-5μm AlTiN PVD coating combined with ultra fine particles' substrates with high-toughness suitable for a variety of steel, stainless steel &amp; super alloy at high speed and continue machining.</li> <li>· Optimized coating stability for higher wear resistance and thermal stability in a wide application field.</li> </ul>
TPM8125	P25 (P15-P35) M25 (M15-M35) K25 (K15-K35) S20 (S15-S30)	Gray dark 	<ul style="list-style-type: none"> <li>· 2-4μm TiAlN PVD coating combined with ultra fine particles' substrates with high-toughness suitable for a variety of steel, stainless steel, cast iron &amp; high temperature alloy in finishing to semi-finishing.</li> <li>· High thermal shock resistance is suitable for light interrupted cuts.</li> </ul>
TPM8225	M20 (M15-M25) S15 (S10-S20) H10 (H05-H15)	Golden 	<ul style="list-style-type: none"> <li>· Universal grade for stainless, HRSA &amp; high-temperature high hardness alloy machining.</li> <li>· High chipping and welding resistance for longer tool life.</li> <li>· 2-4μm AlCrN+AlCrSiN PVD coating combined with ultra fine particles' substrates with high-toughness suitable for stainless steel, high-temperature high hardness alloy &amp; HRSA in finishing to semi-finishing.</li> </ul>
TPM8135	P35 (P20-P40) M35 (M30-M40)	Gray dark 	<ul style="list-style-type: none"> <li>· PVD coating combined with high-resistant substrates, suitable for stainless steel &amp; low carbon steel in roughing to semi-finishing.</li> <li>· Good wear resistance and toughness</li> </ul>

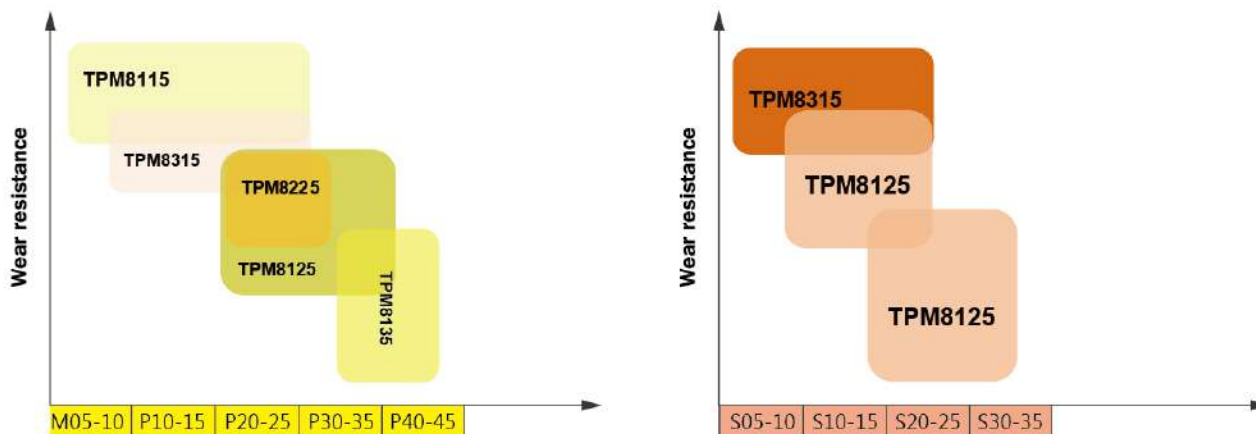
## General turning

### Application fields of grades

CVD grades for steel, stainless steel and cast iron



PVD grades for stainless steel and heat-resistant alloys



## Description of Chipbreaker

### Negative inserts

ISO	Geometry	Application range											Features			
		feed rate (mm/rev)														
		0.04	0.063	0.1	0.16	0.25	0.40	0.63	1.00	1.60	2.50	4.00		6.30		
depth of cut (mm)																
		0.10	0.16	0.25	0.40	0.63	1.00	1.60	2.50	4.00	6.30	10.00	11.6	13	15	
P	GF 				0.05-0.3				0.05-1.0							For steel finishing turning • Stable chip control in high toughness material; low carbon steel, pipe steel & steel plates. • Improved chip control for facing, copy machining and better surface finish.
P M K	GM 				0.15-0.5					1.5-5.0						For medium turning • With broad applied range. • High reliability and universality with fault-free cutting. This chipbreaker matches with wear-resisting grade will be better. • Strong cutting edge strength provide good performance at intermittent and fast feed cutting.
P	HQ 				0.15-0.3				0.5-2.0							For semi-finishing machining • The front angle and double point design can provide good sharpness and widely chip processing performance.
P	TM 				0.2-0.5				1.0-5.0							For semi-finishing machining • High universality, easy chip-flow, special bulge close to the nose radius and big rake angle generate the cutting ability and low cutting force of chip breaker.
P M	S 				0.15-0.35				0.5-4.0							For Medium to Roughing of turning • The large front angle design greatly reduces the cutting resistance, and the special design can reduce the boundary wear.
P K	GR 						0.3-0.8					3.0-12.0				For light load roughing • M class double chip breaker, metal removal rate and edge economy can have it all.
P K	ZR 						0.3-1.0						5.0-15.0			For heavy load roughing • M class double chip breaker, tough edge, with a high security, strong ability to resist plastic deformation at high removal rate.



## Description of Chipbreaker

### Negative inserts

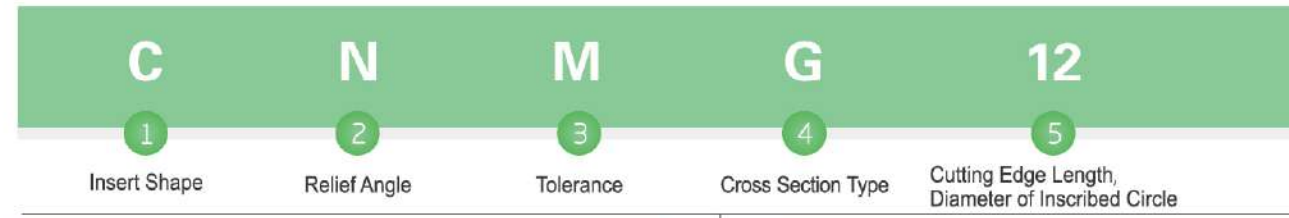
ISO	Geometry	Application range	Features
ISO	Geometry	feed rate (mm/rev)	Features
		depth of cut (mm)	
P K	Standard	0.2-0.5 5.0-15.0	For General cutting <ul style="list-style-type: none"> <li>With broad applied range for steel and cast iron.</li> <li>High cutting edge hardness, low cutting resistance force, easy chip-flow. Combined with more abrasive grade can get better efficiency.</li> </ul>
P K	GR	0.3-1.0 3.0-15.0	For Heavy duty cutting <ul style="list-style-type: none"> <li>Suitable for heavy duty cutting due to strong cutting edge.</li> <li>Wide chip control range with low cutting force.</li> </ul>
P M	MA	0.15-0.5 0.2-6.0	For semi-finishing machining <ul style="list-style-type: none"> <li>First recommendation for medium cutting of carbon steel and alloy steel</li> <li>Alternative chipbreaker for finishing and light cutting of cast iron.</li> <li>Suitable for general field. Positive edge shape of blade, performance of sharp cutting.</li> </ul>
M S	BF	0.05-0.3 0.1-1.0	For stainless finishing turning <ul style="list-style-type: none"> <li>semi-finishing to finishing under with high efficiency high feed rate is adopted under the condition of small cutting depth.</li> <li>Due to the latest chipbreaker design, it can obtain good chip control and good machining surface accuracy.</li> <li>The extremely sharp edge and high rake angle design especially is suitable for stainless steel &amp; softy steel.</li> </ul>
M	BM	0.1-0.3 0.5-1.5	For semi-finishing machining <ul style="list-style-type: none"> <li>Has a wide range of applications for stainless steel.</li> <li>Can effectively solve machining difficulties such as chip breaking and sticking phenomenon in the stainless steel processing, which can obtain higher machining efficiency.</li> </ul>
M S N	HA	0.03-0.3 0.06-1.7	For Light-alloy, Stainless-steel machining <ul style="list-style-type: none"> <li>Sharp cutting edge generates low cutting force.</li> <li>Specially designed tough main cutting edge.</li> <li>Suitable for cutting of low carbon steel, stainless steel, aluminum.</li> </ul>
M	HS	0.1-0.4 1.0-4.0	For Medium cutting of stainless steel <ul style="list-style-type: none"> <li>Exclusive design for stainless steel cutting provide longer tool life.</li> <li>Wear resistance have been reinforced through high rake angle of chip breaker land.</li> </ul>
K	No slot	0.05-0.6 0.3-12.0	For Roughing turning <ul style="list-style-type: none"> <li>For grey and nodular cast-iron.</li> <li>Broad application range for roughing.</li> </ul>

## Description of Chipbreaker

### Positive inserts

ISO	Geometry	Application range	Features
ISO	Geometry	feed rate (mm/rev)	Features
		depth of cut (mm)	
P M	HF	0.05-0.3 0.1-2.0	For finishing turning <ul style="list-style-type: none"> <li>Excellent chip control in steel, stainless steel, grey and nodular cast-iron.</li> <li>Suitable for both boring and outer diameter turning.</li> </ul>
P M	HM	0.2-0.5 1.0-4.0	For semi-finishing turning <ul style="list-style-type: none"> <li>Excellent chip control at wide range of cutting conditions</li> <li>Suitable for stainless steel cutting.</li> </ul>
P M K	HR	0.3-0.7 3.0-7.0	For roughing turning <ul style="list-style-type: none"> <li>suitable for internal and external roughing of steel, stainless steel and cast iron material.</li> </ul>
N	AL	0.03-0.4 0.1-4.0	For Aluminum cutting <ul style="list-style-type: none"> <li>Wide available chip control range from medium-finishing to medium-roughing.</li> <li>High speed of finishing operation.</li> </ul>
S	SL	0.03-0.3 0.06-1.7	For finishing turning <ul style="list-style-type: none"> <li>Suitable for finishing machining of heat resistance alloy, titanium alloy and other aerospace parts.</li> <li>Light cutting chip breaker with low cutting force, high reliability and universality. Problem free cutting.</li> </ul>





### 1 Insert Shape

C N M G 12 04 08 - GM

### 3 Tolerance

C N M G 12 04 08 - GM

Class	d	m	t
A	±0.025	±0.005	±0.025
C	±0.025	±0.013	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J*	±0.05 ~ ±0.15	±0.005	±0.025
K*	±0.05 ~ ±0.15	±0.013	±0.025
L*	±0.05 ~ ±0.15	±0.025	±0.025
M*	±0.05 ~ ±0.15	±0.08 ~ ±0.20	±0.13
N*	±0.05 ~ ±0.15	±0.08 ~ ±0.18	±0.025
U*	±0.08 ~ ±0.25	±0.13 ~ ±0.38	±0.13

\* Sides are based on unground insert

Toleran ce on C,E,H,MO,P,R,S,T,W Insert Sha pe (Excepti onal case)

d	Toleran ce on d				Toleran ce on m	
	J, K, L, M, N	U	M, N	U		
6.35	±0.05	±0.08	±0.08	±0.13		
9.525	±0.05	±0.08	±0.08	±0.13		
12.7	±0.08	±0.13	±0.13	±0.20		
15.875	±0.10	±0.18	±0.15	±0.27		
19.05	±0.10	±0.18	±0.15	±0.27		
25.4	±0.13	±0.25	±0.18	±0.38		

Toleran ce on D Insert Sha pe (Excepti onal case)

d	Toleran ce on d		Toleran ce on m	
6.35	±0.05		±0.11	
9.525	±0.05		±0.11	
12.7	±0.08		±0.15	
15.875	±0.10		±0.18	
19.05	±0.10		±0.18	

### 2 Relief Angle

C N M G 12 04 08 - GM

### 4 Cross Section Type

C N M G 12 04 08 - GM



### 5 Cutting Edge Length, Diameter of Incribed Circle

C N M G 12 04 08 - GM

Symbol										IC
C	d	S	T	R	Y	W	Inch	d(mm)		
03	04	03	06	03	02	1.2(5)		3.97		
04	05	04	08	04	08	S3	1.5(6)	4.76		
05	06	05	09	05	09	03	1.8(7)	5.56		
-	-	-	-	06	-	-	-	6.00		
06	07	06	11	06	11	04	2	6.35		
08	09	07	13	07	13	05	2.5	7.94		
-	-	-	-	08	-	-	-	8.00		
09	11	09	16	09	16	06	3	9.525		
-	-	-	-	10	-	-	-	10.00		
11	13	11	19	11	19	07	3.5	11.11		
-	-	-	-	12	-	-	-	12.00		
12	15	12	22	12	22	08	4	12.70		
14	17	14	24	14	24	09	4.5	14.29		
16	19	15	27	15	27	10	5	15.875		
-	-	-	-	16	-	-	-	16.00		
17	21	17	30	17	30	11	5.5	17.46		
19	23	19	33	19	33	13	6	19.05		
-	-	-	-	20	-	-	-	20.00		
22	27	22	38	22	38	15	7	22.225		
-	-	-	-	25	-	-	-	25.00		
25	31	25	44	25	44	17	8	25.40		
32	38	31	54	31	54	21	10	31.75		
-	-	-	-	32	-	-	-	32.00		

( ) Symbol for small size insert

### 7 Nose Radius (Nose R)

C N M G 12 04 08 - GM

Symbol		Corner Radius	
Metric	Inch	Metric	Inch
01	0	0.1	0.004
02	0.5	0.2	0.008
04	1	0.4	1/64
08	2	0.8	1/32
12	3	1.2	3/64
16	4	1.6	1/16
20	5	2.0	5/64
24	6	2.4	3/32
28	7	2.8	7/64
32	8	3.2	1/8
00	-	Roundinsert (Inch)	
M0	-	Roundinsert (Metric)	

### 6 Height of Cutting Edge

C N M G 12 04 08 - GM

Symbol	Height of Cutting Edge(t)	
	mm	Inch
01	1.59	1/16
T0	1.125	9/128
T1	1.2	5/64
02	1.5(3)	3/32
T2	1.75	7/64
03	2	1/8
T3	2.5	5/32
04	3	3/16
05	3.5	7/32
06	4	1/4
07	5	5/16
09	6	3/8
11	7	7/16
12	8	1/2

( ) Symbol for small size insert

### 8 Chip Breaker for Turning

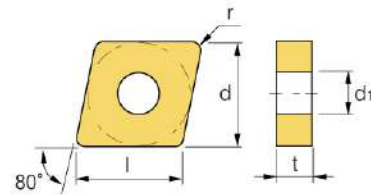
C N M G 12 04 08 - GM



# Turning Insert (Negative)

## CN00

Rhombic 80° Negative



Workpiece	Machining types	
	Continuous cutting	General cutting
Steel	P	●
Stainless steel	M	●
Cast iron	K	●
Non-ferrous metal	N	●
Heat resistant alloy, Titanium alloy	S	●
Hardened steel	H	●

Inserts	Designation	Coated													Uncoated		Dimensions(mm)				
		TCP9305	TCP9215	TCP9120	TCP9225	TCP9335	TCP9345	TPM8115	TPM8215	TPM8135	TPM8305	TCK5205	TCK5215	TCK5315	TCK5225	TCK5325	TP20	TPK01	l	d	t

	120404																				12.4	12.7	4.76	5.16	0.4	
	120408																					12.0	12.7	4.76	5.16	0.8
	120412																					11.6	12.7	4.76	5.16	1.2
	120416																					11.2	12.7	4.76	5.16	1.6
	160608																					15.3	15.875	6.35	6.35	0.8
	160612																					14.8	15.875	6.35	6.35	1.2
	160616																					14.4	15.875	6.35	6.35	1.6
	190608																					18.5	19.05	6.35	7.93	0.8
	190612																					18.1	19.05	6.35	7.93	1.2
190616																					17.7	19.05	6.35	7.93	1.6	

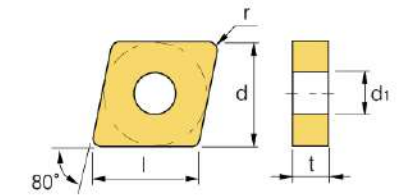
	120404																				12.4	12.7	4.76	5.16	0.4	
	120408																					12.0	12.7	4.76	5.16	0.8
	120412																					11.6	12.7	4.76	5.16	1.2
	120416																					11.2	12.7	4.76	5.16	1.6
	160608																					15.3	15.875	6.35	6.35	0.8
	160612																					14.8	15.875	6.35	6.35	1.2
	160616																					14.4	15.875	6.35	6.35	1.6
190608																					18.5	19.05	6.35	7.93	0.8	
190612																					18.1	19.05	6.35	7.93	1.2	
190616																					17.7	19.05	6.35	7.93	1.6	

	090304-GF																				9.2	9.525	3.18	3.81	0.4	
	090308-GF																					8.8	9.525	3.18	3.81	0.8
	120404-GF																					12.4	12.7	4.76	5.16	0.4
	120408-GF																					12.0	12.7	4.76	5.16	0.8
	120412-GF																					11.6	12.7	4.76	5.16	1.2

	090304-GM																				9.2	9.525	3.18	3.81	0.4	
	090308-GM																					8.8	9.525	3.18	3.81	0.8
	120404-GM																					12.4	12.7	4.76	5.16	0.4
	120408-GM																					12.0	12.7	4.76	5.16	0.8
	120412-GM																					11.6	12.7	4.76	5.16	1.2
	120416-GM																					11.2	12.7	4.76	5.16	1.6
	160608-GM																					15.3	15.875	6.35	6.35	0.8
	160612-GM																					14.8	15.875	6.35	6.35	1.2
	160616-GM																					14.4	15.875	6.35	6.35	1.6
	190608-GM																					18.5	19.05	6.35	7.93	0.8
190612-GM																					18.1	19.05	6.35	7.93	1.2	
190616-GM																					17.7	19.05	6.35	7.93	1.6	

## CN00

Rhombic 80° Negative



Workpiece	Machining types	
	Continuous cutting	General cutting
Steel	P	●
Stainless steel	M	●
Cast iron	K	●
Non-ferrous metal	N	●
Heat resistant alloy, Titanium alloy	S	●
Hardened steel	H	●

Inserts	Designation	Coated													Uncoated		Dimensions(mm)				
		TCP9305	TCP9215	TCP9120	TCP9225	TCP9335	TCP9345	TPM8115	TPM8215	TPM8135	TPM8305	TCK5205	TCK5215	TCK5315	TCK5225	TCK5325	TP20	TPK01	l	d	t

	090308-GR																								8.8	9.525	3.18	3.81	0.8
	120404-GR																					12.4	12.7	4.76	5.16	0.4			
	120408-GR																					12.0	12.7	4.76	5.16	0.8			
	120412-GR																					11.6	12.7	4.76	5.16	1.2			
	120416-GR																					11.2	12.7	4.76	5.16	1.6			
	160608-GR																					15.3	15.875	6.35	6.35	0.8			
	160612-GR																					14.8	15.875	6.35	6.35	1.2			
	160616-GR																					14.4	15.875	6.35	6.35	1.6			
	190608-GR																					18.5	19.05	6.35	7.93	0.8			
	190612-GR																					18.1	19.05	6.35	7.93	1.2			
	190616-GR																					17.7	19.05	6.35	7.93	1.6			
	190624-GR																					16.8	19.05	6.35	7.93	2.4			
250724-GR																					23.3	25.4	7.94	9.12	2.4				
250924-GR																					23.3	25.4	9.52	9.12	2.4				

	120408-ZR																				12.0	12.7	4.76	5.16	0.8	
	120412-ZR																					11.6	12.7	4.76	5.16	1.2
	120416-ZR																					11.2	12.7	4.76	5.16	1.6
	160608-ZR																					15.3	15.875	6.35	6.35	0.8
	160612-ZR																					14.8	15.875	6.35	6.35	1.2
	160616-ZR																					14.4	15.875	6.35	6.35	1.6
	190608-ZR																					18.5	19.05	6.35	7.93	0.8
	190612-ZR																					18.1	19.05	6.35	7.93	1.2
	190616-ZR																					17.7	19.05	6.35	7.93	1.6
	190624-ZR																					16.8	19.05	6.35	7.93	2.4
250724-ZR																					23.3	25.4	7.94	9.12	2.4	
250924-ZR																					23.3	25.4	9.52	9.12	2.4	

	120404-HA																				12.4	12.7	4.76	5.16	0.4	
	120408-HA																					12.0	12.7	4.76	5.16	0.8
	120412-HA																					11.6	12.7	4.76	5.16	1.2























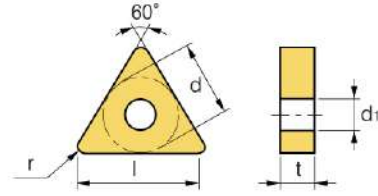




# Turning Insert (Negative)

## TN00

Triangular 60° Negative

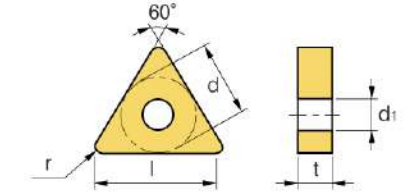


Workpiece	Machining types												
	P	M	K	N	S	H	●	⊙	⊕	⊗	⊘	⊙	⊕
Steel	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	Coated													Uncoated					Dimensions(mm)						
		TC99205	TC99215	TC99220	TC99225	TC99235	TC99235	TC99235	TPM8115	TPM8125	TPM8125	TPM8135	TPM930	TK65205	TK65215	TK65315	TK65225	TK65325	TP20	TRK01	l	d	t	d1	r	
	110304-GM																				10.0	6.35	3.81	2.4	0.4	
	110308-GM																					9.0	6.35	3.81	2.4	0.8
	160404-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	15.5	9.525	4.76	3.81	0.4	
	160408-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	14.5	9.525	4.76	3.81	0.8	
	160412-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	13.5	9.525	4.76	3.81	1.2	
	160416-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	12.5	9.525	4.76	3.81	1.6	
	220404-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	21.0	12.7	4.76	5.16	0.4	
	220408-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	20.0	12.7	4.76	5.16	0.8	
	220412-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19.0	12.7	4.76	5.16	1.2	
	220416-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18.2	12.7	4.76	5.16	1.6	
270608-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	25.4	15.875	6.35	6.35	0.8		
270612-GM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	24.4	15.875	6.35	6.35	1.2		
	160404-GR																				15.5	9.525	4.76	3.18	0.4	
	160408-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	14.5	9.525	4.76	3.18	0.8	
	160412-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	13.5	9.525	4.76	3.18	1.2	
	160416-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	12.5	9.525	4.76	3.18	1.6	
	220404-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	21.0	12.7	4.76	3.18	0.4	
	220408-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	20.0	12.7	4.76	5.16	0.8	
	220412-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	19.0	12.7	4.76	5.16	1.2	
	220416-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	18.2	12.7	4.76	5.16	1.6	
270608-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	25.4	15.875	6.35	6.35	0.8		
270612-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	24.4	15.875	6.35	6.35	1.2		
270616-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	23.3	15.875	6.35	6.35	1.6		
330924-GR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	27.1	15.875	9.52	7.93	2.4		
	160408-ZR		●	●																	14.5	9.525	4.76	3.18	0.8	
	160412-ZR		●	●																		13.5	9.525	4.76	3.18	1.2
	160416-ZR		●	●																		12.5	9.525	4.76	3.18	1.6
	220408-ZR		●	●																		20.0	12.7	4.76	5.16	0.8
	220412-ZR		●	●																		19.0	12.7	4.76	5.16	1.2
	220416-ZR		●	●																		18.2	12.7	4.76	5.16	1.6
	270608-ZR		●	●																		25.4	15.875	6.35	6.35	0.8
	270612-ZR		●	●																		24.4	15.875	6.35	6.35	1.2
270616-ZR		●	●																		23.3	15.875	6.35	6.35	1.6	
330924-ZR		●	●																		27.1	15.875	9.52	7.93	2.4	

## TN00

Triangular 60° Negative



Workpiece	Machining types												
	P	M	K	N	S	H	●	⊙	⊕	⊗	⊘	⊙	⊕
Steel	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	Coated													Uncoated					Dimensions(mm)						
		TC99205	TC99215	TC99220	TC99225	TC99235	TC99235	TC99235	TPM8115	TPM8125	TPM8125	TPM8135	TPM930	TK65205	TK65215	TK65315	TK65225	TK65325	TP20	TRK01	l	d	t	d1	r	
	160404-HA																				15.5	9.525	4.76	3.81	0.4	
	160408-HA																					14.5	9.525	4.76	3.81	0.8
	160412-HA																					13.5	9.525	4.76	3.81	1.2
	160404-HS																				15.5	9.525	4.76	3.81	0.4	
	160408-HS																					14.5	9.525	4.76	3.81	0.8
	160412-HS																					13.5	9.525	4.76	3.81	1.2
	160404R/L-S	●	●																		15.5	9.525	4.76	3.81	0.4	
	160408R/L-S	●	●																			14.5	9.525	4.76	3.81	0.8
	160412R/L-S	●	●																			13.5	9.525	4.76	3.81	1.2







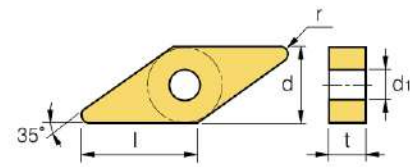







# Turning Insert (Negative)

## VN00

### Rhombic 35° Negative

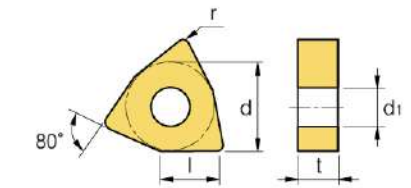


Workpiece	Steel		Stainless steel		Cast iron		Non-ferrous metal		Heat resistant alloy, Titanium alloy		Hardened steel		Machining types
	P	M	K	N	S	H	Continuous cutting	General cutting	Interrupted cutting				
Steel	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel		●	●	●	●	●	●	●	●	●	●	●	●
Cast iron			●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal				●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy					●	●	●	●	●	●	●	●	●
Hardened steel						●	●	●	●	●	●	●	●




Inserts	Designation	Coated														Uncoated	Dimensions(mm)												
		TCP9305	TCP9215	TCP9120	TCP9225	ICP9325	TCP9335	TCP9345	TPM8115	TPM8315	TPM8125	TPM8225	TPM8135	TPM930	TCK5205	TCK5305	TCK5215	TCK5315	TCK5225	TCK5325	TPK20	TPK01	l	d	t	d1	r		
VNMG-MA  Medium	160404-MA	●	●	●	●	●	●																15.6	9.525	4.76	3.81	0.4		
	160408-MA	●	●	●	●	●	●				●	●												14.6	9.525	4.76	3.81	0.8	
	160412-MA	●	●	●	●	●	●				●	●												13.6	9.525	4.76	3.81	1.2	
VNMG-BF  Finishing	160404-BF												●	●										15.6	9.525	4.76	3.81	0.4	
	160408-BF												●	●											14.6	9.525	4.76	3.81	0.8
	160412-BF												●	●											13.6	9.525	4.76	3.81	1.2
VNMG-BM  Medium	160404-BM													●	●									15.6	9.525	4.76	3.18	0.4	
	160408-BM													●	●										14.6	9.525	4.76	3.18	0.8
	160412-BM													●	●										13.6	9.525	4.76	3.18	1.2

## WN00

### Trigon 80° Negative



Workpiece	Steel		Stainless steel		Cast iron		Non-ferrous metal		Heat resistant alloy, Titanium alloy		Hardened steel		Machining types
	P	M	K	N	S	H	Continuous cutting	General cutting	Interrupted cutting				
Steel	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel		●	●	●	●	●	●	●	●	●	●	●	●
Cast iron			●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal				●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy					●	●	●	●	●	●	●	●	●
Hardened steel						●	●	●	●	●	●	●	●

Inserts	Designation	Coated														Uncoated	Dimensions(mm)													
		TCP9305	TCP9215	TCP9120	TCP9225	ICP9325	TCP9335	TCP9345	TPM8115	TPM8315	TPM8125	TPM8225	TPM8135	TPM930	TCK5205	TCK5305	TCK5215	TCK5315	TCK5225	TCK5325	TPK20	TPK01	l	d	t	d1	r			
WNMA  Roughing	060404																							6.2	9.525	4.76	3.81	0.4		
	060408																								6.1	9.525	4.76	3.81	0.8	
	060412																								6.0	9.525	4.76	3.81	1.2	
	080404														●	●	●	●	●	●	●	●	●		8.4	12.7	4.76	5.16	0.4	
	080408														●	●	●	●	●	●	●	●	●		8.3	12.7	4.76	5.16	0.8	
	080412														●	●	●	●	●	●	●	●	●		8.2	12.7	4.76	5.16	1.2	
	080416														●	●	●	●	●	●	●	●	●		8.1	12.7	4.76	5.16	1.6	
WNMG  Medium to Roughing	060404																								6.2	9.525	4.76	3.81	0.4	
	060408																									6.1	9.525	4.76	3.81	0.8
	060412																									6.0	9.525	4.76	3.81	1.2
	080404																									8.4	12.7	4.76	5.16	0.4
	080408														●	●	●	●	●	●	●	●	●	●		8.3	12.7	4.76	5.16	0.8
	080412														●	●	●	●	●	●	●	●	●	●		8.2	12.7	4.76	5.16	1.2
	080416														●	●	●	●	●	●	●	●	●	●		8.1	12.7	4.76	5.16	1.6
WNMG-GF  Finishing	060404-GF	●	●	●	●	●	●																		6.2	9.525	4.76	3.81	0.4	
	060408-GF	●	●	●	●	●	●																			6.1	9.525	4.76	3.81	0.8
	060412-GF	●	●	●	●	●	●																			6.0	9.525	4.76	3.81	1.2
	080404-GF	●	●	●	●	●	●																			8.4	12.7	4.76	5.16	0.4
	080408-GF	●	●	●	●	●	●																			8.3	12.7	4.76	5.16	0.8
	080412-GF	●	●	●	●	●	●																			8.2	12.7	4.76	5.16	1.2



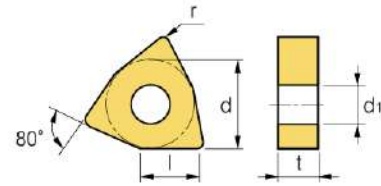




# Turning Insert (Negative)

## WN000

Trigon **80° Negative**

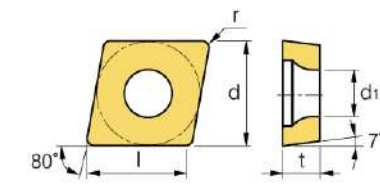


Workpiece	Machining types																	
	P	M	K	N	S	H	●	⊙	⊕	⊖	⊗	⊘	⊙	⊕	⊖	⊗	⊘	⊙
Steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	Coated																Uncoated					Dimensions(mm)					
		TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TP	TP	TP	TP	TP	TP	l	d	t	d1	r
Medium	080404-TM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	8.4	12.7	4.76	5.16	0.4	
	080408-TM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	8.3	12.7	4.76	5.16	0.8	
	080412-TM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	8.2	12.7	4.76	5.16	1.2	
Medium	060404-MA																						6.2	9.525	4.76	3.81	0.4	
	060408-MA																							6.1	9.525	4.76	3.81	0.8
	080404-MA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	8.4	12.7	4.76	5.16	0.4	
	080408-MA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	8.3	12.7	4.76	5.16	0.8	
	080412-MA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	8.2	12.7	4.76	5.16	1.2	
Medium	060404-BF																						6.2	9.525	4.76	3.81	0.4	
	060408-BF																							6.1	9.525	4.76	3.81	0.8
	080404-BF							●	●														8.4	12.7	4.76	5.16	0.4	
	080408-BF							●	●														8.3	12.7	4.76	5.16	0.8	
	080412-BF								●	●													8.2	12.7	4.76	5.16	1.2	
Medium	060404-BM																						6.2	9.525	4.76	3.81	0.4	
	060408-BM																							6.1	9.525	4.76	3.81	0.8
	080404-BM							●	●														8.4	12.7	4.76	5.16	0.4	
	080408-BM							●	●														8.3	12.7	4.76	5.16	0.8	
	080412-BM								●	●													8.2	12.7	4.76	5.16	1.2	

## CC000

Rhombic **80° Positive**  
Relief Angle : 7°



Workpiece	Machining types																		
	P	M	K	N	S	H	●	⊙	⊕	⊖	⊗	⊘	⊙	⊕	⊖	⊗	⊘	⊙	
Steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	Coated																Uncoated					Dimensions(mm)						
		TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TC	TP	TP	TP	TP	TP	TP	l	d	t	d1	r		
Roughing	060204																						6.0	6.35	2.38	2.8	0.4		
	060208																							5.6	6.35	2.38	2.8	0.8	
	09T304																							9.2	9.525	3.97	4.4	0.4	
	09T308																								8.8	9.525	3.97	4.4	0.8
	120404																								12.4	12.7	4.76	5.5	0.4
	120408																									12.0	12.7	4.76	5.5
Finishing	060202-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		6.2	6.35	2.38	2.8	0.2		
	060204-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		6.0	6.35	2.38	2.8	0.4	
	060208-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		5.6	6.35	2.38	2.8	0.8	
	09T302-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		9.4	9.525	3.97	4.4	0.2	
	09T304-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		9.2	9.525	3.97	4.4	0.4	
	09T308-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		8.8	9.525	3.97	4.4	0.8	
	120404-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		12.4	12.7	4.76	5.5	0.4	
	120408-HF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		12.0	12.7	4.76	5.5	0.8	
Medium	060202-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		6.2	6.35	2.38	2.8	0.2		
	060204-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		6.0	6.35	2.38	2.8	0.4	
	060208-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		5.6	6.35	2.38	2.8	0.8	
	09T302-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		9.4	9.525	3.97	4.4	0.2	
	09T304-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		9.2	9.525	3.97	4.4	0.4	
	09T308-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		8.8	9.525	3.97	4.4	0.8	
	120404-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		12.4	12.7	4.76	5.5	0.4	
120408-HM	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		12.0	12.7	4.76	5.5	0.8		

























# Ceramic Grades

Excellent wear resistance and good impact resistance.

Excellent heat resistance, high oxidation resistance and high thermal shock resistance, so the cutting speed can generally be higher than carbide cutting tool 3-10 times, can realize high speed cutting and dry cutting to substantially improve production efficiency and reduce the cost of production.



## Features of Ceramic

Classification	Symbol	Density (g/cm <sup>3</sup> )	Main Component	Hardness of Substrate (Gpa)	Fracture Toughness (MPa.m <sup>1/2</sup> )	Transverse Strength (Mpa)	Advantages and Applications
<b>H</b>	TT01	4.40	Al <sub>2</sub> O <sub>3</sub> +TiCN	20.0	≥5.5	750-950	· Application : Semi-roughing to finishing turning and interrupted milling of high hardness steel and cast iron. It is most suitable for cutting manganese steel and high strength steel.
<b>k</b>	TT03	4.80	Al <sub>2</sub> O <sub>3</sub> +TiCN	19.0	≥6.0	700-900	· Application : It is most suitable for cutting all kinds of high hardness alloy steel and alloy cast iron, especially for cutting ductile cast iron and boron-containing cast iron. It can be used for semi-roughing to finishing turning and interrupted milling.
	TT03N	4.60	Al <sub>2</sub> O <sub>3</sub> +TiCN (TiN COAT)	20.1	≥6.0	800-1000	
<b>k</b>	TS01	3.40	Si <sub>3</sub> N <sub>4</sub> +TiCN	17.0	≥6.5	800-1000	· Application : Roughing and high speed machining of cast iron, especially the nickel-based heat-resistant alloy has a good effect in cutting and can be used for high-feed processing and intermittent milling.

## Ceramic Inserts Identification System

### ● Identification System



### ● Edge Preparation Identification System

Table 1

Edge Prep.	Symbol	Cutting Edge Spec.	Example	Shape
S		Chamfered and Honed Cutting Edge	S01525 0.15mm x 25° Chamfered and Honed Cutting Edge	
T		Chamfered Cutting Edge	T02025 0.20mm x 25° Chamfered Cutting Edge	

● See Page B3 for insert color

## Ceramic Grades


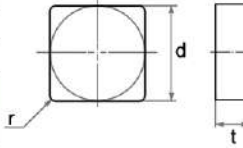
Inserts	Designation	Ddge Prep	Aluminum Oxide		PVD Coated Ceramic	Silicon Nitride Ceramic	Dimensions(mm)				Geometries(mm)
			TT01	TT03			TT03N	TS01	d	t	
	120404	T02020	●	●			12.70	4.76	0.4	5.16	
	120408	T02020	●	●			12.70	4.76	0.8	5.16	
	120412	T02020	●	●			12.70	4.76	1.2	5.16	
	120416	T02020	●	●			12.70	4.76	1.6	5.16	
	160608	T02020					15.875	6.35	0.8	6.35	
	160612	T02020					15.875	6.35	1.2	6.35	
	160616	T02020					15.875	6.35	1.6	6.35	
	160708	T02020					15.875	7.94	0.8	6.35	
	160712	T02020					15.875	7.94	1.2	6.35	
	160716	T02020					15.875	7.94	1.6	6.35	
	190608	T02020					19.05	6.35	0.8	7.94	
	190612	T02020					19.05	6.35	1.2	7.94	
	190616	T02020					19.05	6.35	1.6	7.94	
	120404	T02020	●	●			12.70	4.76	0.4	-	
	120408	T02020	●	●			12.70	4.76	0.4	-	
	120412	T02020	●	●			12.70	4.76	0.4	-	
	120708	T02020	●	●			12.70	7.94	0.8	-	
	120712	T02020	●	●			12.70	7.94	0.8	-	
	120716	T02020	●	●			12.70	7.94	0.8	-	
	160708	T02020	●	●			15.875	7.94	0.8	-	
	160712	T02020	●	●			15.875	7.94	0.8	-	
	160716	T02020	●	●			15.875	7.94	0.8	-	
	150404	T02020	●	●			12.70	4.76	0.4	5.16	
	150408	T02020	●	●			12.70	4.76	0.8	5.16	
	150412	T02020	●	●			12.70	4.76	1.2	5.16	
	150416	T02020	●	●			12.70	4.76	1.6	5.16	
	150604	T02020	●	●			12.70	6.35	0.4	5.16	
	150608	T02020	●	●			12.70	6.35	0.8	5.16	
	150612	T02020	●	●			12.70	6.35	1.2	5.16	
	150616	T02020	●	●			12.70	6.35	1.6	5.16	



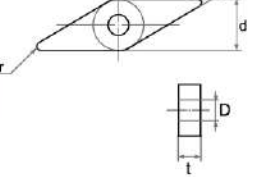

## Ceramic Inserts

Inserts	Designation	Ddge Prep	Aluminum Oxide		PVD Coated Ceramic	Silicon Nitride Ceramic	Dimensions(mm)				Geometries(mm)
			TT01	TT03			TT03N	TS01	d	t	
 DNGN	150404	T02020	●	●			12.70	4.76	0.4	-	
	150408	T02020	●	●			12.70	4.76	0.8	-	
	150412	T02020	●	●			12.70	4.76	1.2	-	
	150416	T02020	●	●			12.70	4.76	1.6	-	
	150604	T02020	●	●			12.70	6.35	0.4	-	
	150608	T02020	●	●			12.70	6.35	0.8	-	
	150612	T02020	●	●			12.70	6.35	1.2	-	
	150616	T02020	●	●			12.70	6.35	1.6	-	
	150704	T02020	●	●			12.70	7.94	0.4	-	
	150708	T02020	●	●			12.70	7.94	0.8	-	
150712	T02020	●	●			12.70	7.94	1.2	-		
150716	T02020	●	●			12.70	7.94	1.6	-		
 RNGA	090400	T02020					9.525	4.76	-	3.81	
	120400	T02020					12.70	4.76	-	5.16	
	120700	T02020					12.70	7.94	-	5.16	
 RNGN	090400	T02020	●	●			9.525	4.76	-	-	
	120400	T02020	●	●			12.70	4.76	-	-	
	120700	T02020	●	●			12.70	7.94	-	-	
	150700	T02020	●	●			15.875	7.94	-	-	
	190700	T02020	●	●			19.05	7.94	-	-	
	201000	T02020	●	●			20.00	10.00	-	-	
250700	T02020	●	●			25.40	7.94	-	-		
 SNGA	090304	T02020					9.525	3.18	0.4	3.81	
	090308	T02020					9.525	3.18	0.8	3.81	
	120404	T02020	●	●			12.70	4.76	0.4	5.16	
	120408	T02020	●	●			12.70	4.76	0.8	5.16	
	120412	T02020	●	●			12.70	4.76	1.2	5.16	
	120416	T02020	●	●			12.70	4.76	1.6	5.16	
	150608	T02020					15.875	6.35	0.8	6.35	
	150612	T02020					15.875	6.35	1.2	6.35	
	150616	T02020					15.875	6.35	1.6	6.35	
	190608	T02020					19.05	6.35	0.8	7.94	
	190612	T02020					19.05	6.35	1.2	7.94	
	190616	T02020					19.05	6.35	1.6	7.94	

## Ceramic Inserts

Inserts	Designation	Ddge Prep	Aluminum Oxide		PVD Coated Ceramic	Silicon Nitride Ceramic	Dimensions(mm)				Geometries(mm)
			TT01	TT03			TT03N	TS01	d	t	
 SNGN	090304	T02020	●	●			9.525	3.18	0.4	-	
	090308	T02020	●	●			9.525	3.18	0.8	-	
	090312	T02020	●	●			9.525	3.18	1.2	-	
	090404	T02020	●	●			9.525	4.76	0.4	-	
	090408	T02020					9.525	4.76	0.8	-	
	090412	T02020					9.525	4.76	1.2	-	
	120404	T02020					12.70	4.76	0.4	-	
	120408	T02020					12.70	4.76	0.8	-	
	120412	T02020					12.70	4.76	1.2	-	
	120416	T02020					12.70	4.76	2.0	-	
	120420	T02020					12.70	7.94	0.4	-	
	120708	T02020					12.70	7.94	0.8	-	
	120712	T02020					12.70	7.94	1.2	-	
	120716	T02020					12.70	7.94	1.6	-	
	120720	T02020					12.70	7.94	2.0	-	
	150708	T02020					15.875	7.94	0.8	-	
	150712	T02020					15.875	7.94	1.2	-	
	150716	T02020					15.875	7.94	1.6	-	
	190708	T15015					19.05	7.94	0.8	-	
	190712	T12015					19.05	7.94	1.2	-	
190716	T12015					19.05	7.94	1.6	-		
190720	T12015					19.05	7.94	2.0	-		
250720	T20015					25.40	7.94	2.0	-		
251012	T20015					25.40	10.00	1.2	-		

## Ceramic Inserts

Inserts	Designation	Ddge Prep	Aluminum Oxide		PVD Coated Ceramic	Silicon Nitride Ceramic	Dimensions(mm)				Geometries(mm)
			TT01	TT03			TT03N	TS01	d	t	
 TNGA	160404	T02020	●	●			9.525	4.76	0.4	3.81	
	160408	T02020	●	●			9.525	4.76	0.8	3.81	
	160412	T02020	●	●			9.525	4.76	1.2	3.81	
	160416	T02020	●	●			9.525	4.76	1.6	3.81	
	220404	T02020	●	●			12.70	4.76	0.4	5.16	
	220408	T02020	●	●			12.70	4.76	0.8	5.16	
	220412	T02020	●	●			12.70	4.76	1.2	5.16	
	220416	T02020	●	●			12.70	4.76	1.6	5.16	
 TNGN	110304	T02020					6.35	3.18	0.4	-	
	110308	T02020					6.35	3.18	0.4	-	
	160404	T02020					9.525	4.76	0.4	-	
	160408	T02020					9.525	4.76	0.8	-	
	220716	T02020					12.70	7.94	1.6	-	
 VNGA	160402	T02020	●	●			9.525	4.76	0.2	3.81	
	160404	T02020	●	●			9.525	4.76	0.4	3.81	
	160408	T02020	●	●			9.525	4.76	0.8	3.81	
	160412	T02020	●	●			9.525	4.76	1.2	3.81	
	160416	T02020	●	●			9.525	4.76	1.6	3.81	
 VNGN	160412	T02020	●	●			9.525	4.76	1.2	-	
	160704	T02020	●	●			9.525	7.94	0.4	-	
	160708	T02020	●	●			9.525	7.94	0.8	-	
	160712	T02020	●	●			9.525	7.94	1.2	-	
	160716	T02020	●	●			9.525	7.94	1.6	-	
 WNGA	080404	T02020	●	●			12.70	4.76	0.4	5.16	
	080408	T02020	●	●			12.70	4.76	0.8	5.16	
	080412	T02020	●	●			12.70	4.76	1.2	5.16	
	080416	T02020	●	●			12.70	4.76	1.6	5.16	

## Ceramic Inserts

Inserts	Designation	Ddge Prep	Aluminum Oxide		PVD Coated Ceramic	Silicon Nitride Ceramic	Dimensions(mm)				Geometries(mm)
			TT01	TT03			TT03N	TS01	d	t	
 RCGX	060600	T02020	●	●			6.35	6.35	6.20	120°	
	090700	T02020	●	●			9.525	7.94	7.70	120°	
	120700	T02020	●	●			12.70	7.94	7.70	120°	
	151000	T02020	●	●			15.875	9.53	9.30	120°	
	191000	T02020	●	●			19.05	10.00	9.77	120°	
	251200	T15015	●	●			25.40	12.00	11.58	140°	



## Cermet

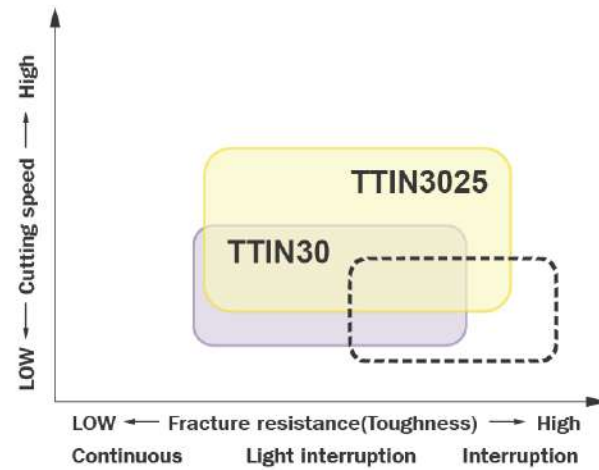
Cermets combine toughness with superior wear resistance, and provide longer tool life and excellent surface finishes. Typical materials used in cermets are TiC, TiN, TiCN and NbC.



### PVD Coated Cermet

PVD Coated Cermet is coated on cermet substrate with a thin layer of high wear resistance and high adhesion resistance by PVD (Physical Vapor Deposition) technology. Generally because of the low processing temperature of PVD compared with CVD, PVD coated cermet features less deterioration and more bending strength.

## Features of Cermet and PVD Coated Cermet



### ■ TTIN30

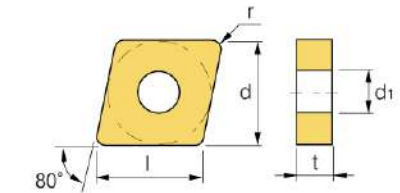
- Superior fracture resistance and wear resistance
- Application : Stable machining of steel

### ■ TTIN3025

- Superior wear and adhesion resistant TiCN coating on the special reinforcement cermet
- Application : The 1st choice PVD coated cermet for steel machining provides high efficient machining and high quality surface finish

## CN00

Rhombic 80° Negative



Workpiece	Machining types			
	●	●	●	●
Steel	P	●	●	●
Stainless steel	M	●	●	●
Cast iron	K	●	●	●
Non-ferrous metal	N	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●
Hardened steel	H	●	●	●

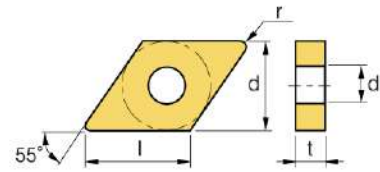
● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTIN80	TTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	120404-TS	●	●	12.4	12.7	4.76	5.16	0.4	0.03-0.15	0.20-1.80
	120408-TS	●	●	12.0	12.7	4.76	5.16	0.8	0.08-0.20	0.20-1.80
	120404-HQ	●	●	12.4	12.7	4.76	5.16	0.4	0.05-0.30	0.80-4.00
	120408-HQ	●	●	12.0	12.7	4.76	5.16	0.8	0.08-0.40	0.80-4.00
	120404-MT	●	●	12.4	12.7	4.76	5.16	0.4	0.15-0.40	1.00-5.00
	120408-MT	●	●	12.0	12.7	4.76	5.16	0.8	0.17-0.55	1.20-5.00

# Cermet Insert (Negative)

## DN○○

Rhombic 55° Negative



Workpiece	Steel	P	●	●
	Stainless steel	M	●	●
	Cast iron	K	●	●
	Non-ferrous metal	N		
	Heat resistant alloy, Titanium alloy	S		
	Hardened steel	H		

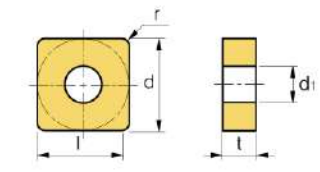
Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTM30	TTTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	150404-TS	●	●	15.1	12.7	4.76	5.16	0.4	0.03-0.15	0.30-1.50
	150408-TS	○	○	14.7	12.7	4.76	5.16	0.8	0.08-0.20	0.50-1.50
	150404-HQ	●	●	15.1	12.7	4.76	5.16	0.4	0.05-0.30	0.80-3.50
	150408-HQ	●	●	14.7	12.7	4.76	5.16	0.8	0.08-0.40	0.80-4.00
	150604-HQ			15.1	12.7	6.35	5.16	0.4	0.05-0.30	0.80-3.50
	150608-HQ			14.7	12.7	6.35	5.16	0.8	0.08-0.40	0.80-4.00
	150404R-S	●	●	15.1	12.7	4.76	5.16	0.4	0.10-0.40	0.70-4.00
	150408R-S			14.7	12.7	4.76	5.16	0.8	0.12-0.45	1.00-4.50
	150404L-S			15.1	12.7	4.76	5.16	0.4	0.10-0.40	0.70-4.00
	150408L-S			14.7	12.7	4.76	5.16	0.8	0.12-0.45	1.00-4.50
	150404R-VF	●		15.1	12.7	4.76	5.16	0.4	0.10-0.35	0.70-4.50
	150408R-VF			14.7	12.7	4.76	5.16	0.8	0.12-0.45	1.00-4.50
	150404L-VF			15.1	12.7	4.76	5.16	0.4	0.10-0.35	0.70-4.50
	150408L-VF			14.7	12.7	4.76	5.16	0.8	0.12-0.4	1.00-4.50

## SN○○

Square 90° Negative



Workpiece	Steel	P	●	●
	Stainless steel	M	●	●
	Cast iron	K	●	●
	Non-ferrous metal	N		
	Heat resistant alloy, Titanium alloy	S		
	Hardened steel	H		

Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

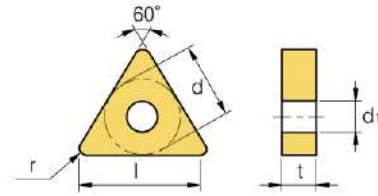
Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTM30	TTTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	120404	●	●	12.3	12.7	4.76	5.16	0.4	0.05-0.30	0.80-4.00
	120408	●	●	11.9	12.7	4.76	5.16	0.8	0.08-0.40	0.80-4.00



# Cermet Insert (Negative)

## TN00

Triangular 60° Negative



Workpiece	Steel	<b>P</b>	●	●
	Stainless steel	<b>M</b>	●	●
	Cast iron	<b>K</b>	●	●
	Non-ferrous metal	<b>N</b>	●	●
	Heat resistant alloy, Titanium alloy	<b>S</b>	●	●
	Hardened steel	<b>H</b>	●	●

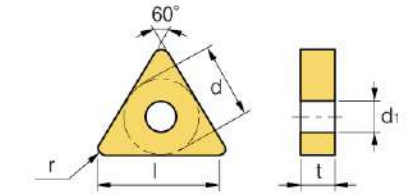
Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTTN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	160402R-S	●	●	16.0	9.525	4.76	3.81	0.2	0.03-0.20	0.10-1.50
	160404R-S	●	●	15.5	9.525	4.76	3.81	0.4	0.05-0.25	0.30-2.00
	160402L-S	●	●	16.0	9.525	4.76	3.81	0.2	0.03-0.20	0.10-1.50
	160404L-S	●	●	15.5	9.525	4.76	3.81	0.4	0.05-0.25	0.30-2.00
	160402R-C			16.0	9.525	4.76	3.81	0.2	0.08-0.30	0.50-3.50
	160404R-C			15.5	9.525	4.76	3.81	0.4	0.12-0.30	1.00-3.50
	160408R-C			14.5	9.525	4.76	3.81	0.8	0.15-0.35	1.30-3.50
	160402L-C			16.0	9.525	4.76	3.81	0.2	0.08-0.30	0.50-3.50
	160404L-C			15.5	9.525	4.76	3.81	0.4	0.12-0.30	1.00-3.50
	160402R-P	●	●	16.0	9.525	4.76	3.81	0.2	0.10-0.30	0.50-3.50
	160404R-P	●	●	15.5	9.525	4.76	3.81	0.4	0.20-0.30	1.00-3.50
	160408R-P	●	●	14.5	9.525	4.76	3.81	0.8	0.20-0.50	1.30-3.50
	160402L-P	●	●	16.0	9.525	4.76	3.81	0.2	0.10-0.30	0.50-3.50
	160404L-P	●	●	15.5	9.525	4.76	3.81	0.4	0.20-0.30	1.00-3.50
	160404-TS	●	●	15.4	9.525	4.76	3.81	0.4	0.03-0.15	0.30-1.50
	160408-TS	●	●	14.5	9.525	4.76	3.81	0.8	0.08-0.20	0.50-1.50
	160404-HQ	●	●	15.4	9.525	4.76	3.81	0.4	0.05-0.35	0.50-3.50
	160408-HQ	●	●	14.5	9.525	4.76	3.81	0.8	0.08-0.40	0.80-4.00

## TN00

Triangular 60° Negative



Workpiece	Steel	<b>P</b>	●	●
	Stainless steel	<b>M</b>	●	●
	Cast iron	<b>K</b>	●	●
	Non-ferrous metal	<b>N</b>	●	●
	Heat resistant alloy, Titanium alloy	<b>S</b>	●	●
	Hardened steel	<b>H</b>	●	●

Machining types

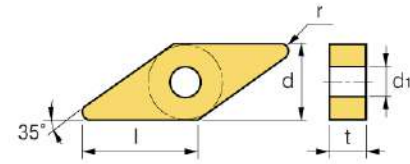
- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTTN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	160404R-S	●	●	15.4	9.525	4.76	3.81	0.4	0.12-0.30	1.00-3.50
	160408R-S	●	●	14.5	9.525	4.76	3.81	0.8	0.15-0.35	1.30-3.40
	160404L-S	●	●	15.4	9.525	4.76	3.81	0.4	0.12-0.30	1.00-3.50
	160408L-S	●	●	14.5	9.525	4.76	3.81	0.8	0.15-0.35	1.30-3.40
	160404R-C	●	●	15.5	9.525	4.76	3.81	0.4	0.20-0.35	1.30-3.50
	160408R-C	●	●	14.5	9.525	4.76	3.81	0.8	0.25-0.40	1.20-4.00
	160404L-C	●	●	15.5	9.525	4.76	3.81	0.4	0.20-0.35	1.30-3.50
	160408L-C	●	●	14.5	9.525	4.76	3.81	0.8	0.25-0.40	1.20-4.00
	160404R-VF	●	●	15.4	9.525	4.76	3.81	0.4	0.10-0.30	0.70-3.50
	160408R-VF	●	●	14.5	9.525	4.76	3.81	0.8	0.12-0.35	1.00-3.50
	160404L-VF	●	●	15.4	9.525	4.76	3.81	0.4	0.10-0.30	0.70-3.50
	160408L-VF	●	●	14.5	9.525	4.76	3.81	0.8	0.12-0.35	1.00-3.50
	160404-MT	●	●	15.4	9.525	4.76	3.81	0.4	0.17-0.40	1.00-3.50
	160408-MT	●	●	14.5	9.525	4.76	3.81	0.8	0.17-0.50	1.20-3.50

# Cermet Insert (Negative)

## VN○○

Rhombic 35° Negative

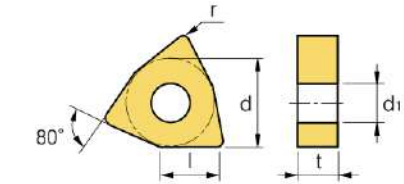


Workpiece	Steel	P	●	●	Machining types	●	Continuous cutting
	Stainless steel	M	●	●		●	General cutting
	Cast iron	K	●	●		⊛	Interrupted cutting
	Non-ferrous metal	N					
	Heat resistant alloy, Titanium alloy	S					
	Hardened steel	H					

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTTN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	160404-TS	●	●	15.6	9.525	4.76	3.81	0.4	0.03-0.15	0.30-1.50
	160408-TS	○	○	14.6	9.525	4.76	3.81	0.8	0.08-0.20	0.50-1.50
	160404-HQ			15.6	9.525	4.76	3.81	0.4	0.10-0.40	0.50-3.50
	160408-HQ	●	●	14.6	9.525	4.76	3.81	0.8	0.12-0.45	0.50-3.50
	160404-MT	●		15.6	9.525	4.76	3.81	0.4	0.15-0.36	0.80-3.00
	160408-MT	●		14.6	9.525	4.76	3.81	0.8	0.17-0.36	1.00-2.50

## WN○○

Trigon 80° Negative



Workpiece	Steel	P	●	●	Machining types	●	Continuous cutting
	Stainless steel	M	●	●		●	General cutting
	Cast iron	K	●	●		⊛	Interrupted cutting
	Non-ferrous metal	N					
	Heat resistant alloy, Titanium alloy	S					
	Hardened steel	H					

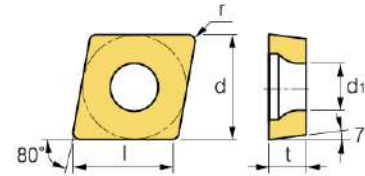
Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTTN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	080404-TS	●	●	8.4	12.7	4.76	5.16	0.4	0.03-0.15	0.20-1.80
	080408-TS	○	○	8.3	12.7	4.76	5.16	0.8	0.08-0.20	0.20-1.80
	080404-HQ			8.4	12.7	4.76	5.16	0.4	0.05-0.30	0.50-4.00
	080408-HQ	●	●	8.3	12.7	4.76	5.16	0.8	0.08-0.40	0.50-4.00
	080404R-S	●		8.4	12.7	4.76	5.16	0.4	0.10-0.35	0.70-3.00
	080408R-S	●		8.3	12.7	4.76	5.16	0.8	0.12-0.40	1.00-3.00
	080404L-S	●		8.4	12.7	4.76	5.16	0.4	0.10-0.35	0.70-3.00
	080408L-S	●		8.3	12.7	4.76	5.16	0.8	0.12-0.40	1.00-3.00
	080404-MT	●		8.4	12.7	4.76	5.16	0.4	0.12-0.40	1.00-4.00
	080408-MT	●		8.3	12.7	4.76	5.16	0.8	0.17-0.55	1.20-4.00



# Cermet Insert (Positive)

CC○○

Rhombic 80° Positive  
Relief Angle : 7°



Workpiece	Steel	P	●	●
	Stainless steel	M	●	●
	Cast iron	K	●	●
	Non-ferrous metal	N		
	Heat resistant alloy, Titanium alloy	S		
	Hardened steel	H		

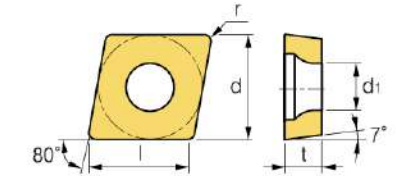
Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTIN8025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	030102R-F			3.3	3.5	1.39	1.90	0.2	0.01-0.05	0.10-0.30
	030104R-F			3.1	3.5	1.39	1.90	0.4	0.01-0.05	0.10-0.30
	040102R-F			4.1	4.3	1.79	2.30	0.2	0.01-0.10	0.10-0.50
	040104R-F			3.9	4.3	1.79	2.30	0.4	0.01-0.10	0.10-0.50
	030102L-F	●	●	3.3	3.5	1.39	1.90	0.2	0.01-0.05	0.10-0.30
	030104L-F	●	●	3.1	3.5	1.39	1.90	0.4	0.01-0.05	0.10-0.30
	040102L-F	●	●	4.1	4.3	1.79	2.30	0.2	0.01-0.10	0.10-0.50
	040104L-F	●	●	3.9	4.3	1.79	2.30	0.4	0.01-0.10	0.10-0.50
	060202R-W15			6.5	6.35	2.38	2.80	0.2	0.03-0.11	0.06-1.70
	060204R-W15			6.5	6.35	2.38	2.80	0.4	0.02-0.20	0.10-2.00
	060202L-W15			6.5	6.35	2.38	2.80	0.2	0.03-0.11	0.06-1.70
	060204L-W15	●	●	6.5	6.35	2.38	2.80	0.4	0.02-0.20	0.10-2.00
	09T302R-W20			9.7	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
	09T304R-W20			9.7	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.00
	09T302L-W20	●	●	9.7	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
	09T304L-W20	●	●	9.7	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.00
	060202ER-U	●	○	6.5	6.35	2.38	2.80	0.2	0.03-0.11	0.06-1.70
	060204ER-U	●	○	6.5	6.35	2.38	2.80	0.4	0.05-0.20	0.06-1.70
	09T302ER-U	●	○	9.7	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
	09T304ER-U	●	○	9.7	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.00
	060202EL-U	●	○	6.5	6.35	2.38	2.80	0.2	0.03-0.11	0.06-1.70
	060204EL-U	●	○	6.5	6.35	2.38	2.80	0.4	0.05-0.20	0.06-1.70
	09T302EL-U	●	○	9.7	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
	09T304EL-U	●	○	9.7	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.00

CC○○

Rhombic 80° Positive  
Relief Angle : 7°



Workpiece	Steel	P	●	●
	Stainless steel	M	●	●
	Cast iron	K	●	●
	Non-ferrous metal	N		
	Heat resistant alloy, Titanium alloy	S		
	Hardened steel	H		

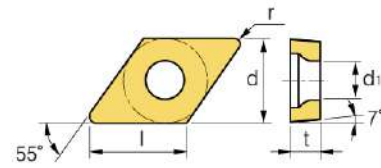
Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTIN8025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	060204-FG	●		6.0	6.35	2.38	2.80	0.4	0.05-0.15	0.30-1.50
	09T304-FG	●		9.2	9.525	3.97	4.40	0.4	0.07-0.20	0.40-2.00
	09T308-FG			8.8	9.525	3.97	4.40	0.8	0.10-0.25	0.60-2.00
	060202-PS	●	●	6.2	6.35	2.38	2.80	0.2	0.05-0.20	0.30-1.00
	060204-PS	●	●	6.0	6.35	2.38	2.80	0.4	0.10-0.25	0.30-1.00
	060208-PS			5.6	6.35	2.38	2.80	0.8	0.10-0.25	0.30-1.00
	09T302-PS	●	●	9.4	9.525	3.97	4.40	0.2	0.04-0.16	0.80-1.50
	09T304-PS	●	●	9.2	9.525	3.97	4.40	0.4	0.05-0.20	0.30-1.50
	09T308-PS	●	●	8.8	9.525	3.97	4.40	0.8	0.10-0.25	0.30-1.50
	060202-HQ	●	●	6.2	6.35	2.38	2.80	0.2	0.04-0.14	0.50-1.50
	060204-HQ	●	●	6.0	6.35	2.38	2.80	0.4	0.10-0.20	0.50-2.00
	09T302-HQ	●	●	9.4	9.525	3.97	4.40	0.2	0.07-0.18	0.50-2.00
	09T304-HQ	●	●	9.2	9.525	3.97	4.40	0.4	0.08-0.20	0.50-2.00
	09T308-HQ	●	●	8.8	9.525	3.97	4.40	0.8	0.10-0.25	0.50-2.00
	060204-MT			6.0	6.35	2.38	2.80	0.4	0.07-0.20	0.50-2.00
	09T304-MT	●		9.2	9.525	3.97	4.40	0.4	0.10-0.25	0.70-3.50
	09T308-MT			8.8	9.525	3.97	4.40	0.8	0.13-0.30	1.00-3.50

## DC○○

Rhombic **55° Positive**  
Relief Angle : 7°



Workpiece	Steel	P	●	●
	Stainless steel	M	●	●
	Cast iron	K	●	●
	Non-ferrous metal	N		
	Heat resistant alloy, Titanium alloy	S		
	Hardened steel	H		

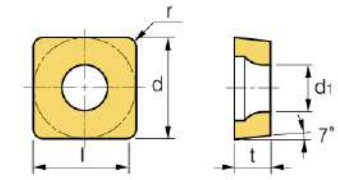
Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTIN30	TTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	070202R-F			7.8	6.35	2.38	2.80	0.2	0.03-0.11	0.06-1.70
	070204R-F			7.8	6.35	2.38	2.80	0.4	0.02-0.20	0.10-2.00
	070202L-F			7.8	6.35	2.38	2.80	0.2	0.03-0.11	0.06-1.70
	070204L-F			7.8	6.35	2.38	2.80	0.4	0.02-0.20	0.10-2.00
	11T302R-F			11.6	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
	11T304R-F			11.6	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.00
	11T302L-F			11.6	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
11T304L-F			11.6	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.00	
	11T302ER-U	●	●	11.6	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
	11T304ER-U	●	●	11.6	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.50
	11T302EL-U	●	●	11.6	9.525	3.97	4.40	0.2	0.04-0.15	0.08-2.00
	11T304EL-U	●	●	11.6	9.525	3.97	4.40	0.4	0.05-0.20	0.10-2.50
	070204-FG	●	●	7.3	6.35	2.38	2.80	0.4	0.07-0.20	0.40-1.50
	11T304-FG	●	●	11.2	9.525	3.97	4.40	0.4	0.10-0.25	0.60-1.50
	11T308-FG	●	●	10.8	9.525	3.97	4.40	0.8	0.10-0.25	0.60-2.00
	070202-PS			7.5	6.35	2.38	2.80	0.2	0.03-0.10	0.06-1.00
	070204-PS			7.3	6.35	2.38	2.80	0.4	0.05-0.20	0.30-1.20
	11T302-PS			11.4	9.525	3.97	4.40	0.2	0.04-0.15	0.08-1.50
	11T304-PS			11.2	9.525	3.97	4.40	0.4	0.05-0.20	0.30-1.50
	11T308-PS			10.8	9.525	3.97	4.40	0.8	0.10-0.25	0.30-1.50
	070202-HQ			7.5	6.35	2.38	2.80	0.2	0.07-0.14	0.50-2.00
	070204-HQ			7.3	6.35	2.38	2.80	0.4	0.08-0.16	0.50-2.00
	070208-HQ			6.8	6.35	2.38	2.80	0.8	0.10-0.20	0.50-2.00
	11T302-HQ			11.4	9.525	3.97	4.40	0.2	0.07-0.18	0.50-2.00
	11T304-HQ			11.2	9.525	3.97	4.40	0.4	0.08-0.20	0.50-2.00
	11T308-HQ			10.8	9.525	3.97	4.40	0.8	0.10-0.25	0.50-2.00
	11T304-MT	●	●	11.2	9.525	3.97	4.40	0.4	0.10-0.25	0.70-3.00
	11T308-MT	●	●	10.8	9.525	3.97	4.40	0.8	0.13-0.30	1.00-3.00

## SC○○

Square **90° Positive**  
Relief Angle: 7°



Workpiece	Steel	P	●	●
	Stainless steel	M	●	●
	Cast iron	K	●	●
	Non-ferrous metal	N		
	Heat resistant alloy, Titanium alloy	S		
	Hardened steel	H		

Machining types

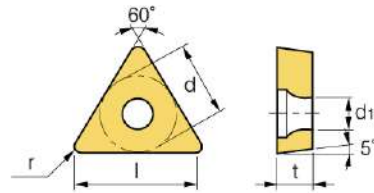
- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTIN30	TTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	09T304-HQ	●	●	9.1	9.525	3.97	4.40	0.4	0.08-0.16	0.50-2.00
	09T308-HQ	●	●	8.7	9.525	3.97	4.40	0.8	0.10-0.20	0.50-2.00



## TB○○

Triangular **60° Positive**  
Relief Angle : 5°



Workpiece	Steel	<b>P</b>	●	●
	Stainless steel	<b>M</b>	●	●
	Cast iron	<b>K</b>	●	●
	Non-ferrous metal	<b>N</b>		
	Heat resistant alloy, Titanium alloy	<b>S</b>		
	Hardened steel	<b>H</b>		

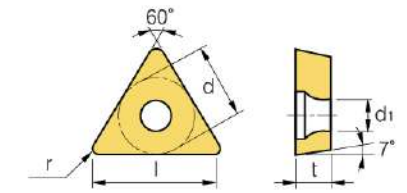
Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTIN30	TTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	060102L	●	●	6.4	3.97	1.59	2.16	0.2	0.05-0.20	0.10-1.30
	060104L	●	●	5.8	3.97	1.59	2.16	0.4	0.08-0.20	0.10-1.30

## TC○○

Triangular **60° Positive**  
Relief Angle : 7°



Workpiece	Steel	<b>P</b>	●	●
	Stainless steel	<b>M</b>	●	●
	Cast iron	<b>K</b>	●	●
	Non-ferrous metal	<b>N</b>		
	Heat resistant alloy, Titanium alloy	<b>S</b>		
	Hardened steel	<b>H</b>		

Machining types

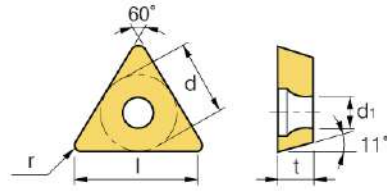
- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTIN30	TTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	060102L			6.4	3.97	1.59	2.16	0.2	0.05-0.20	0.10-1.30
	060104L			5.8	3.97	1.59	2.16	0.4	0.08-0.20	0.10-1.30
	080202R			7.7	4.76	2.38	2.30	0.2	0.03-0.11	0.06-1.70
	080204R			7.2	4.76	2.38	2.30	0.4	0.05-0.15	0.06-2.00
	080202L			7.7	4.76	2.38	2.30	0.2	0.03-0.11	0.06-1.70
	080204L			7.2	4.76	2.38	2.30	0.4	0.05-0.15	0.06-2.00
	090204-PS			8.6	5.56	2.38	2.50	0.4	0.05-0.20	0.10-1.70
	110202-PS			10.5	6.35	2.38	2.80	0.2	0.03-0.13	0.06-1.70
	110204-PS			10.0	6.35	2.38	2.80	0.8	0.05-0.20	0.30-1.20
	16T304-PS			15.5	9.525	3.97	4.40	0.4	0.05-0.20	0.30-1.50
	16T308-PS			14.5	9.525	3.97	4.40	0.8	0.10-0.25	0.30-1.50
	090204-HQ	●	●	8.6	5.56	2.38	2.50	0.4	0.08-0.16	0.50-2.00
	110202-HQ	●	●	10.5	6.35	2.38	2.80	0.2	0.07-0.14	0.50-2.00
	110204-HQ	●	●	10.0	6.35	2.38	2.80	0.8	0.08-0.16	0.50-2.00
	110208-HQ	●	●	9.0	6.35	2.38	2.80	0.8	0.10-0.20	0.50-2.00
	16T304-HQ	●	●	15.5	9.525	3.97	4.40	0.4	0.08-0.20	0.50-2.00
	16T308-HQ	●	●	14.5	9.525	3.97	4.40	0.8	0.10-0.25	0.50-2.00

# Cermet Insert (Positive)

## TP○○

Triangular **60° Positive**  
Relief Angle : 11°



Workpiece	Steel	<b>P</b>	●	●
	Stainless steel	<b>M</b>	●	●
	Cast iron	<b>K</b>	●	●
	Non-ferrous metal	<b>N</b>		
	Heat resistant alloy, Titanium alloy	<b>S</b>		
	Hardened steel	<b>H</b>		

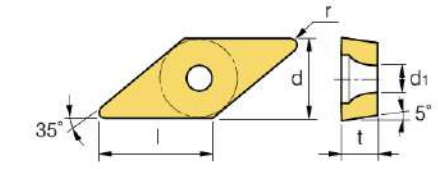
Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTIN30	TTTN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	080202R			7.7	4.76	2.38	2.30	0.2	0.01-0.12	0.06-1.70
	080204R			7.2	4.76	2.38	2.30	0.4	0.01-0.15	0.08-1.70
	090202R			9.1	5.56	2.38	3.00	0.2	0.01-0.12	0.06-1.70
	090204R			8.6	5.56	2.38	3.00	0.4	0.01-0.15	0.08-1.70
	110302R			10.5	6.35	3.18	3.40	0.2	0.01-0.12	0.06-2.00
	110304R			10.0	6.35	3.18	3.40	0.4	0.01-0.15	0.08-2.00
	080202L	●	●	7.7	4.76	2.38	2.30	0.2	0.01-0.12	0.06-1.70
	080204L	●	●	7.2	4.76	2.38	2.30	0.4	0.01-0.15	0.08-1.70
	090202L	●	●	9.1	5.56	2.38	3.00	0.2	0.01-0.12	0.06-1.70
	090204L	●	●	8.6	5.56	2.38	3.00	0.4	0.01-0.15	0.08-1.70
	110302L	●	●	10.5	6.35	3.18	3.40	0.2	0.01-0.12	0.06-2.00
	110304L	●	●	10.0	6.35	3.18	3.40	0.4	0.01-0.15	0.08-2.00
	110304-PS			10.0	6.35	3.18	3.40	0.4	0.05-0.20	0.30-1.50
	110308-PS			9.0	6.35	3.18	3.40	0.8	0.10-0.25	0.30-1.50

## VB○○

Rhombic **35° Positive**  
Relief Angle : 5°



Workpiece	Steel	<b>P</b>	●	●
	Stainless steel	<b>M</b>	●	●
	Cast iron	<b>K</b>	●	●
	Non-ferrous metal	<b>N</b>		
	Heat resistant alloy, Titanium alloy	<b>S</b>		
	Hardened steel	<b>H</b>		

Machining types

- Continuous cutting
- General cutting
- ⊛ Interrupted cutting

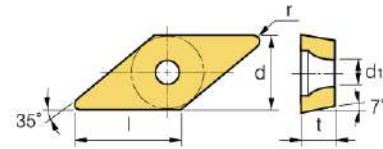
Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTIN30	TTTN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	110301R-Y	○	○	11.0	6.35	3.18	2.80	0.1	0.02-0.08	0.05-1.50
	110302R-Y	○	○	11.0	6.35	3.18	2.80	0.2	0.03-0.13	0.06-1.70
	110304R-Y	○	○	11.0	6.35	3.18	2.80	0.4	0.05-0.20	0.07-2.00
	110301L-Y	○	○	11.0	6.35	3.18	2.80	0.1	0.02-0.08	0.05-1.50
	110302L-Y	○	○	11.0	6.35	3.18	2.80	0.2	0.03-0.13	0.06-1.70
	110304L-Y	○	○	11.0	6.35	3.18	2.80	0.4	0.05-0.20	0.07-2.00
	110302-PS	●	●	10.5	6.35	3.18	2.80	0.2	0.03-0.20	0.20-1.20
	110304-PS	●	●	10.0	6.35	3.18	2.80	0.4	0.04-0.20	0.20-1.20
	160404-PS			15.6	9.525	4.76	4.40	0.4	0.05-0.20	0.30-1.50
	160408-PS			14.6	9.525	4.76	4.40	0.8	0.10-0.20	0.30-1.50
	110302-HQ	●	●	10.5	6.35	3.18	2.80	0.2	0.07-0.14	0.50-1.50
	110304-HQ	●	●	10.0	6.35	3.18	2.80	0.4	0.08-0.16	0.50-1.50
	110308-HQ	●	●	9.0	6.35	3.18	2.80	0.8	0.10-0.20	0.50-1.50
	160404-HQ	●	●	15.6	9.525	4.76	4.40	0.4	0.08-0.16	0.50-2.00
	160408-HQ	●	●	14.6	9.525	4.76	4.40	0.8	0.10-0.20	0.50-2.00



# Cermet Insert (Positive)

## VC○○

Rhombic 35° Positive  
Relief Angle: 7°

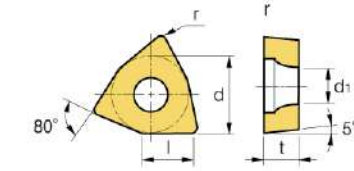


Workpiece	Steel	P	●	●	Machining types	●	Continuous cutting
	Stainless steel	M	●	●		●	General cutting
	Cast iron	K	●	●		⊛	Interrupted cutting
	Non-ferrous metal	N					
	Heat resistant alloy, Titanium alloy	S					
Hardened steel	H						

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	110302-PS	●	●	10.5	6.35	3.18	2.80	0.2	0.03-0.20	0.20-1.20
	110304-PS	●	●	10.0	6.35	3.18	2.80	0.4	0.04-0.20	0.20-1.20
	160404-PS			15.6	9.525	4.76	4.40	0.4	0.05-0.20	0.30-1.50
	160408-PS			14.6	9.525	4.76	4.40	0.8	0.10-0.20	0.30-1.50

## WB○○

Trigon 80° Positive  
Relief Angle: 5°



Workpiece	Steel	P	●	●	Machining types	●	Continuous cutting
	Stainless steel	M	●	●		●	General cutting
	Cast iron	K	●	●		⊛	Interrupted cutting
	Non-ferrous metal	N					
	Heat resistant alloy, Titanium alloy	S					
Hardened steel	H						

Inserts	Designation	Coated		Dimensions(mm)					Cutting Condition	
		TTN30	TTTIN3025	l	d	t	d1	r	fn (mm/rev)	ap (mm)
	060102L-F	●	●	2.6	3.97	1.59	2.30	0.2	0.01-0.05	0.10-0.30
	060104L-F	●	●	2.5	3.97	1.59	2.30	0.4	0.01-0.10	0.10-0.50
	080202L-F			3.1	4.76	2.38	2.30	0.2	0.01-0.08	0.10-0.40
	080204L-F			3.0	4.76	2.38	2.30	0.4	0.01-0.10	0.10-0.50

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

## Insert type

High precision		Wear resistance		Productivity	
for regrinding type	One use type	Multi-corner type	Multi-corner type (coated)	Solid type	

## Solid CBN grade

Grade	Coating	CBN Volume	Application					Purpose
			Cast iron	Ductile cast iron	Hardness Material	Mill Rolls	Powder metallurgy	
TB1000	-	90%	●		●	●		Continuous and light interrupted turning at high speed
TB3000	-	50%			●			Medium and heavy interrupted turning
TB5000	-	75%			●			Continuous and light interrupted turning
TBX200	-	85%	●					Light to medium interrupted milling
TBX300	-	95%	●					Medium and high interrupted turning
TBX500	-	85%	●				●	Continuous turning
TBC500	TiAlN	75%			●			Continuous and light interrupted turning

## CBN PCBN grade

Grade	CBN Volume	Binding agent	Application					Purpose
			Cast iron	Ductile cast iron	Hardness Material	Mill Rolls	Powder metallurgy	
TB100C	75%	TiN	●		●	●		Interrupted machining
TB300C	60%	TiCN			●			Continuous and medium interrupted machining
TB400C	50%	TiCN			●			Continuous machining at high speed
TBX20C	90%	New binder	●					Interrupted machining for cast iron seat ring alloys
TBX30C	90%	Metal	●					Continuous machining at high speed
TBX40C	85%	TiN+Metal	●				●	Continuous and light interrupted turning
TBX50C	65%	TiN			●			Continuous processing for powder metallurgy

## Identification System (Turning Insert)

**C** **N** **G** **A** **12** **04** **04** **-** **2** **N** **S02020**

"Turning Indexable Inserts identification System" See Page  $\Rightarrow$  013 No. of Edges Hand Edge Prep. (Ref. To the Table 1)

## Preparation Identification System

Symbol	Cutting Edge Spec.	Example	Shape
S	Chamfered and Honed Cutting Edge	S01020	0.10mm x 20° Chamfered and Honed Cutting Edge
		S02020	0.20mm x 20° Chamfered and Honed Cutting Edge
		S02030	0.20mm x 30° Chamfered and Honed Cutting Edge
T	Chamfered Cutting Edge	T01020	0.10mm x 20° Chamfered and Cutting Edge
		T02020	0.20mm x 20° Chamfered and Cutting Edge
		T02025	0.20mm x 25° Chamfered and Cutting Edge



## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries	
		TB100C	TB300C	TB400C	TBX20C	TBX30C	TBX40C	TBX50C	IC	d	s	r		la
<b>CNGA</b>  80° Nega	120404-1N		●					12.7	5.16	4.76	0.4	2.5		
	120408-1N		●					12.7	5.16	4.76	0.8	2.5		
	120412-1N		●					12.7	5.16	4.76	1.2	2.5		
	T01020 T01025 T02020 S02025 S02030	120404-2N	●	●		●			12.7	5.16	4.76	0.4	2.5	
		120408-2N	●	●		●			12.7	5.16	4.76	0.8	2.5	
		120412-2N	●	●		●			12.7	5.16	4.76	1.2	2.5	
		120404-4N							12.7	5.16	4.76	0.4	2.5	
		120408-4N							12.7	5.16	4.76	0.8	2.5	
		120412-4N							12.7	5.16	4.76	1.2	2.5	

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries	
		TB100C	TB300C	TB400C	TBX20C	TBX30C	TBX40C	TBX50C	IC	d	s	r		la
<b>DNGA</b>  55° Nega	110404-1N		●					9.525	3.81	4.76	0.4	2.5		
	110408-1N		●					9.525	3.81	4.76	0.8	2.5		
	110412-1N		●					9.525	3.81	4.76	1.2	2.5		
	150404-1N		●					12.7	5.16	4.76	0.4	2.5		
	150408-1N		●					12.7	5.16	4.76	0.8	2.5		
	150412-1N		●					12.7	5.16	4.76	1.2	2.5		
	T01020 T01025 T02020 S02025 S02030	150604-1N		●					12.7	5.16	6.35	0.4	2.5	
		150608-1N		●					12.7	5.16	6.35	0.8	2.5	
		150612-1N		●					12.7	5.16	6.35	1.2	2.5	
		110404-2N	●	●		●			9.525	3.81	4.76	0.4	2.5	
		110408-2N	●	●		●			9.525	3.81	4.76	0.8	2.5	
		110412-2N	●	●		●			9.525	3.81	4.76	1.2	2.5	
	T01020 T01025 T02020 S02025 S02030	150404-2N	●	●		●			12.7	5.16	4.76	0.4	2.5	
		150408-2N	●	●		●			12.7	5.16	4.76	0.8	2.5	
		150412-2N	●	●		●			12.7	5.16	4.76	1.2	2.5	
		150604-2N	●	●		●			12.7	5.16	6.35	0.4	2.5	
		150608-2N	●	●		●			12.7	5.16	6.35	0.8	2.5	
		150612-2N	●	●		●			12.7	5.16	6.35	1.2	2.5	
		110404-4N							9.525	3.81	4.76	0.4	2.5	
		110408-4N							9.525	3.81	4.76	0.8	2.5	
		110412-4N							9.525	3.81	4.76	1.2	2.5	
		150404-4N							12.7	5.16	4.76	0.4	2.5	
		150408-4N							12.7	5.16	4.76	0.8	2.5	
		150412-4N							12.7	5.16	4.76	1.2	2.5	
150604-4N							12.7	5.16	6.35	0.4	2.5			
150608-4N							12.7	5.16	6.35	0.8	2.5			
150612-4N							12.7	5.16	6.35	1.2	2.5			

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>SNGA</b> 	120404-1N		●						12.7	5.16	4.76	0.4	2.5		
	120408-1N		●						12.7	5.16	4.76	0.8	2.5		
	120412-1N		●						12.7	5.16	4.76	1.2	2.5		
	120404-4N	T01020	●	●		●		●	12.7	5.16	4.76	0.4	2.5		
	120408-4N	T01025	●	●		●		●	12.7	5.16	4.76	0.8	2.5		
	120412-4N	T02020	●	●		●		●	12.7	5.16	4.76	1.2	2.5		
	120404-8N	S02025													
	120408-8N	S02030							12.7	5.16	4.76	0.4	2.5		
	120412-8N								12.7	5.16	4.76	0.8	2.5		
								12.7	5.16	4.76	1.2	2.5			

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>VNGA</b> 	160404-1N		●						9.525	3.81	4.76	0.4	2.5		
	160408-1N		●						9.525	3.81	4.76	0.8	2.5		
	160412-1N		●						9.525	3.81	4.76	1.2	2.5		
	160404-2N	T01020	●	●		●		●	9.525	3.81	4.76	0.4	2.5		
	160408-2N	T02020	●	●		●		●	9.525	3.81	4.76	0.8	2.5		
	160412-2N	S01020	●	●		●		●	9.525	3.81	4.76	1.2	2.5		
	160404-4N	S02020													
	160408-4N								9.525	3.81	4.76	0.4	2.5		
	160412-4N								9.525	3.81	4.76	0.8	2.5		
								9.525	3.81	4.76	1.2	2.5			

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>TNGA</b> 	160404-1N		●						9.525	3.81	4.76	0.4	2.5		
	160408-1N		●						9.525	3.81	4.76	0.8	2.5		
	160412-1N		●						9.525	3.81	4.76	1.2	2.5		
	160404-3N	T01020	●	●		●		●	9.525	3.81	4.76	0.4	2.5		
	160408-3N	T02020	●	●		●		●	9.525	3.81	4.76	0.8	2.5		
	160412-3N	S01020	●	●		●		●	9.525	3.81	4.76	1.2	2.5		
	160404-6N	S02020													
	160408-6N								9.525	3.81	4.76	0.4	2.5		
	160412-6N								9.525	3.81	4.76	0.8	2.5		
								9.525	3.81	4.76	1.2	2.5			

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>WNGA</b> 	080404-1N		●						12.7	5.16	4.76	0.4	2.5		
	080408-1N		●						12.7	5.16	4.76	0.8	2.5		
	080412-1N		●						12.7	5.16	4.76	1.2	2.5		
	080404-3N	T01020	●	●		●		●	12.7	5.16	4.76	0.4	2.5		
	080408-3N	T01025	●	●		●		●	12.7	5.16	4.76	0.8	2.5		
	080412-3N	T02020	●	●		●		●	12.7	5.16	4.76	1.2	2.5		
	080404-6N	S02025													
	080408-6N	S02030							12.7	5.16	4.76	0.4	2.5		
	080412-6N								12.7	5.16	4.76	0.8	2.5		
								12.7	5.16	4.76	1.2	2.5			



## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>CCGW</b> 	060202-1N		●						6.35	2.80	2.38	0.2	2.5		
	060204-1N		●						6.35	2.80	2.38	0.4	2.5		
	09T302-1N		●						9.525	4.40	3.97	0.2	2.5		
	09T304-1N		●						9.525	4.40	3.97	0.4	2.5		
	09T308-1N		●						9.525	4.40	3.97	0.8	2.5		
	120402-1N		●						12.7	5.50	4.76	0.2	2.5		
	120404-1N		●						12.7	5.50	4.76	0.4	2.5		
	120408-1N		●						12.7	5.50	4.76	0.8	2.5		
	120412-1N		●						12.7	5.50	4.76	1.2	2.5		
		T01020													
		T01025													
		T02020													
		S02025													
		S02030													
	060202-2N		●		●		●		6.35	2.80	2.38	0.2	2.5		
	060204-2N		●		●		●		6.35	2.80	2.38	0.4	2.5		
	09T302-2N		●		●		●		9.525	4.40	3.97	0.2	2.5		
	09T304-2N		●		●		●		9.525	4.40	3.97	0.4	2.5		
	09T308-2N		●		●		●		9.525	4.40	3.97	0.8	2.5		
	120402-2N		●		●		●		12.7	5.50	4.76	0.2	2.5		
	120404-2N		●		●		●		12.7	5.50	4.76	0.4	2.5		
	120408-2N		●		●		●		12.7	5.50	4.76	0.8	2.5		
	120412-2N		●		●		●		12.7	5.50	4.76	1.2	2.5		

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>TCGW</b> 	110202-1N		●						6.35	2.80	2.38	0.2	2.5		
	110204-1N		●						6.35	2.80	2.38	0.4	2.5		
	110208-1N		●						6.35	2.80	2.38	0.8	2.5		
	16T302-1N		●						9.525	4.40	3.97	0.2	2.5		
	16T304-1N		●						9.525	4.40	3.97	0.4	2.5		
	16T308-1N		●						9.525	4.40	3.97	0.8	2.5		
	16T312-1N		●						9.525	4.40	3.97	1.2	2.5		
		T01020													
		T02020													
		S01020		●		●		●		6.35	2.80	2.38	0.2		2.5
		S02020		●		●		●		6.35	2.80	2.38	0.4		2.5
		110202-3N		●		●		●		6.35	2.80	2.38	0.8		2.5
		110204-3N		●		●		●		6.35	2.80	2.38	0.4		2.5
		110208-3N		●		●		●		6.35	2.80	2.38	0.8		2.5
	16T302-3N		●		●		●		9.525	4.40	3.97	0.2	2.5		
	16T304-3N		●		●		●		9.525	4.40	3.97	0.4	2.5		
	16T308-3N		●		●		●		9.525	4.40	3.97	0.8	2.5		
	16T312-3N		●		●		●		9.525	4.40	3.97	1.2	2.5		

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>DCGW</b> 	070202-1N		●						6.35	2.80	2.38	0.2	2.5		
	070204-1N		●						6.35	2.80	2.38	0.4	2.5		
	070208-1N		●						6.35	2.80	2.38	0.8	2.5		
	11T302-1N		●						9.525	4.40	3.97	0.2	2.5		
	11T304-1N		●						9.525	4.40	3.97	0.4	2.5		
	11T308-1N		●						9.525	4.40	3.97	0.8	2.5		
	11T312-1N		●						9.525	4.40	3.97	1.2	2.5		
		T01020													
		T01025													
		T02020													
		S02025		●		●		●		6.35	2.80	2.38	0.2		2.5
		S02030		●		●		●		6.35	2.80	2.38	0.4		2.5
		070202-2N		●		●		●		6.35	2.80	2.38	0.8		2.5
		070204-2N		●		●		●		6.35	2.80	2.38	0.2		2.5
	070208-2N		●		●		●		6.35	2.80	2.38	0.8	2.5		
	11T302-2N		●		●		●		9.525	4.40	3.97	0.2	2.5		
	11T304-2N		●		●		●		9.525	4.40	3.97	0.4	2.5		
	11T308-2N		●		●		●		9.525	4.40	3.97	0.8	2.5		
	11T312-2N		●		●		●		9.525	4.40	3.97	1.2	2.5		

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries		
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la	
<b>VBGW</b> 	110302-1N		●						6.35	2.80	3.18	0.2	2.5		
	110304-1N		●						6.35	2.80	3.18	0.4	2.5		
	110308-1N		●						6.35	2.80	3.18	0.8	2.5		
	160402-1N		●						9.525	4.40	4.76	0.2	2.5		
	160404-1N		●						9.525	4.40	4.76	0.4	2.5		
	160408-1N		●						9.525	4.40	4.76	0.8	2.5		
	160412-1N		●						9.525	4.40	4.76	1.2	2.5		
		T01020													
		T02020													
		S01020		●		●		●		6.35	2.80	3.18	0.2		2.5
		S02020		●		●		●		6.35	2.80	3.18	0.4		2.5
		110302-2N		●		●		●		6.35	2.80	3.18	0.8		2.5
		110304-2N		●		●		●		6.35	2.80	3.18	0.2		2.5
		110308-2N		●		●		●		6.35	2.80	3.18	0.8		2.5
	160402-2N		●		●		●		9.525	4.40	4.76	0.2	2.5		
	160404-2N		●		●		●		9.525	4.40	4.76	0.4	2.5		
	160408-2N		●		●		●		9.525	4.40	4.76	0.8	2.5		
	160412-2N		●		●		●		9.525	4.40	4.76	1.2	2.5		

## CBN Inserts

Designation	Edge Prep.	Uncoated						Dimensions(mm)					Geometries	
		TB100C	TB300C	TB400C	TB200C	TB300C	TB400C	TB500C	IC	d	s	r		la
<b>VCGW</b> 	160402-1N		●						9.525	4.40	4.76	0.2	2.5	
	160404-1N		●						9.525	4.40	4.76	0.4	2.5	
	160408-1N		●						9.525	4.40	4.76	0.8	2.5	
	160412-1N		●						9.525	4.40	4.76	1.2	2.5	
	160402-2N	●	●		●		●		9.525	4.40	4.76	0.2	2.5	
	160404-2N	●	●		●		●		9.525	4.40	4.76	0.4	2.5	
	160408-2N	●	●		●		●		9.525	4.40	4.76	0.8	2.5	
	160412-2N	●	●		●		●		9.525	4.40	4.76	1.2	2.5	

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TB2000	TB3000	TB5000	TB5000	IC	d	s	r	la	
<b>CNGA</b> 	120404-4S		●	●		●			12.7	5.16	4.76	0.4	2.5	
	120408-4S	T01020		●	●		●		12.7	5.16	4.76	0.8	2.5	
	120412-4S	T01025		●	●		●		12.7	5.16	4.76	1.2	2.5	
		T02020												
		S02025												
		S02030												

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TB2000	TB3000	TB5000	TB5000	IC	d	s	r	la	
<b>DNGA</b> 	150404-4S		●	●		●			12.7	5.16	4.76	0.4	2.5	
	150408-4S	T01020		●	●		●		12.7	5.16	4.76	0.8	2.5	
	150412-4S	T01025		●	●		●		12.7	5.16	4.76	1.2	2.5	
		T02020												
		S02025												
		S02030												

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TB2000	TB3000	TB5000	TB5000	IC	d	s	r	la	
<b>SNGA</b> 	120404-8S		●	●		●			12.7	5.16	4.76	0.4	2.5	
	120408-8S	T01020		●	●		●		12.7	5.16	4.76	0.8	2.5	
	120412-8S	T01025		●	●		●		12.7	5.16	4.76	1.2	2.5	
		T02020												
		S02025												
		S02030												



# Turning Insert (Negative)

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TBX200	TBX300	TB5400	TBC500	IC	d	s	r	la	
<b>TNGA</b>  <b>60° Nega</b>	160404-6S		●	●	●	●			9.525	3.81	4.76	0.4	2.5	
	160408-6S	T01020	●	●	●	●			9.525	3.81	4.76	0.8	2.5	
	160412-6S	T02020	●	●	●	●			9.525	3.81	4.76	1.2	2.5	
		S01020												
		S02020												

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TBX200	TBX300	TB5400	TBC500	IC	d	s	r	la	
<b>VNGA</b>  <b>35° Nega</b>	160404-4S		●	●	●	●			9.525	3.81	4.76	0.4	2.5	
	160408-4S	T01020	●	●	●	●			9.525	3.81	4.76	0.8	2.5	
	160412-4S	T02020	●	●	●	●			9.525	3.81	4.76	1.2	2.5	
		S01020												
		S02020												

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TBX200	TBX300	TB5400	TBC500	IC	d	s	r	la	
<b>WNGA</b>  <b>80° Nega</b>	080404-6S		●	●	●	●			12.7	5.16	4.76	0.4	2.5	
	080408-6S	T01020	●	●	●	●			12.7	5.16	4.76	0.8	2.5	
	080412-6S	T01025	●	●	●	●			12.7	5.16	4.76	1.2	2.5	
		T02020												
		S02025												

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TBX200	TBX300	TB5400	TBC500	IC	d	s	r	la	
<b>CNMN</b>  <b>80° Nega</b>	090404		●	●	●	●			9.525	-	4.76	0.4	-	
	090408	T01020	●	●	●	●			9.525	-	4.76	0.8	-	
	090412	T01025	●	●	●	●			9.525	-	4.76	1.2	-	
	120404	T02020	●	●	●	●			12.7	-	4.76	0.4	-	
	120408	S02025	●	●	●	●			12.7	-	4.76	0.8	-	
	120412	S02030	●	●	●	●			12.7	-	4.76	1.2	-	

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TBX200	TBX300	TB5400	TBC500	IC	d	s	r	la	
<b>RNMN</b>  <b>Round Nega</b>	090400		●	●	●	●			9.525	-	4.76	-	-	
	120400	T01020	●	●	●	●			12.7	-	4.76	-	-	
	120700	T01025	●	●	●	●			12.7	-	7.94	-	-	
	150700	T02020	●	●	●	●			15.875	-	7.94	-	-	
	200700	S02025	●	●	●	●			20.0	-	7.94	-	-	
	201000	S02030	●	●	●	●			20.0	-	10.00	-	-	

## CBN Inserts

Designation	Edge Prep.	Uncoated						Coated	Dimensions(mm)					Geometries
		TB1000	TB3000	TB5000	TBX200	TBX300	TB5400	TBC500	IC	d	s	r	la	
<b>SNMN</b>  <b>90° Nega</b>	090400		●	●	●	●			9.525	-	4.76	0.4	-	
	090408	T01020	●	●	●	●			9.525	-	4.76	0.8	-	
	090412	T01020	●	●	●	●			9.525	-	4.76	1.2	-	
	120404	T01025	●	●	●	●			12.7	-	4.76	0.4	-	
	120408	T02020	●	●	●	●			12.7	-	4.76	0.8	-	
	120412	S01020	●	●	●	●			12.7	-	4.76	1.2	-	
	150712	S02020	●	●	●	●			15.875	-	7.94	1.2	-	
	150716	S05020	●	●	●	●			15.875	-	7.94	1.6	-	
	201020	S10020	●	●	●	●			20.0	-	10.0	2.0	-	
	201024		●	●	●	●			20.0	-	10.0	2.4	-	

## PCD grade

Grade	Features	Application	Grain size (μm)	Hardness (Hv)	TRS (kgf/mm <sup>2</sup> )
TDP10E	By use of the diamond grain having good bonding property, it is suitable for machining of non-ferrous metal, graphite.	High Si aluminum alloy, Copper, Bronze alloy, Rubber, Wood, Carbon, Cemented carbide, ceramic semi-sintered products, FRP, graphite	10	10000~12000	200
TDP30E	Coarse diamond grain has been used to get excellent wear resistance enough to machine cemented-carbide, high Si aluminum alloy.	Cemented carbide, Ceramic roughing, High Si aluminum alloy, Rock, stone	2-30	10000~12000	110
TDP01E	By use of ultra fine diamond grain, it is possible to make sharp cutting edge. Thus it is appropriate grade to machine non-ferrous material	Plastic, Wood, Precise finishing of aluminum	1	8000~10000	220

## Recommended cutting condition

Workpiece	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	Recommended grade	
				1 <sup>st</sup>	2 <sup>nd</sup>
Aluminum alloy (4%-8% Si)	1000-3000	0.10-0.60	~3	TDP10E	TDP30E
Aluminum alloy (9%-14% Si)	600-2500	0.10-0.50	~3	TDP10E	TDP30E
Aluminum alloy (15%-18% Si)	300-700	0.10-0.40	~3	TDP10E	TDP30E
Copper, Bronze alloy	~1000	0.05-0.20	~3	TDP10E	TDP01E
Reinforced plastic	~1000	0.10-0.30	~2	TDP10E	TDP01E
Wood	~4000	0.10-0.40	-	TDP10E	TDP01E
Cemented carbide	10~30	~0.20	~0.5	TDP30E	TDP10E

## PCD Inserts

Designation	Uncoated			Dimensions(mm)						Geometries	
	TDP01E	TDP10E	TDP30E	IC	d	s	r	la	α		
<b>CN</b> ○○○ 	CNGA	120404-1N	●	●	12.7	5.16	4.76	0.4	2.5	0°	
		120408-1N	●	●	12.7	5.16	4.76	0.8	2.5	0°	
	CNGX	120404-1N	●	●	12.7	5.16	4.76	0.4	2.5	10°	
		120408-1N	●	●	12.7	5.16	4.76	0.8	2.5	10°	
<b>CN</b> ○○○ 	CNGA	120404-2N	●	●	12.7	5.16	4.76	0.4	2.5	0°	
		120408-2N	●	●	12.7	5.16	4.76	0.8	2.5	0°	
	CNGX	120404-2N	●	●	12.7	5.16	4.76	0.4	2.5	3°-5°	
		120408-2N	●	●	12.7	5.16	4.76	0.8	2.5	3°-5°	

## PCD Inserts

Designation	Uncoated			Dimensions(mm)						Geometries	
	TDP01E	TDP10E	TDP30E	IC	d	s	r	la	α		
<b>DN</b> ○○○ 	DNGA	150404-1N	●	●	12.7	5.16	4.76	0.4	2.5	0°	
		150408-1N	●	●	12.7	5.16	4.76	0.8	2.5	0°	
	DNGX	150404-1N	●	●	12.7	5.16	4.76	0.4	2.5	3°-5°	
		150408-1N	●	●	12.7	5.16	4.76	0.8	2.5	3°-5°	
<b>DN</b> ○○○ 	DNGA	150404-2N	●	●	12.7	5.16	4.76	0.4	2.5	0°	
		150408-2N	●	●	12.7	5.16	4.76	0.8	2.5	0°	
	DNGX	150404-2N	●	●	12.7	5.16	4.76	0.4	2.5	3°-5°	
		150408-2N	●	●	12.7	5.16	4.76	0.8	2.5	3°-5°	



## PCD Inserts

Designation	Uncoated			Dimensions(mm)						Geometries	
	TDP01E	TDP10E	TDP30E	IC	d	s	r	la	$\alpha$		
<b>TN</b> ○○ 	TNGA	160404-1N	●	●	9.525	3.81	4.76	0.4	2.5	0°	
		160408-1N	●	●	9.525	3.81	4.76	0.8	2.5	0°	
	TNGX	160404-1N	●	●	9.525	3.81	4.76	0.4	2.5	3°-5°	
		160408-1N	●	●	9.525	3.81	4.76	0.8	2.5	3°-5°	
	TNGA	160404-3N	●	●	9.525	3.81	4.76	0.4	2.5	0°	
		160408-3N	●	●	9.525	3.81	4.76	0.8	2.5	0°	
	TNGX	160404-3N	●	●	9.525	3.81	4.76	0.4	2.5	3°-5°	
		160408-3N	●	●	9.525	3.81	4.76	0.8	2.5	3°-5°	

## PCD Inserts

Designation	Uncoated			Dimensions(mm)						Geometries	
	TDP01E	TDP10E	TDP30E	IC	d	s	r	la	$\alpha$		
<b>VN</b> ○○ 	VNGA	160404-1N	●	●	9.525	3.81	4.76	0.4	2.5	0°	
		160408-1N	●	●	9.525	3.81	4.76	0.8	2.5	0°	
	VNGX	160404-1N	●	●	9.525	3.81	4.76	0.4	2.5	3°-5°	
		160408-1N	●	●	9.525	3.81	4.76	0.8	2.5	3°-5°	
	VNGA	160404-2N	●	●	9.525	3.81	4.76	0.4	2.5	0°	
		160408-2N	●	●	9.525	3.81	4.76	0.8	2.5	0°	
	VNGX	160404-2N	●	●	9.525	3.81	4.76	0.4	2.5	3°-5°	
		160408-2N	●	●	9.525	3.81	4.76	0.8	2.5	3°-5°	

## PCD Inserts

Designation	Uncoated			Dimensions(mm)						Geometries	
	TDP01E	TDP10E	TDP30E	IC	d	s	r	la	$\alpha$		
<b>CC</b> ○○ 	CCGW	060202-1N	○	●	6.35	2.80	2.38	0.2	2.5	0°	
		060204-1N	○	●	6.35	2.80	2.38	0.4	2.5	0°	
		09T302-1N	○	●	9.525	4.40	3.97	0.2	2.5	0°	
		09T304-1N	○	●	9.525	4.40	3.97	0.4	2.5	0°	
		09T308-1N	○	●	9.525	4.40	3.97	0.8	2.5	0°	
		120404-1N	○	●	12.7	5.50	4.76	0.4	2.5	0°	
		120408-1N	○	●	12.7	5.50	4.76	0.8	2.5	0°	
	CCGT	060202-1N	○	●	6.35	2.80	2.38	0.2	2.5	3°-5°	
		060204-1N	○	●	6.35	2.80	2.38	0.4	2.5	3°-5°	
		09T302-1N	○	●	9.525	4.40	3.97	0.2	2.5	3°-5°	
		09T304-1N	○	●	9.525	4.40	3.97	0.4	2.5	3°-5°	
		09T308-1N	○	●	9.525	4.40	3.97	0.8	2.5	3°-5°	
	120404-1N	○	●	12.7	5.50	4.76	0.4	2.5	3°-5°		
	120408-1N	○	●	12.7	5.50	4.76	0.8	2.5	3°-5°		
	CCGW	060202-2N	○	○	6.35	2.80	2.38	0.2	2.5	0°	
		060204-2N	○	○	6.35	2.80	2.38	0.4	2.5	0°	
		09T302-2N	○	○	9.525	4.40	3.97	0.2	2.5	0°	
		09T304-2N	○	○	9.525	4.40	3.97	0.4	2.5	0°	
		09T308-2N	○	○	9.525	4.40	3.97	0.8	2.5	0°	
		120404-2N	○	○	12.7	5.50	4.76	0.4	2.5	0°	
		120408-2N	○	○	12.7	5.50	4.76	0.8	2.5	0°	
	CCGT	060202-2N	○	○	6.35	2.80	2.38	0.2	2.5	3°-5°	
		060204-2N	○	○	6.35	2.80	2.38	0.4	2.5	3°-5°	
		09T302-2N	○	○	9.525	4.40	3.97	0.2	2.5	3°-5°	
		09T304-2N	○	○	9.525	4.40	3.97	0.4	2.5	3°-5°	
		09T308-2N	○	○	9.525	4.40	3.97	0.8	2.5	3°-5°	
	120404-2N	○	○	12.7	5.50	4.76	0.4	2.5	3°-5°		
	120408-2N	○	○	12.7	5.50	4.76	0.8	2.5	3°-5°		

## PCD Inserts

Designation	Uncoated			Dimensions(mm)						Geometries		
	TDP01E	TDP10E	TDP30E	IC	d	s	r	la	$\alpha$			
<b>DC</b>  55° Posi	DCGW	070202-1N	○	●	●	6.35	2.80	2.38	0.2	2.5	0°	
		070204-1N	○	●	●	6.35	2.80	2.38	0.4	2.5	0°	
		070208-1N	○	●	●	6.35	2.80	2.38	0.8	2.5	0°	
		11T302-1N	○	●	●	9.525	4.40	3.97	0.2	2.5	0°	
		11T304-1N	○	●	●	9.525	4.40	3.97	0.4	2.5	0°	
		11T308-1N	○	●	●	9.525	4.40	3.97	0.8	2.5	0°	
	DCGT	070202-1N	○	●	●	6.35	2.80	2.38	0.2	2.5	3°-5°	
		070204-1N	○	●	●	6.35	2.80	2.38	0.4	2.5	3°-5°	
		070208-1N	○	●	●	6.35	2.80	2.38	0.8	2.5	3°-5°	
		11T302-1N	○	●	●	9.525	4.40	3.97	0.2	2.5	3°-5°	
	11T304-1N	○	●	●	9.525	4.40	3.97	0.4	2.5	3°-5°		
	11T308-1N	○	●	●	9.525	4.40	3.97	0.8	2.5	3°-5°		
DCGW	070202-2N	○	○	○	6.35	2.80	2.38	0.2	2.5	0°		
	070204-2N	○	○	○	6.35	2.80	2.38	0.4	2.5	0°		
	070208-2N	○	○	○	6.35	2.80	2.38	0.8	2.5	0°		
	11T302-2N	○	○	○	9.525	4.40	3.97	0.2	2.5	0°		
	11T304-2N	○	○	○	9.525	4.40	3.97	0.4	2.5	0°		
	11T308-2N	○	○	○	9.525	4.40	3.97	0.8	2.5	0°		
	DCGT	070202-2N	○	○	○	6.35	2.80	2.38	0.2	2.5		3°-5°
		070204-2N	○	○	○	6.35	2.80	2.38	0.4	2.5		3°-5°
		070208-2N	○	○	○	6.35	2.80	2.38	0.8	2.5		3°-5°
		11T302-2N	○	○	○	9.525	4.40	3.97	0.2	2.5		3°-5°
	11T304-2N	○	○	○	9.525	4.40	3.97	0.4	2.5	3°-5°		
	11T308-2N	○	○	○	9.525	4.40	3.97	0.8	2.5	3°-5°		

## PCD Inserts

Designation	Uncoated			Dimensions(mm)						Geometries		
	TDP01E	TDP10E	TDP30E	IC	d	s	r	la	$\alpha$			
<b>TC</b>  60° Posi	TCGW	110202-1N	○	●	●	6.35	2.80	2.38	0.2	2.5	0°	
		110204-1N	○	●	●	6.35	2.80	2.38	0.4	2.5	0°	
		110208-1N	○	●	●	6.35	2.80	2.38	0.8	2.5	0°	
		16T302-1N	○	●	●	9.525	4.40	3.97	0.2	2.5	0°	
		16T304-1N	○	●	●	9.525	4.40	3.97	0.4	2.5	0°	
		16T308-1N	○	●	●	9.525	4.40	3.97	0.8	2.5	0°	
	TCGT	110202-1N	○	●	●	6.35	2.80	2.38	0.2	2.5	3°-5°	
		110204-1N	○	●	●	6.35	2.80	2.38	0.4	2.5	3°-5°	
		110208-1N	○	●	●	6.35	2.80	2.38	0.8	2.5	3°-5°	
		16T302-1N	○	●	●	9.525	4.40	3.97	0.2	2.5	3°-5°	
	16T304-1N	○	●	●	9.525	4.40	3.97	0.4	2.5	3°-5°		
	16T308-1N	○	●	●	9.525	4.40	3.97	0.8	2.5	3°-5°		
TCGW	110202-3N	○	○	○	6.35	2.80	2.38	0.2	2.5	0°		
	110204-3N	○	○	○	6.35	2.80	2.38	0.4	2.5	0°		
	110208-3N	○	○	○	6.35	2.80	2.38	0.8	2.5	0°		
	16T302-3N	○	○	○	9.525	4.40	3.97	0.2	2.5	0°		
	16T304-3N	○	○	○	9.525	4.40	3.97	0.4	2.5	0°		
	16T308-3N	○	○	○	9.525	4.40	3.97	0.8	2.5	0°		
	TCGT	110202-3N	○	○	○	6.35	2.80	2.38	0.2	2.5		3°-5°
		110204-3N	○	○	○	6.35	2.80	2.38	0.4	2.5		3°-5°
		110208-3N	○	○	○	6.35	2.80	2.38	0.8	2.5		3°-5°
		16T302-3N	○	○	○	9.525	4.40	3.97	0.2	2.5		3°-5°
	16T304-3N	○	○	○	9.525	4.40	3.97	0.4	2.5	3°-5°		
	16T308-3N	○	○	○	9.525	4.40	3.97	0.8	2.5	3°-5°		





# External tool Holder Code System (ISO)

**P S K N R 25 25 - M 12**

1 2 3 4 5 6 7 8 9

### 4 Clearance Angle of Inserts

**P S K N R 25 25 - M 12**

<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>N</b>	<b>P</b>

### 1 Clamping Method of Inserts

**P S K N R 25 25 - M 12**

<b>C</b>	<b>A</b>	<b>B</b>	<b>M</b>	<b>P</b>	<b>S</b>	<b>W</b>

### 5 Hand of Tool

**P S K N R 25 25 - M 12**

<b>L</b>	<b>N</b>	<b>R</b>

### 6 Height of Shank

**P S K N R 25 25 - M 12**

### 2 Insert Shape

**P S K N R 25 25 - M 12**

<b>C</b>	<b>D</b>	<b>E</b>	<b>K</b>	<b>L</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>V</b>	<b>W</b>

### 7 Width of Shank

**P S K N R 25 25 - M 12**

### 8 Length of Holder

**P S K N R 25 25 - M 12**

	<table border="1"> <tr><td>A - 32</td><td>H - 100</td><td>Q - 180</td></tr> <tr><td>B - 40</td><td>J - 110</td><td>R - 200</td></tr> <tr><td>C - 50</td><td>K - 125</td><td>S - 250</td></tr> <tr><td>D - 60</td><td>L - 140</td><td>T - 300</td></tr> <tr><td>E - 70</td><td>M - 150</td><td>U - 350</td></tr> <tr><td>F - 80</td><td>N - 160</td><td>V - 400</td></tr> <tr><td>G - 90</td><td>P - 170</td><td>W - 450</td></tr> </table>	A - 32	H - 100	Q - 180	B - 40	J - 110	R - 200	C - 50	K - 125	S - 250	D - 60	L - 140	T - 300	E - 70	M - 150	U - 350	F - 80	N - 160	V - 400	G - 90	P - 170	W - 450	X-Special Item
A - 32	H - 100	Q - 180																					
B - 40	J - 110	R - 200																					
C - 50	K - 125	S - 250																					
D - 60	L - 140	T - 300																					
E - 70	M - 150	U - 350																					
F - 80	N - 160	V - 400																					
G - 90	P - 170	W - 450																					

### 3 Holder Style

**P S K N R 25 25 - M 12**

<b>B</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>J</b>	<b>K</b>
<b>L</b>	<b>N</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>V</b>	<b>Y</b>

### 9 Length of Insert Cutting Edge

**P S K N R 25 25 - M 12**

<b>A, B, K</b>	<b>C, D, E, M, V</b>	<b>H</b>	<b>L</b>	<b>O</b>
<b>P</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>W</b>

TOOL LINE  
DRILL LINE  
GROOVE LINE  
MILL LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
GROOVE LINE  
MILL LINE  
THREAD LINE  
TURN LINE



**S 12 M - S T F P R - 11**

1 2 3 4 5 6 7 8 9

**1 Type of Bar**

**S 12 M - S T F P R - 11**

"A" Steel with coolant hole  
 "E" Carbide bar with fixed steel head and coolant hole  
 "C" Carbide shank  
 "S" Steel shank  
 "X" Special type

**2 Bar Diameter**

**S 12 M - S T F P R - 11**

**3 Bar Length**

**S 12 M - S T F P R - 11**

长度 Length(L)	(mm)
H	100
J	110
K	125
M	150
N	160
Q	180
R	200
S	250
T	300
U	350
V	400
W	450
Y	500

**4 Method of Mounting Insert**

**S 12 M - S T F P R - 11**

<b>C</b>	<b>A</b>
<b>M</b>	<b>P</b>
<b>S</b>	<b>W</b>

**5 Insert Shape**

**S 12 M - S T F P R - 11**

**6 Lead Angle of Boring Bar**

**S 12 M - S T F P R - 11**

<b>L</b>	<b>F</b>	<b>U</b>
<b>K</b>	<b>Q</b>	<b>Z</b>
<b>J</b>	<b>W</b>	

**7 Relief Angle of Insert**

**S 12 M - S T F P R - 11**

<b>B</b>	<b>C</b>
<b>N</b>	<b>P</b>

**8 Hand of Bar**

**S 12 M - S T F P R - 11**

<b>R</b>	<b>L</b>

**8 Length of Cutting Edge**

**S 12 M - S T F P R - 11**

TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE

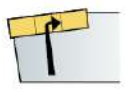
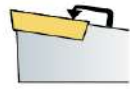
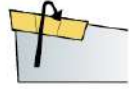
TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE

**S T F C R 12 C A - 16**

1 2 3 4 5 6 7 8 9




**1 Method of mounting insert**

**S T F C R 12 C A - 16**

 TOP CLAMPING	 HOLE CLAMPING	 SCREW ON
C	P	S

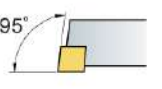
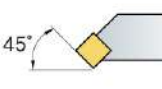
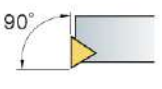

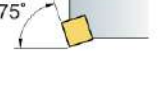
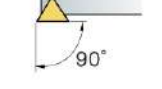
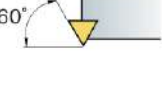
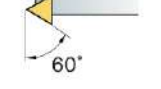
**2 Insert Shape**

**S T F C R 12 C A - 16**

		
C	S	T

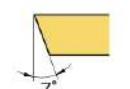
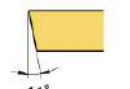
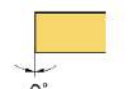
**3 Holder style**

**S T F C R 12 C A - 16**

 L	 S	 F	 R
 K	 G	 W	 T

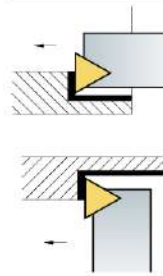
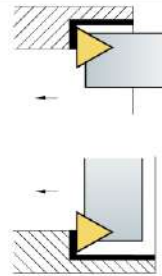
**4 Relief angle of insert**

**S T F C R 12 C A - 16**

 C	 P	 N
--	--	--

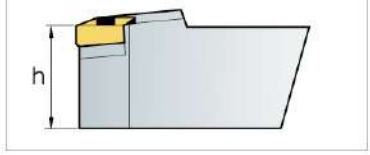
**5 Hand of tool**

**S T F C R 12 C A - 16**

 R	 L
---	---

**6 Hand of tool**

**S T F C R 12 C A - 16**



**7 Cartridge code**

**S T F C R 12 C A - 16**

C  
(cartridge)

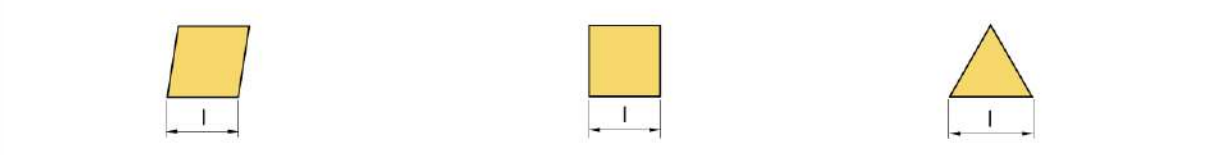
**8 Type of cartridge**

**S T F C R 12 C A - 16**

A  
(ISO5611)

**9 Length of cutting edge**

**S T F C R 12 C A - 16**



TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE



Cutting Shape							
Designation	DCBNR/L	DCKNR/L	DCLNR/L	DDJNR/L	DSBNR/L	DSDNN	DSKNR/L
Approach angle	45°	75°	95°	93°	75°	45°	75°
Page							
Chamfering						●	
Back turning			●	●			
Turning	●		●	●	●	●	
Copying				●			
Facing		●	●				●

Cutting Shape							
Designation	MDQNR/L	MSBNR/L	MSDNN	MSKNR/L	MSSNR/L	MTENN	MTFNR/L
Approach angle	107.5°	75°	45°	75°	45°	60°	91°
Page							
Chamfering			●		●	●	
Back turning	●						
Turning	●	●	●	●	●	●	●
Copying	●					●	
Facing				●	●		●

Cutting Shape							
Designation	DSSNR/L	DTFNR/L	DTGNR/L	DTJNR/L	DVJNR/L	DVVNN	DWLNR/L
Approach angle	45°	90°	90°	90°	93°	72.5°	95°
Page							
Chamfering							
Back turning	●			●	●		●
Turning	●		●	●	●	●	●
Copying				●	●	●	
Facing	●	●					●

Cutting Shape							
Designation	MTGNR/L	MTJNR/L	MTQNR/L	MVJNR/L	MVQNR/L	MVUNR/L	MVVNN
Approach angle	91°	93°	105°	93°	117.5°	95°	72.5°
Page							
Chamfering							
Back turning		●		●	●	●	
Turning	●	●	●	●	●	●	●
Copying		●	●	●	●	●	●
Facing	●	●	●				

Cutting Shape							
Designation	MCBNR/L	MCKNR/L	MCLNR/L	MCMNN	MCMNN-100	MDJNR/L	MDPNN
Approach angle	75°	75°	95°	50°	40°	93°	62.5°
Page							
Chamfering				●	●		
Back turning			●			●	
Turning	●		●	●	●	●	●
Copying						●	●
Facing		●	●		●		

Cutting Shape							
Designation	MWLNR/L						
Approach angle	95°						
Page							
Chamfering							
Back turning	●						
Turning	●						
Copying							
Facing	●						

# Index for Tool Holder

Cutting Shape						
Designation	WTJNR/L	WTENN	WTQNR/L	WWLNR/L		
Approach angle	93°	60°	105°	95°		
Page						
Chamfering		●				
Back turning	●		●	●		
Turning	●	●	●	●		
Copying	●	●	●	●		
Facing			●	●		

Cutting Shape							
Designation	PCKNR/L	PCLNR/L	PCBNR/L	PDJNR/L	PDNNR/L	PSBNR/L	PSDNN
Approach angle	75°	95°	75°	93°	62.5°	75°	45°
Page							
Chamfering					●		●
Back turning		●		●			●
Turning	●	●	●	●	●	●	●
Copying				●	●		
Facing	●	●					

Cutting Shape							
Designation	PSKNR/L	PSSNR/L	PRDCN	PRGCR/L	PTFNR/L	PTG(J)NR/L	PWLNR/L
Approach angle	75°	45°			91°	90°	95°
Page							
Chamfering		●					
Back turning							
Turning	●	●	●	●	●	●	●
Copying			●	●			
Facing	●				●		●

Cutting Shape							
Designation	SCACR/L	SCKCR/L	SCLCR/L	SDACR/L	SDJCR/L	SDNCN	SDQCR/L
Approach angle	90°	75°	95°	90°	93°	62.5°	107.5°
Page							
Chamfering							
Back turning			●	●	●		●
Turning	●	●	●	●	●	●	●
Copying			●	●	●	●	●
Facing		●	●				●

Cutting Shape							
Designation	SRACR/L	SRDCN	SRGCR/L	SSBCR/L	SSDCN	SSKCR/L	SSSCR/L
Approach angle				75°	45°	75°	45°
Page							
Chamfering					●		●
Back turning							
Turning	●	●	●	●	●	●	●
Copying	●	●	●				
Facing						●	●

Cutting Shape							
Designation	STACR/L	STGCR/L	STFCR/L	STWCR/L	SVJBR/L SVJCR/L	SVABR/L SVACR/L	SVQBR/L
Approach angle	90°	91°	91°	60°	93°	90°	117.5°
Page							
Chamfering				●			
Back turning					●	●	●
Turning	●	●	●	●	●	●	●
Copying					●	●	●
Facing			●	●			

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE



# Index for Tool Holder

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

Cutting Shape							
Designation	SVHBR/L SVHCR/L	SVVBN SVVCN	SVUBR/L SVUCR/L	SVKCR	SVVCR/L		
Approach angle	107.5°	72.5°	95°	90.5°	92.5°		
Page							
Chamfering					●		
Back turning	●						
Turning	●	●	●	●	●		
Copying	●	●		●	●		
Facing			●	●			

Cutting Shape							
Designation	DCLNR/L	DDUNR/L	DSKNR/L	DTFNR/L	DWLNR/L		
Approach angle	95°	93°	75°	90°	95°		
Page							
Chamfering							
Back turning		●					
Turning	●	●	●	●	●		
Copying		●					
Facing	●				●		

Cutting Shape							
Designation	MCKNR/L	MCLNR/L	MCWNR/L	MDQNR/L	MDUNR/L	MDZNR/L	MSKNR/L
Approach angle	75°	95°	50°	107.5°	95°	93°	75°
Page							
Chamfering			●				
Back turning				●	●	●	
Turning	●	●	●	●	●	●	●
Copying				●	●	●	
Facing		●					

Cutting Shape							
Designation	MTFNR/L	MTUNR/L	MTUNR/L-R	MTWNR/L	MTQNR/L	MVQNR/L	MVUNR/L
Approach angle	91°	95°	95°	60°	105°	117.5°	95°
Page							
Chamfering				●			
Back turning						●	●
Turning	●	●	●	●	●	●	●
Copying						●	●
Facing	●		●				

Cutting Shape							
Designation	MVXNR/L	MWLNR/L					
Approach angle	139°	95°					
Page							
Chamfering							
Back turning							
Turning	●	●					
Copying	●						
Facing		●					

Cutting Shape							
Designation	WTQNR	WTUNR					
Approach angle	105°	95°					
Page							
Chamfering							
Back turning							
Turning	●	●					
Copying							
Facing							

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

Cutting Shape							
Designation	PCLNR/L	PDUNR/L	PDSNR/L	PSKNR/L	PTFNR/L	PWLNR/L	
Approach angle	95°	95°	62.5°	75°	91°	95°	
Page							
Chamfering							
Back turning		●	●			●	
Turning	●	●	●	●	●	●	
Copying		●	●				
Facing	●			●		●	

Cutting Shape							
Designation	SCKCR/L	SCLCR/L	SCZCR/L	SDQCR/L	SDUCR/L	SDWCR/L	SDZCR/L
Approach angle	75°	95°	93°	107.5°	95°	62.5°	3°
Page							
Chamfering						●	
Back turning			●	●	●	●	●
Turning	●	●	●	●	●	●	●
Copying				●	●	●	
Facing		●					

Cutting Shape							
Designation	SSKCR/L	SSSCR/L	STFCR/L	STFPR/L	STUCR/L	STUPR/L	STWCR/L
Approach angle	75°	45°	91°	91°	95°	95°	60°
Page							
Chamfering							●
Back turning		●					●
Turning	●	●	●	●	●	●	
Copying		●					●
Facing							

Cutting Shape							
Designation	STUBR/L	SVJBR/L	SVJCR/L	SVQBR/L	SVQCR/L	SVXBR/L	SVXCR/L
Approach angle	93°	93°	93°	117.5°	117.5°	96°	96°
Page							
Chamfering							
Back turning				●	●		
Turning	●	●	●	●	●	●	●
Copying		●	●	●	●		
Facing						●	●

Cutting Shape							
Designation	SVUBR/L	SVUCR/L	SVWBR/L	SVWCR/L	SVZBR/L	SVZCR/L	SVJBR/L
Approach angle	95°	95°	72.5°	72.5°	93°	93°	93°
Page							
Chamfering							
Back turning	●	●	●	●	●	●	●
Turning	●	●	●	●	●	●	●
Copying	●	●			●	●	●
Facing							

Cutting Shape							
Designation	SVJCR/L	SWLCR/L	SWUBR/L	SWURB/L	SEXP		
Approach angle	93°	95°	93°	93°	100°		
Page							
Chamfering							
Back turning		●					
Turning	●	●	●	●	●		
Copying	●						
Facing		●		●			

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE



Cutting Shape							
Designation	SCLCR/L	SDQCR/L	SDUCR/L	STFPR/L	STFCR/L	STUPR/L	STUCR/L
Approach angle	95°	107.5°	95°	91°	91°	95°	95°
Page							
Chamfering							
Back turning		●	●				
Turning	●	●	●	●	●	●	●
Copying		●					
Facing	●						

Cutting Shape							
Designation	CSKPR/L	CTFPR/L	CTSPR/L	CTTPR/L	CTWPR/L	STTCR/L	STWCR/L
Approach angle							
Page							
Chamfering							
Back turning							
Turning	●	●	●	●	●	●	●
Copying							
Facing	●						

Cutting Shape							
Designation	SSKCR/L	SSSCR/L	STFCR/L				
Approach angle							
Page							
Chamfering		●					
Back turning							
Turning	●	●	●				
Copying							
Facing	●						

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

# Double Clamp System

## DCBNR/L



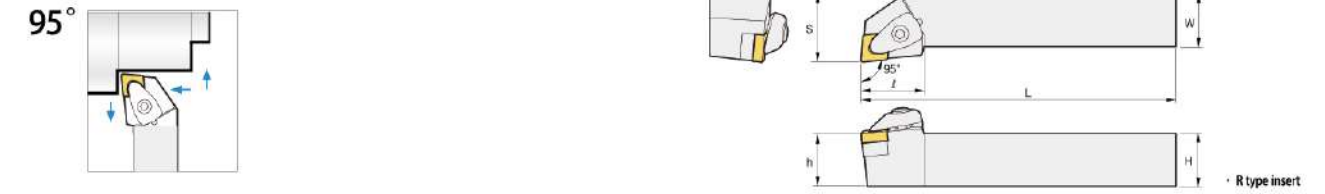
Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DCBNR/L 2020K12	●	●	20	20	125	31	20	17	CN□□1204□□	CVH54	CHX0518	MSC-432	DSP0611F	SPR0714	HW30L
2525M12	●	●	25	25	150	31	25	22							
3232P12			32	32	170	31	32	22							

## DCKNR/L



Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DCKNR/L 2020K12	●	●	20	20	125	21	20	25	CN□□1204□□	CVH54	CHX0518	MSC-432	DSP0611F	SPR0714	HW30L
2525M12	●	●	25	25	150	21	25	32							
3225P12			32	25	170	21	32	32							
3232P12			32	32	170	21	32	32							

## DCLNR/L



Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DCLNR/L 2020K09	●	●	20	20	125	24.5	20	25	CN□□0903□□	CVH43	CHX0415	MSC-322	DSP0408F	SPR0510	HW25L
2525M09	●	●	25	25	150	24.5	25	32							
2020K12	●	●	20	20	125	30	20	25	CN□□1204□□	CVH54	CHX0518	MSC-432	DSP0611F	SPR0714	HW30L
2525M12	●	●	25	25	150	30	25	32							
3225P12	●	●	32	25	170	30	32	32							
3232P12	●	●	32	32	170	30	32	40							

## DDJNR/L



Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DDJNR/L 2020K11	●	●	20	20	125	30	20	25	DN□□1104□□	CVH43	CHX0415	MSD-322	DSP0408F	SPR0510	HW25L
2525M11	●	●	25	25	150	30	25	32							
3225P11			32	25	170	30	32	32							
3232P11			32	32	170	30	32	40	DN□□1504□□	CVH54	CHX0518	MSD-432	DSP0611F	SPR0714	HW30L
2020K15	●	●	20	20	125	35	20	25							
2525M15	●	●	25	25	150	35	25	32							
3225P15			32	25	170	35	32	32							
3232P15	●	●	32	32	170	35	32	40							



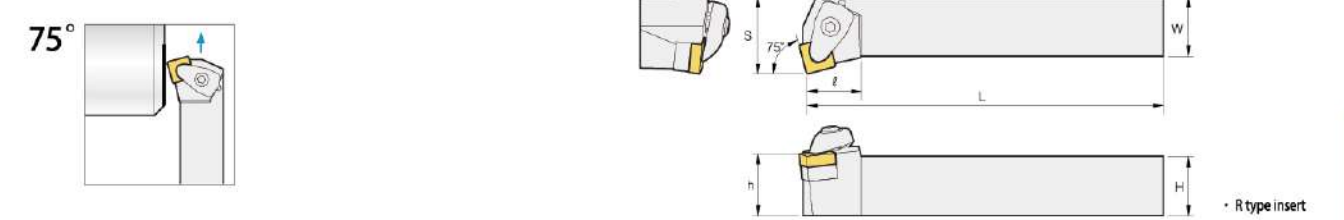
# Double Clamp System

## DSBNR/L



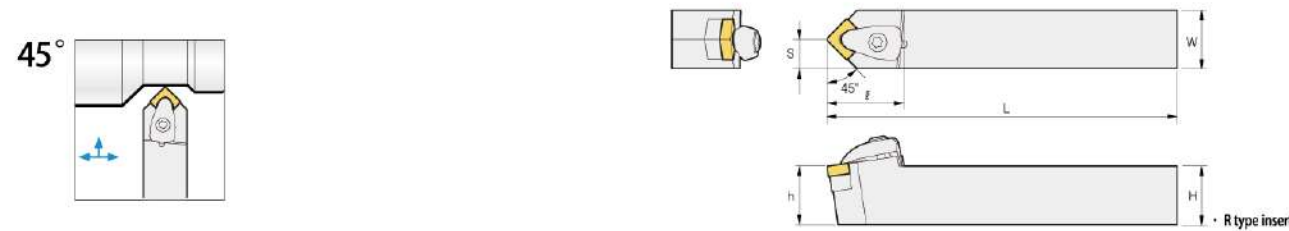
Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DSBNR/L 2020K12	●	●	20	20	125	32	20	17	SN□□1204□□	CVH54	CHX0518	MSS-432	DSP0611F	SPR0714	HW30L
2525M12	●	●	25	25	150	32	25	22							
3232P12			32	32	170	32	32	22							

## DSKNR/L



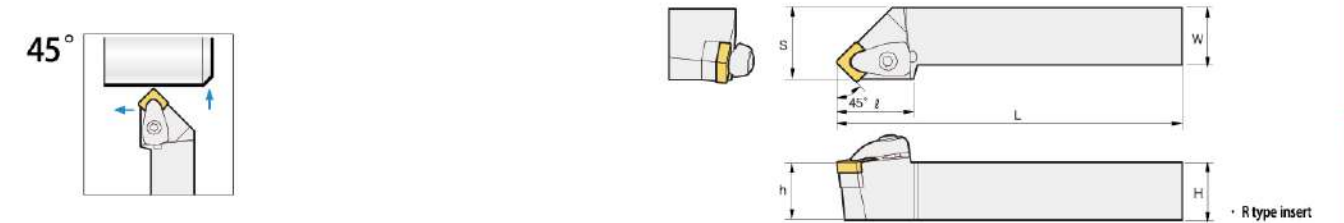
Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DSKNR/L 2020K09			20	20	125	20	20	25	SN□□0903□□	CVH43	CHX0415	MSS-322	DSP0408F	SPR0510	HW25L
2020K12	●	●	20	20	125	23	20	25	SN□□1204□□	CVH54	CHX0518	MSS-432	DSP0611F	SPR0714	HW30L
2525M12	●	●	25	25	150	23	25	32							
3232P12	●	●	32	32	170	23	32	40							

## DSDNN



Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DSDNN 2020K09			20	20	125	26.5	20	10	SN□□0903□□	CVH43	CHX0415	MSS-322	DSP0408F	SPR0510	HW25L
2020K12	●	●	20	20	125	33	20	10	SN□□1204□□	CVH54	CHX0518	MSS-432	DSP0611F	SPR0714	HW30L
2525M12	●	●	25	25	150	33	25	12.5							
3225P12			32	25	170	33	32	12.5							
3232P12	●	●	32	32	170	33	32	16							

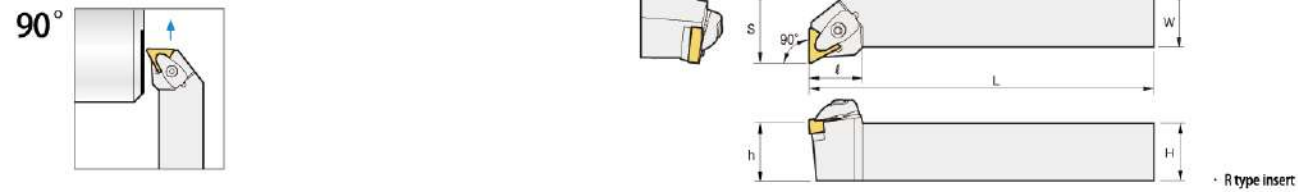
## DSSNR/L



Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DSSNR/L 2020K09			20	20	125	28.5	20	25	SN□□0903□□	CVH43	CHX0415	MSS-322	DSP0408F	SPR0510	HW25L
2020K12	●	●	20	20	125	35	20	25	SN□□1204□□	CVH54	CHX0518	MSS-432	DSP0611F	SPR0714	HW30L
2525M12	●	●	25	25	150	35	25	32							
3225P12			32	25	170	35	32	32							
3232P12	●	●	32	32	170	35	32	40							

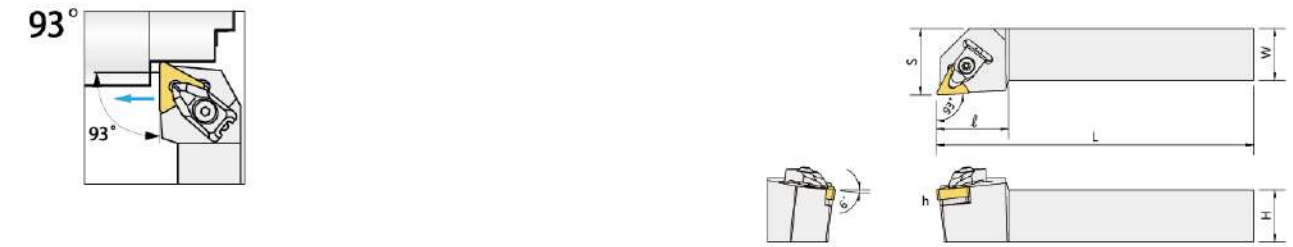
# Double Clamp System

## DTFNR/L



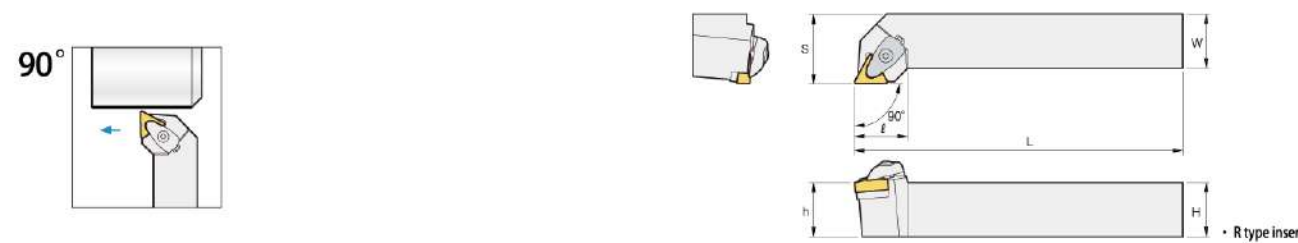
Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DTFNR/L 2020K16	●	●	20	20	125	24.5	20	25	TN□□1604□□	CVH43	CHX0415	MST-322	DSP0408F	SPR0510	HW25L
2525M16	●	●	25	25	150	24.5	25	32							
3232P16	●	●	32	32	170	23.5	32	40							
2525M22	●		25	25	150	33	25	32	TN□□2204□□	CVH54	CHX0518	MST-432	DSP0611F	SPR0714	HW30L
3225P22			32	25	170	33	32	32							
3232P22	●		32	32	170	33	32	40							

## DTJNR/L



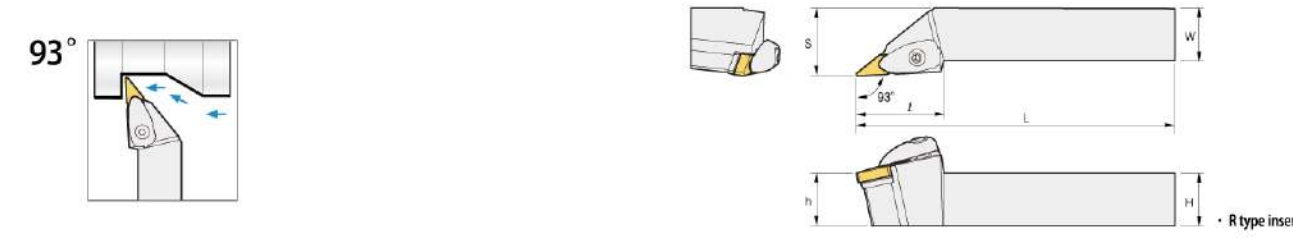
Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DTJNR/L 2020K16	●	●	20	20	125	24.5	20	25	TN□□1604□□	CVH43	CHX0415	MST-322	DSP0408F	SPR0510	HW25L
2525M16	●	●	25	25	150	24.5	25	32							
3232P16	●	●	32	32	170	24.5	32	40							
2525M22	●		25	25	150	32.6	25	32	TN□□2204□□	CVH54	CHX0518	MST-432	DSP0611F	SPR0714	HW30L
3225P22			32	25	170	32.6	32	32							
3232P22	●		32	32	170	32.6	32	40							

## DTGNR/L



Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DTGNR/L 2020K16	●	●	20	20	125	24.5	20	25	TN□□1604□□	CVH43	CHX0415	MST-322	DSP0408F	SPR0510	HW25L
2525M16	●	●	25	25	150	24.5	25	32							
3232P16	●	●	32	32	170	24.5	32	40							
2525M22	●		25	25	150	32.6	25	32	TN□□2204□□	CVH54	CHX0518	MST-432	DSP0611F	SPR0714	HW30L
3225P22			32	25	170	32.6	32	32							
3232P22	●		32	32	170	32.6	32	40							

## DVJNR/L



Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DVJNR/L 2020K16	●	●	20	20	125	41.5	20	25	VN□□1604□□	CVH63	CHX0518	MSV-322	DSP0408F	SPR0714	HW25L
2525M16	●	●	25	25	150	41.5	25	32							
3232P16	●	●	32	32	170	41.5	32	40							



## DVVNN



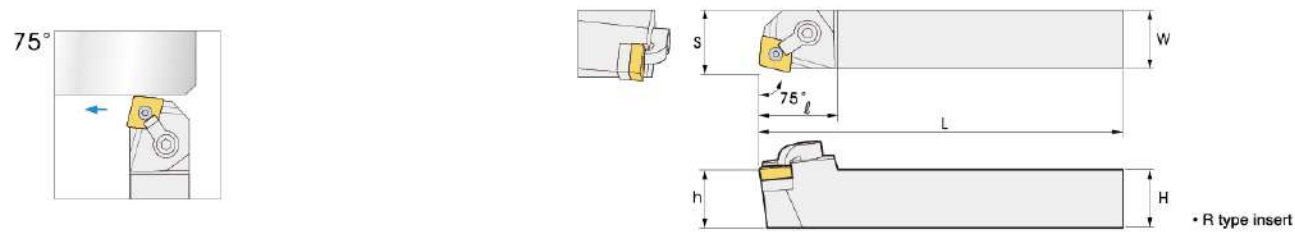
Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DVVNN 2020K16	●		20	20	125	40	20	10	VN□□1604□□	CVH63	CHX0518	MSV-322	DSP0408F	SPR0714	HW25L HW30L
2525M16	●		25	25	150	40	25	12.5							
3232P16	●		32	32	170	40	32	16							

## DWLNR/L



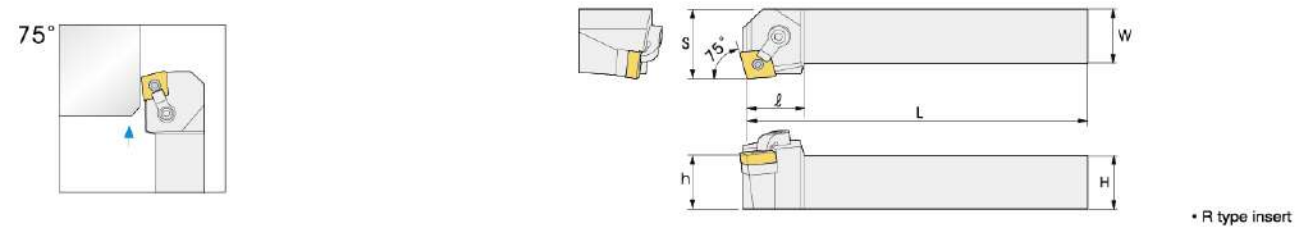
Designation	Stock		Size						Inserts	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	H	W	L	ℓ	h	S							
DWLNR/L 2020K06	●		20	20	125	26	20	25	WN□□0603□□	CVH43	CHX0415	MSW-322	DSP0408F	SPR0510	HW25L
2525M06	●		25	25	150	26	25	32							
2020K08	●	●	20	20	125	32	20	25	WN□□0804□□	CVH54	CHX0518	MSW-432	DSP0611F	SPR0714	HW30L
2525M08	●	●	25	25	150	32	25	32							
3225P08	●		32	25	170	32	32	32							
3232P08	●	●	32	32	170	32	32	40							

## MCBNR/L



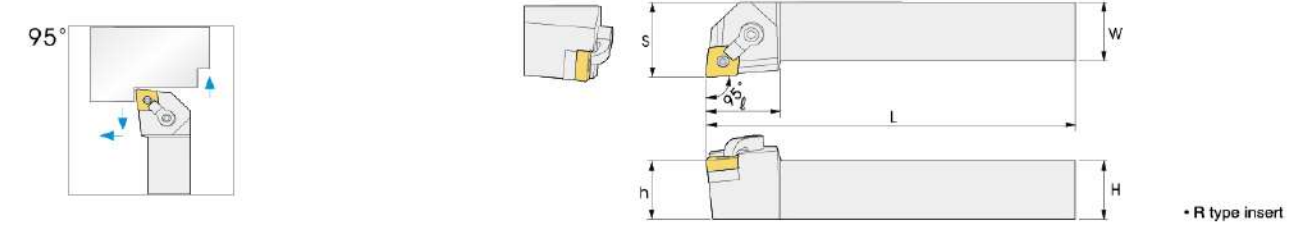
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MCBNR/L 2020K12	●	●	20	20	125	32	20	20.7	CN□□1204□□	MSC-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2525M12	●	●	25	25	150	32	25	25.2						
3232P12	●	●	32	32	170	32	32	30.8						
2525M16			25	25	150	36	25	22.0	CN□□1606□□	MSC-533	MLP508	MCP822	MCS830-4	HW30L HW40L
3232P16			32	32	170	40	32	31.9						
3232P19			32	32	170	40	32	32.7	CN□□1906□□	MSC-633	MLP610	MCP822	MCS830-4	HW40L

## MCKNR/L



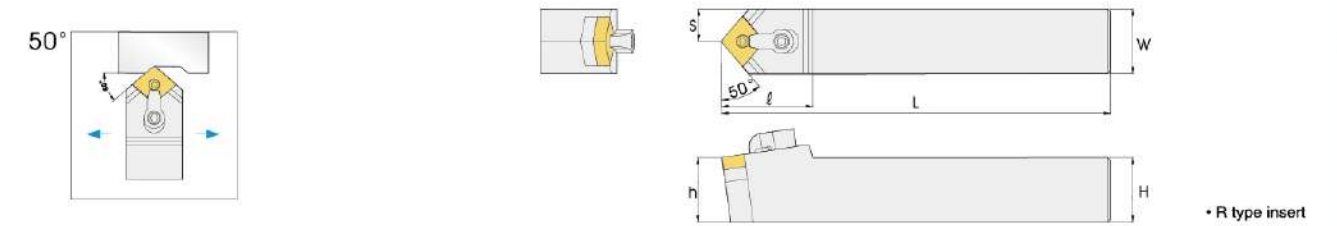
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MCKNR/L 2020K12	●	●	20	20	125	28	20	25	CN□□1204□□	MSC-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2525M12	●	●	25	25	150	28	25	32						
3232P12	●	●	32	32	170	35	32	40						
2525M16			25	25	150	32	25	32	CN□□1606□□	MSC-533	MLP508	MCP822	MCS830-4	HW30L HW40L
3232P16			32	32	170	35	32	40						
3232P19			32	32	170	38	32	40	CN□□1906□□	MSC-633	MLP610	MCP822	MCS830-4	HW40L

## MCLNR/L



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MCLNR/L 1616H09			16	16	100	25	16	20	CN□□0903□□	MSC-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K09			20	20	125	25	20	20	CN□□1204□□	MSC-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2020K12	●	●	20	20	125	32	20	25						
2525M12	●	●	25	25	150	32	25	32						
3232P12	●	●	32	32	170	32	32	40						
2525M16	●	●	25	25	150	34	25	32	CN□□1606□□	MSC-533	MLP508	MCP822	MCS830-4	HW30L HW40L
3225P16			32	25	170	35	32	32						
3232P16	●	●	32	32	170	34	32	40						
3232P19			32	32	170	38	32	40	CN□□1906□□	MSC-633	MLP610	MCP822	MCS830-4	HW40L
4040S19			40	40	200	38	40	50	CN□□2507□□	MSC-844	MLP812	MCP1032	MCS1035-6	HW40L HW50L
4040S25			40	40	250	38	40	50	CN□□2509□□	MSC-854				

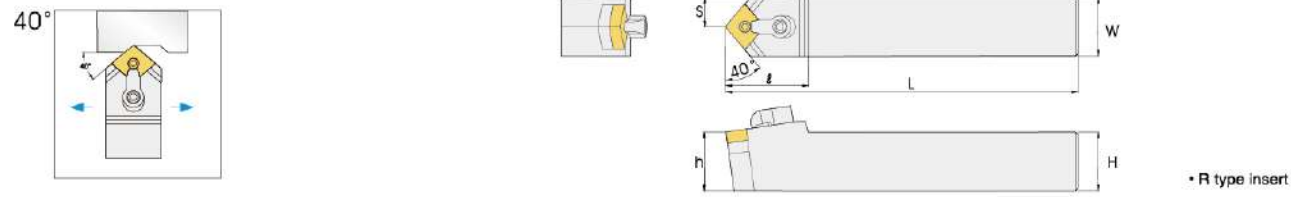
## MCMNN



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MCMNN 2020K12	●		20	20	125	35	20	10	CN□□1204□□	MSC-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2525M12	●		25	25	150	35	25	12.5						
3232P12			32	32	170	38	32	16						
2525M16			25	25	150	43	25	12.5	CN□□1606□□	MSC-533	MLP508	MCP822	MCS830-4	HW30L HW40L
3232P16			32	32	170	42	32	16						

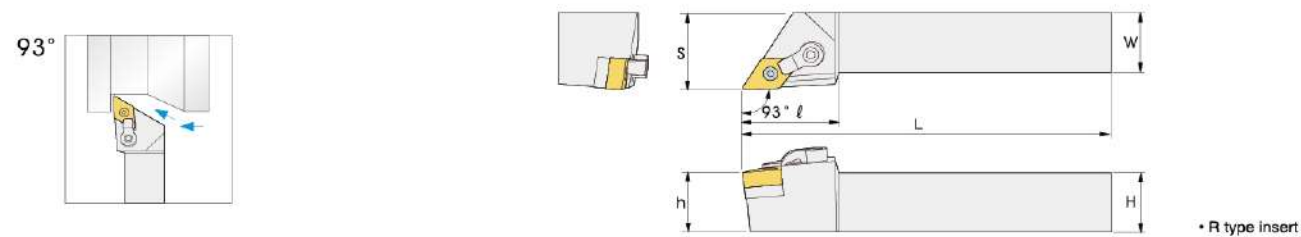


## MCMNN-100



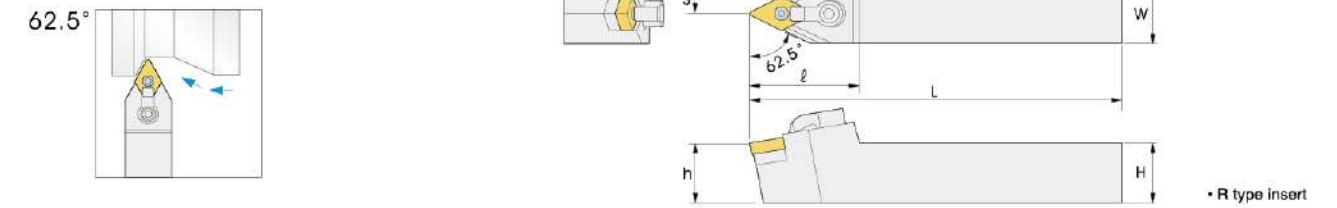
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MCMNN 2020K12-100	●		20	20	125	35	20	10	CN□□1204□□	MSC-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2525M12-100	●		25	25	150	35	25	12.5						
3232P12-100			32	32	170	35	32	16						
2525M16-100			25	25	150	43	25	12.5	CN□□1606□□	MSC-533	MLP508	MCP822	MCS830-4	HW30L HW40L
3232P16-100			32	32	170	45	32	16						

## MDJNR/L



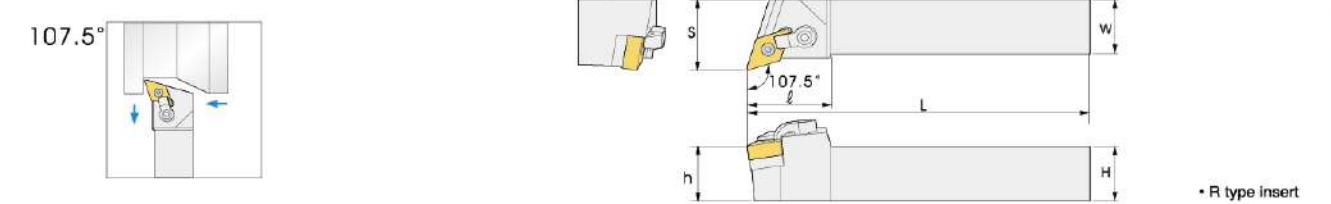
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MDJNR/L 1616H11	●	●	16	16	100	34	16	20	CN□□1204□□	MSD-322	MLP305	MCP621	MCS625-3	HW20L HW30L
2020K11	●	●	20	20	125	34	20	25						
2525M11	●	●	25	25	150	34	25	32						
2020K15	●	●	20	20	125	38	20	25	DN□□1504□□	MSD-432	MLP406L	MCP621	MCS625-3	HW25L HW35L
2525M15	●	●	25	25	150	38	25	32						
3232P15	●	●	32	32	170	40	32	40	DN□□1506□□	MSD-442	MLP406L	MCP621	MCS625-3	HW25L HW35L
4040R15			40	40	200	40	40	48						

## MDPNN



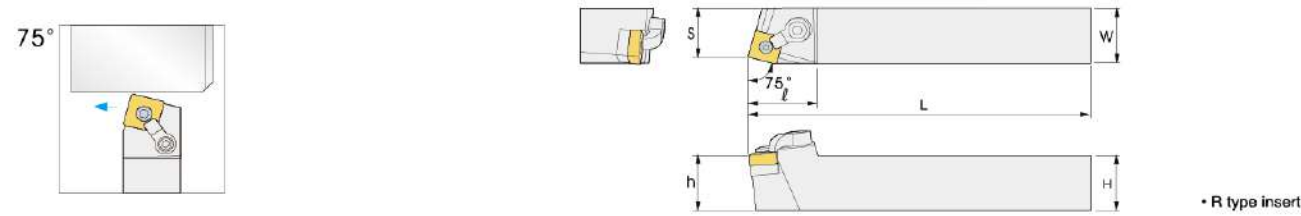
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MDPNN 1616H11	●		16	16	100	38	16	8	DN□□1104□□	MSD-322	MLP305	MCP621	MCS625-3	HW20L HW30L
2020K11	●		20	20	125	38	20	10						
2525M11	●		25	25	150	37	25	12.5						
2020K15	●		20	20	125	43	20	10	DN□□1504□□	MSD-432	MLP406L	MCP621	MCS625-3	HW25L HW35L
2525M15	●		25	25	150	43	25	12.5						
3232P15	●		32	32	170	44	32	16	DN□□1506□□	MSD-442	MLP406L	MCP621	MCS625-3	HW25L HW35L

## MDQNR/L



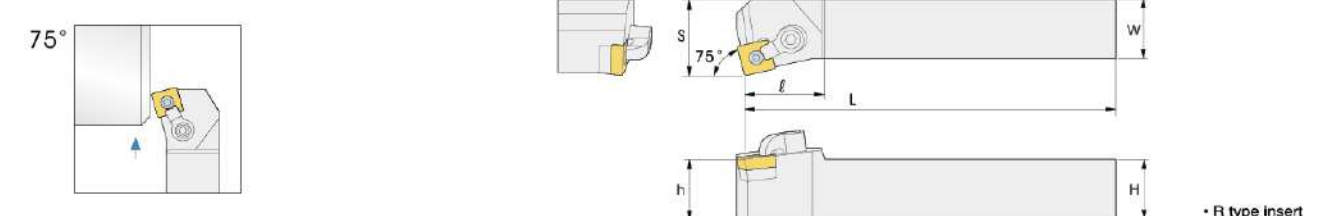
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MDQNR/L 1616H11	●	●	16	16	100	31	16	20	DN□□1104□□	MSD-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K11	●	●	20	20	125	31	20	25						
2525M11	●	●	25	25	150	34	25	32						
2020K15	●	●	20	20	125	37	20	25	DN□□1504□□	MSD-432	MLP406L	MCP621	MCS625-3	HW25L HW35L
2525M15	●	●	25	25	150	34	25	32						
3232P15	●	●	32	32	170	37	32	40	DN□□1506□□	MSD-442	MLP406L	MCP621	MCS625-3	HW25L HW35L

## MSBNR/L



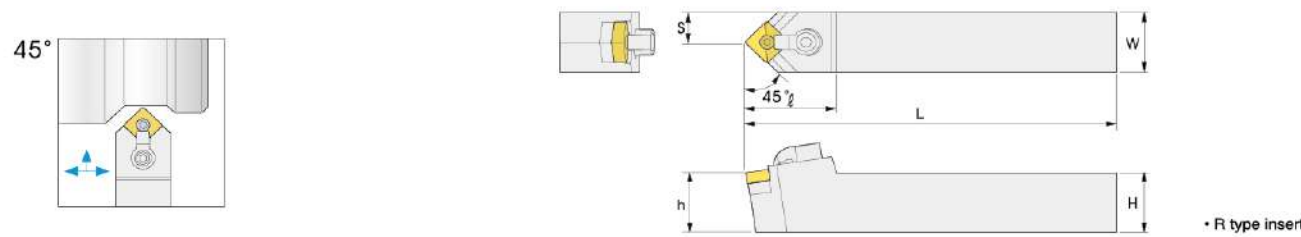
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MSBNR/L 2020K12	●	●	22	22	125	32	20	17	SN□□1204□□	MSS-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2525M12	●	●	25	25	150	32	25	22						
3232P12	●	●	32	32	170	35	32	29						
2525M15			25	25	150	35	25	22	SN□□1506□□	MSS-533	MLP508	MCP822	MCS830-4	HW30L HW40L
3232P15			32	32	170	35	32	27						
3232P19			32	32	170	42	32	27	SN□□1906□□	MSS-633	MLP610	MCP822	MCS830-4	HW40L
4040R19			40	40	200	42	40	35						

## MSKNR/L



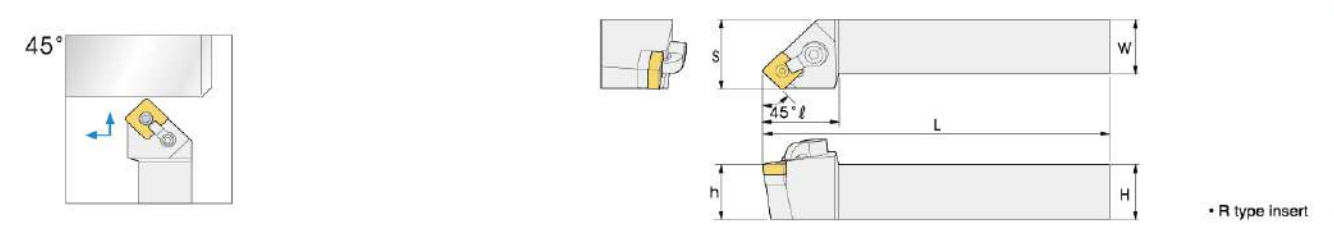
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MSKNR/L 2020K12	●	●	20	20	125	29	20	25	SN□□1204□□	MSS-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2525M12	●	●	25	25	150	29	25	32						
3232P12	●	●	32	32	170	32	32	40						
2525M15	●	●	25	25	150	33	25	32	SN□□1506□□	MSS-533	MLP508	MCP822	MCS830-4	HW30L HW40L
3232P15			32	32	170	35	32	40						
3232P19			32	32	170	35	32	40	SN□□1906□□	MSS-633	MLP610	MCP822	MCS830-4	HW40L
4040R19			40	40	200	38	40	50						

## MSDNN



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MSDNN 1616H12	●		16	16	100	35	16	8	SN□□1204□□	MSS-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2020K12	●		20	20	125	35	20	10						
2525M12	●		25	25	150	35	25	12.5						
3232P12	●		32	32	170	38	32	16	SN□□1506□□	MSS-533	MLP508	MCP822	MCS830-4	HW30L HW40L
2525M15			25	25	150	43	25	12.5						
3232P15			32	32	170	45	32	16	SN□□1906□□	MSS-633	MLP610	MCP822	MCS830-4	HW40L
3232P19			32	32	170	47	32	16						
4040R19			40	40	200	47	40	20	SN□□2507□□ SN□□2509□□	MSS-844 MSS-854	MLP812	MCP1032	MCS1035-6	HW40L HW50L
4040S25			40	40	250	60	40	20						

## MSSNR/L



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MSSNR/L 1616H12	●	●	16	16	100	34	16	20	SN□□1204□□	MSS-432	MLP406	MCP618	MCS625-3	HW25L HW30L
2020K12	●	●	20	20	125	33	20	25						
2525M12	●	●	25	25	150	35	25	32						
3232P12	●	●	32	32	170	35	32	40	SN□□1506□□	MSS-533	MLP508	MCP822	MCS830-4	HW30L HW40L
2525M15	●	●	25	25	150	41	25	32						
3232P15			32	32	170	42	32	40	SN□□1906□□	MSS-633	MLP610	MCP822	MCS830-4	HW40L
3232P19			32	32	170	45	32	40						
4040R19			40	40	200	45	40	50	SN□□2507□□ SN□□2509□□	MSS-844 MSS-854	MLP812	MCP1032	MCS1035-6	HW40L HW50L
4040S25			40	40	250	60	40	20						

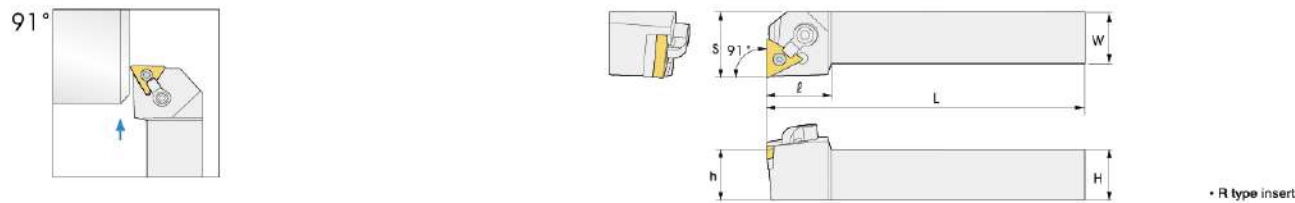


## MTENN



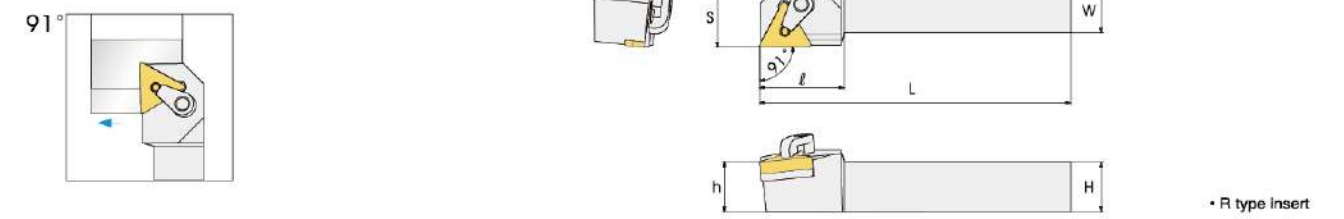
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
<b>MTENN</b> 1616H16	●		16	16	100	34	16	8	TN□□1604□□	MST-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K16	●		20	20	125	34	20	10						
2525M16	●		25	25	150	34	25	12.5						
3232P16	●		32	32	170	34	32	16						
4040R16			40	40	200	35	40	20						
2525M22	●		25	25	150	38	25	12.5	TN□□2204□□	MST-432	MLP406	MCP819	MCS830-4	HW25L HW40L
3232P22	●		32	32	170	40	32	16						
4040R22			40	40	200	38	40	20						
3232P27			32	32	170	40	32	16	TN□□2706□□	MST-533	MLP508	MCP822	MCS830-4	HW30L HW40L

## MTFNR/L



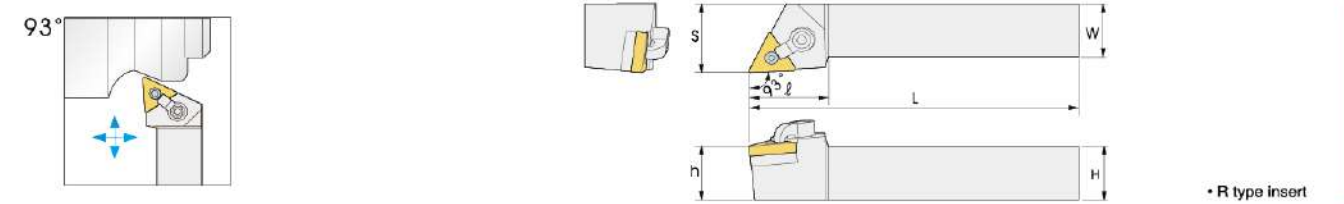
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
<b>MTFNR/L</b> 1616H16	●	●	16	16	100	29	16	20	TN□□1604□□	MST-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K16	●	●	20	20	125	29	20	25						
2525M16	●	●	25	25	150	30	25	32						
3232P16			32	32	170	32	32	40						
2525M22			25	25	150	36	25	32						
3232P22			32	32	170	36	32	40	TN□□2204□□	MST-432	MLP406	MCP819	MCS830-4	HW25L HW40L

## MTGNR/L



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
<b>MTGNR/L</b> 1616H16	●	●	16	16	100	29	16	20	TN□□1604□□	MST-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K16	●	●	20	20	125	29	20	25						
2525M16	●	●	25	25	150	30	25	32						
3232P16			32	32	170	32	32	40						
2525M22			25	25	150	32	25	32						
3232P22			32	32	170	32	32	40	TN□□2204□□	MST-432	MLP406	MCP819	MCS830-4	HW25L HW40L

## MTJNR/L



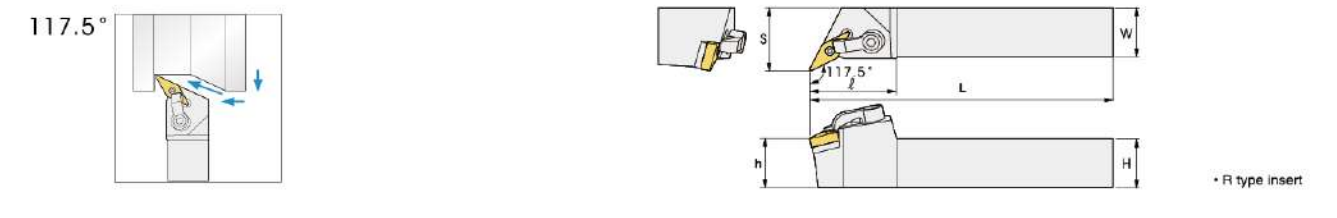
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
<b>MTJNR/L</b> 1616H16	●	●	16	16	100	30	16	20	TN□□1604□□	MST-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K16	●	●	20	20	125	30	20	25						
2525M16	●	●	25	25	150	32	25	32						
3232P16	●		32	32	170	35	32	40						
4040R16			40	40	200	28	40	50						
2525M22	●		25	25	150	34	25	32	TN□□2204□□	MST-432	MLP406	MCP819	MCS830-4	HW25L HW40L
3232P22	●		32	32	170	35	32	40						
4040R22			40	40	200	38	40	50						
3232P27			32	32	170	35	32	40	TN□□2706□□	MST-533	MLP508	MCP822	MCS830-4	HW30L HW40L
4040S27			40	40	250	35	40	50						

## MTQNR/L



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	l	h	S						
MTQNR/L 1616H16	●	●	16	16	100	30	16	20	TN□□1604□□	MST-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K16	●	●	20	20	125	30	20	25						
2525M16	●	●	25	25	150	32	25	32						
3232P16	●	●	32	32	170	35	32	40						
2525M22	●	●	25	25	150	32	25	32						
3232P22			32	32	170	35	32	40	TN□□2204□□	MST-432	MLP406	MCP819	MCS830-4	HW25L HW40L

## MVQNR/L



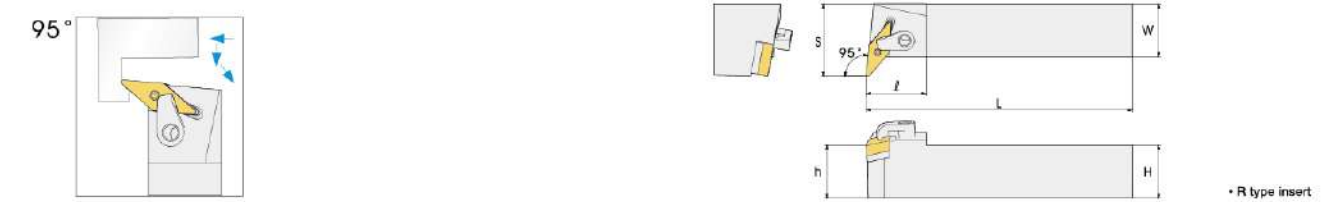
Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	l	h	S						
MVQNR/L 2020K16	●	●	20	20	125	40	20	25	VN□□1604□□	MSV-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2525M16	●	●	25	25	150	40	25	32						
3232P16			32	32	170	40	32	40						

## MVJNR/L



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	l	h	S						
MVJNR/L 1616K16	●	●	16	16	125	44	16	20	VN□□1604□□	MSV-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K16	●	●	20	20	125	44	20	25						
2525M16	●	●	25	25	150	44	25	32						
3232P16	●	●	32	32	170	46	32	40						

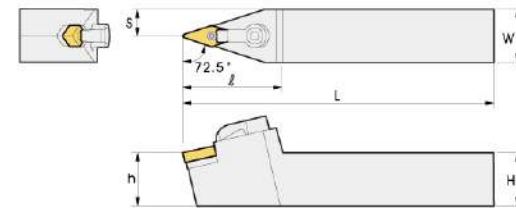
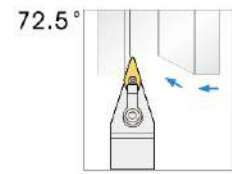
## MVUNR/L



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	l	h	S						
MVUNR/L 2020K16	●	●	20	20	125	30	20	29	VN□□1604□□	MSV-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2525M16	●	●	25	25	150	30	25	34						

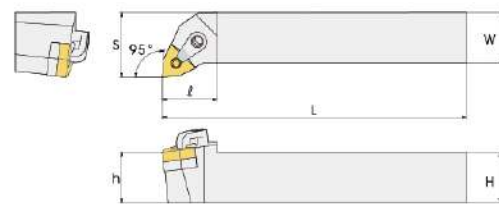
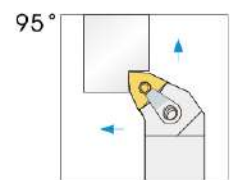


## MVVNN



Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MVVNN 2020K16	●	●	20	20	125	25	20	10	VN□□1604□□	MST-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2525M16	●	●	25	25	150	32	25	12.5						
3232P16	●	●	32	32	170	42	32	16						

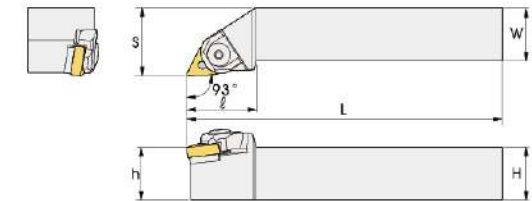
## MWLNR/L



• R type insert

Designation	Stock		Size						Inserts	Shim	Pin	Clamp	screw	Wrench
	R	L	H	W	L	ℓ	h	S						
MWLNR/L 1616H06	●	●	16	16	100	27	16	20	WN□□0604□□	MSW-322	MLP305	MCP618	MCS625-3	HW20L HW30L
2020K06	●	●	20	20	125	27	20	25						
2525M06	●	●	25	25	150	27	25	32						
1616H08	●	●	16	16	100	27	16	20						
2020K08	●	●	20	20	125	28	20	25						
2525M08	●	●	25	25	150	30	25	32	MW□□0804□□	MSW-432	MLP406	MCP819	MCS830-4	HW25L HW40L
3232P08	●	●	32	32	170	30	32	40						
4040R08	●	●	40	40	200	38	40	50						

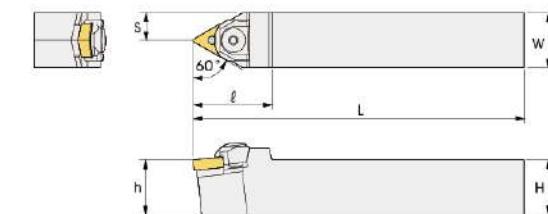
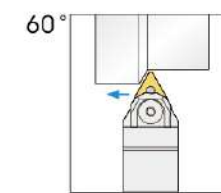
## WTJNR/L



• R type insert

Designation	Stock		Size						Inserts	Wedge Clamp	Screw	Slopper ring	Shim	Pin	Wrench
	R	L	H	W	L	ℓ	h	S							
WTJNR/L 1316H16	●	●	13	16	125	20	16	20	TN□□1604□□	WCP16TL	WCS626	ER04	MST-32M	MLP305-S	HW25L HW40L
1616K16	●	●	16	16	125	32	16	21							
2020K16	●	●	20	20	125	32	20	25							
2525M16	●	●	25	25	150	35	25	32							
3232P16	●	●	32	32	170	36	32	40							
2525M22	●	●	25	25	150	36	25	32	TN□□2204□□	WCP22TL	WCS626	ER04	MST-432	MLP406-S	HW30L HW40L
3232P22	●	●	32	32	170	36	32	40							

## WTENN

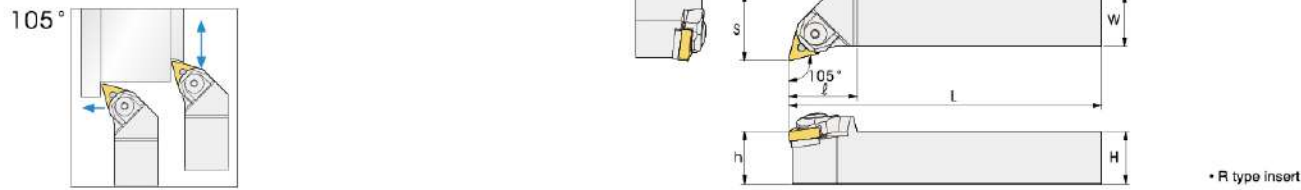


• R type insert

Designation	Stock		Size						Inserts	Wedge Clamp	Screw	Slopper ring	Shim	Pin	Wrench
	R	L	H	W	L	ℓ	h	S							
WTENN 2020K16	●	●	20	20	125	34	20	10	TN□□1604□□	WCP16TL	WCS626	ER04	MST-32M	MLP305-S	HW25L HW40L
2525M16	●	●	25	25	150	35	25	12.5							
2525M22	●	●	25	25	150	38	25	12.5	TN□□2204□□	WCP22TL	WCS626	ER04	MST-432	MLP406-S	HW30L HW40L
3232P22	●	●	32	32	170	38	32	16							

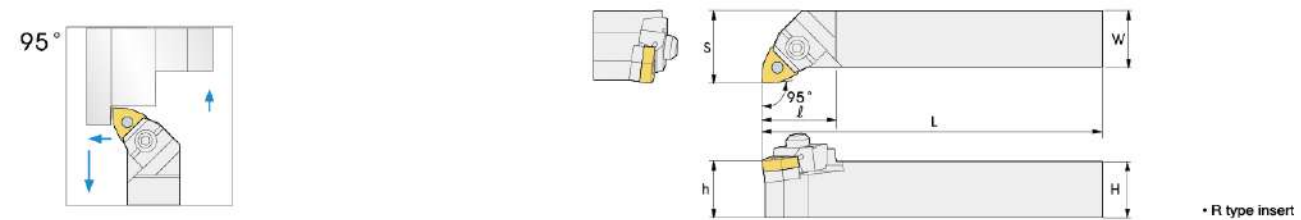
# Wedge Clamp System

## WTQNR/L



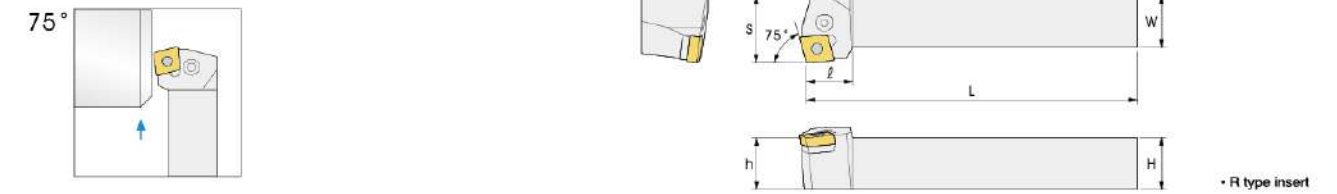
Designation	Stock		Size						Inserts	Wedge Clamp	Screw	Slopper ring	Shim	Pin	Wrench
	R	L	H	W	L	ℓ	h	S							
WTQNR/L 1616K16	●	●	16	16	125	34	16	20	TN□□1604□□	WCP16TL	WCS626	ER04	MST-32M	MLP305-S	HW25L HW40L
2020K16	●	●	20	20	125	32	20	26							
2525M16			25	25	150	32	25	32							
3232P16			32	32	170	35	32	40							
2525M22			25	25	150	36	25	38	TN□□2204□□	WCP22TL	WCS626	ER04	MST-432	MLP406-S	HW30L HW40L
3232P22			32	32	170	36	32	50							

## WWLNR/L



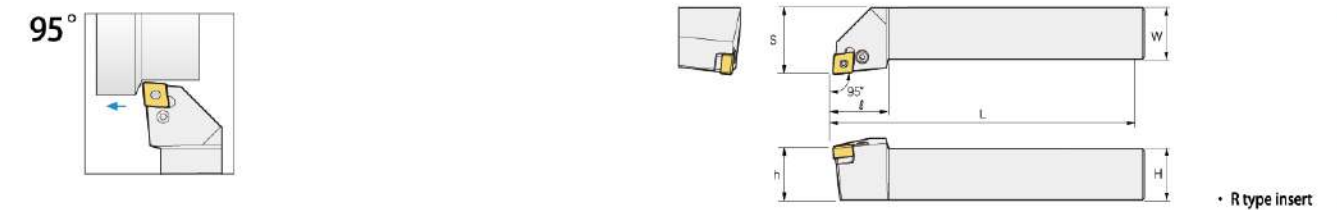
Designation	Stock		Size						Inserts	Wedge Clamp	Screw	Slopper ring	Shim	Pin	Wrench
	R	L	H	W	L	ℓ	h	S							
WWLNR/L 1616K08	●	●	16	16	125	32	16	22	WN□□0804□□	WCP08WL	WCS626	ER04	MSW-43M	MLP406-S	HW30L HW40L
2020K08	●	●	20	20	125	32	20	26							
2525M08	●	●	25	25	150	35	25	32							
3232P08	●	●	32	32	170	35	32	40							

## PCKNR/L



Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PCKNR/L 1616H12			16	16	100	27	16	20	CN□□1204□□	SC42	LV4	VHX0821	SP4	HW30L
2020K12	●		20	20	125	27	20	25						
2525M12	●		25	25	150	30	25	32						
2525M16			25	25	150	33	25	32	CN□□1606□□	SC53	LV5	VHX0825	SP5	HW30L
3232P16			32	32	170	33	32	40						
3232P19			32	32	170	38	32	32	CN□□1906□□	SC63N	LV6	VHX1027N	SP6N	HW40L

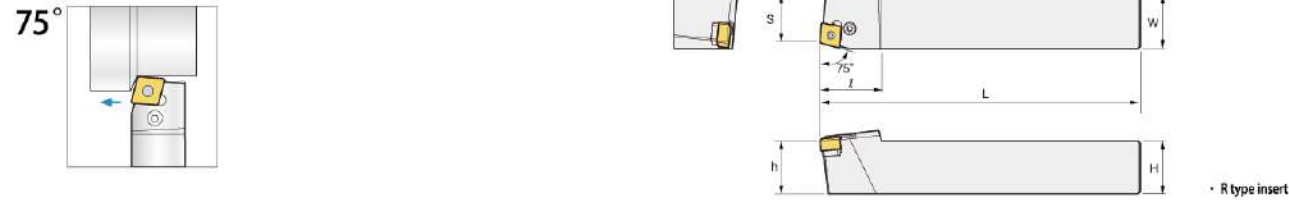
## PCLNR/L



Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PCLNR/L 1616H09			16	16	100	22	16	20	CN□□0903□□	SC32	LV3	VHX0617	SP3	HW25L
2020K09			20	20	125	22	20	25						
2525M09			25	25	150	22	25	32						
1616H12	●	●	16	16	100	28	16	20	CN□□1204□□	SC42	LV4	VHX0821	SP4	HW30L
2020K12	●	●	20	20	125	28	20	25						
2525M12	●	●	25	25	150	28	25	32						
3232P12	●	●	32	32	170	30	32	40						
2525M16	●		25	25	150	34	25	32	CN□□1606□□	SC53	LV5	VHX0825	SP5	HW30L
3232P16	●		32	32	170	34	32	40						
3232P19	●		32	32	170	38	32	40	CN□□1906□□	SC63N	LV6	VHX1027N	SP6N	HW40L
4040S19			40	40	250	38	40	50						
4040S25			40	40	250	47	40	50	CN□□2507□□ CN□□2509□□	SC84N	LV8N	VHX1236N	SP8N	HW50L
5050T25			50	50	300	47	50	60						

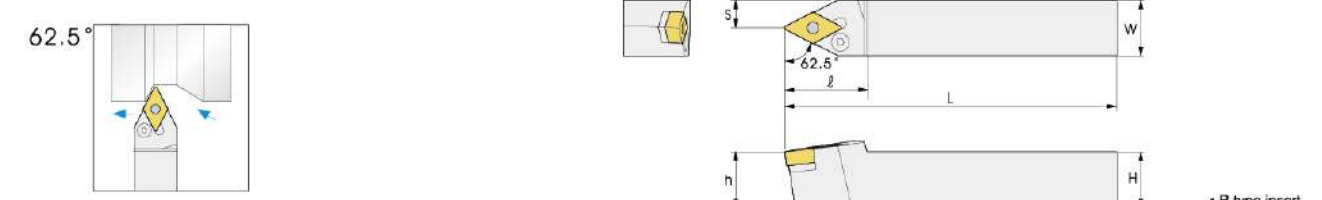


## PCBNR/L



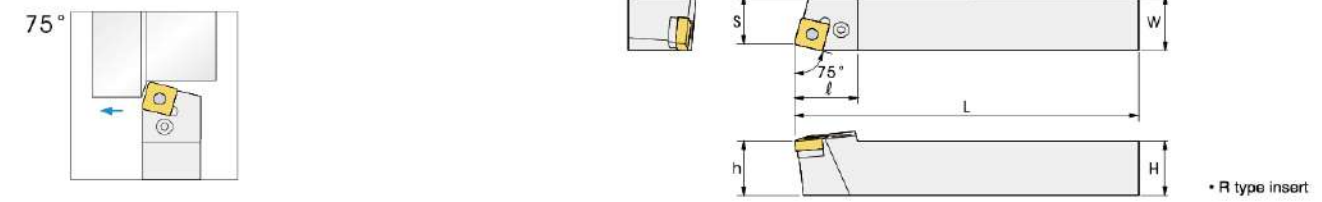
Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PCBNR/L 2020K12	●	●	20	20	125	30	20	17	CN□□1204□□	SC42	LV4	VHX0821	SP4	HW30L
2525M12	●	●	25	25	150	26	25	22						
3232P12	●	●	32	32	170	27	32	29						
2525M16			25	25	150	32	25	22	CN□□1606□□	SC53	LV5	VHX0825	SP5	HW30L
3232P16			32	32	170	33	32	27						
3232P19			32	32	170	38	32	27	CN□□1906□□	SC63N	LV6	VHX1027N	SP6N	HW40L
4040S19			40	40	250	38	40	35						
4040S25			40	40	250	50	40	37	CN□□2507□□ CN□□2509□□	SC84N	LV8N	VHX1236N	SP8N	HW50L
5050T25			50	50	300	50	50	43						

## PDNNR/L



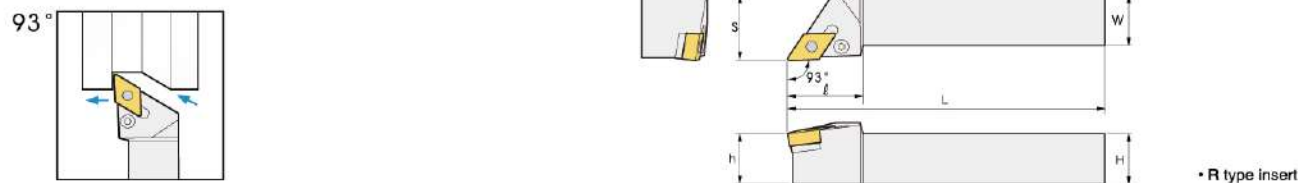
Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PDNNR/L 2020K1504			20	20	125	37	20	10	DN□□1504□□	SD42	LV4	VHX0821	SP4	HW30L
2525M1504	●		25	25	150	37	25	12.5						
3232P1504			32	32	170	37	32	16						
2020K1506			20	20	125	37	20	10	DN□□1506□□	SD42	LV4B	VHX0821	SP4	HW30L
2525M1506	●		25	25	150	37	25	12.5						
3232P1506			32	32	170	37	32	16						

## PSBNR/L



Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PSBNR/L 1616H09			16	16	100	21	16	13	SN□□0903□□	SS32	LV3	VHX0617	SP3	HW25L
2020K09			20	20	125	23	20	17						
2020K12	●		20	20	125	30	20	17	SN□□1204□□	SS42	LV4	VHX0821	SP4	HW30L
2525M12	●		25	25	150	30	25	22						
3232P12	●		32	32	170	42	32	27						
2525M15	●		25	25	150	35	25	22	SN□□1506□□	SS53	LV5	VHX0825	SP5	HW30L
3232P15	●		32	32	170	35	32	27						
3232P19	●		32	32	170	40	32	27	SN□□1906□□	SS63N	LV6	VHX1027	SP6	HW40L
4040S19			40	40	250	40	40	35						
4040S25			40	40	250	50	40	35	SN□□2507□□ SN□□2509□□	SS84N	LV8N	VHX1236N	SP8N	HW50L
5050T25			50	50	300	50	50	43						

## PDJNR/L



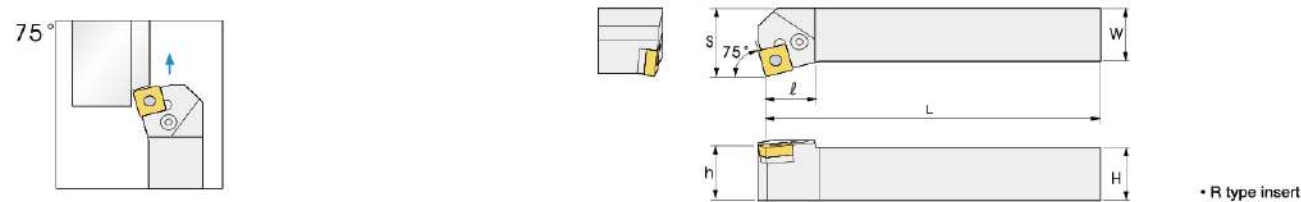
Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PDJNR/L 1616H11			16	16	100	26	16	20	DN□□1104□□	SD17	LV3	VHX0617	SP3	HW25L
2020K11			20	20	125	26	20	25						
2525M11			25	25	150	26	25	32						
2020K1504	●	●	20	20	125	36	20	25	DN□□1504□□	SD42	LV4	VHX0821	SP4	HW30L
2525M1504	●	●	25	25	150	36	25	32						
3232P1504			32	32	170	36	32	40						
2020K1506			20	20	125	36	20	25	DN□□1506□□	SD42	LV4B	VHX0821	SP4	HW30L
2525M1506	●	●	25	25	150	36	25	32						
3232P1506	●	●	32	32	170	36	32	40						

## PSDNN



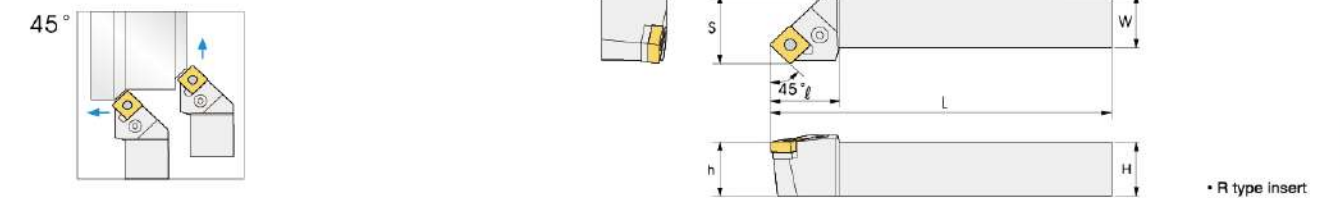
Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PSDNN 2020K12	●		20	20	125	32	20	10	SN□□1204□□	SS42	LV4	VHX0821	SP4	HW30L
2525M12	●		25	25	150	32	25	12.5						
3232P12	●		32	32	170	35	32	16						
2525M15	●		25	25	150	40	25	12.5	SN□□1506□□	SS53	LV5	VHX0825	SP5	HW30L
3232P15	●		32	32	170	40	32	16						
3232P19			32	32	170	40	32	16	SN□□1906□□	SS63N	LV6	VHX1027	SP6	HW40L
4040S19			40	40	250	40	40	20						
4040S25			40	40	250	50	40	20	SN□□2507□□	SS84N	LV8N	VHX1236N	SP8N	HW50L
5050T25			50	50	300	50	50	25						

## PSKNR/L



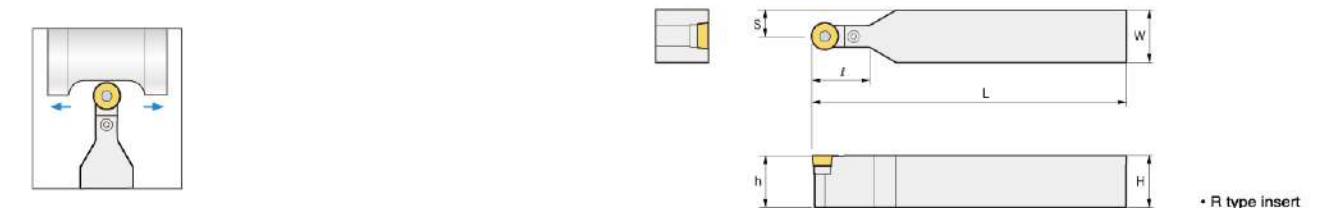
Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PSKNR/L 1616H09			16	16	100	17	16	20	SN□□0903□□	SS32	LV3	VHX0617	SP3	HW25L
2020K09			20	20	125	20	20	25						
2020K12	●	●	20	20	125	29	20	25	SN□□1204□□	SS42	LV4	VHX0821	SP4	HW30L
2525M12	●	●	25	25	150	29	25	32						
3232P12	●	●	32	32	170	29	32	40						
2525M15	●	●	25	25	150	28	25	32	SN□□1506□□	SS53	LV5	VHX0825	SP5	HW30L
3232P15	●	●	32	32	170	28	32	40						
3232P19	●		32	32	170	41.5	32	40	SN□□1906□□	SS63N	LV6	VHX1027	SP6	HW40L
4040S19			40	40	250	41.5	40	50						
4040S25			40	40	250	46	40	50	SN□□2507□□	SS84N	LV8N	VHX1236N	SP8N	HW50L
5050T25			50	50	300	37.5	50	60						

## PSSNR/L



Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PSSNR/L 1616H09			16	16	100	25	16	20	SN□□0903□□	SS32	LV3	VHX0617	SP3	HW25L
2020K09			20	20	125	30	20	25						
2020K12	●	●	20	20	125	30	20	25	SN□□1204□□	SS42	LV4	VHX0821	SP4	HW30L
2525M12	●	●	25	25	150	36	25	32						
3232P12	●	●	32	32	170	40	32	40						
2525M15	●	●	25	25	150	36	25	32	SN□□1506□□	SS53	LV5	VHX0825	SP5	HW30L
3232P15	●	●	32	32	170	45	32	40						
3232P19	●		40	40	170	41.5	32	40	SN□□1906□□	SS63N	LV6	VHX1027	SP6	HW40L
4040S19			40	40	250	41.5	40	50						
4040S25			40	40	250	48	40	50	SN□□2507□□	SS84N	LV8N	VHX1236N	SP8N	HW50L
5050T25			50	50	300	37.5	50	60						

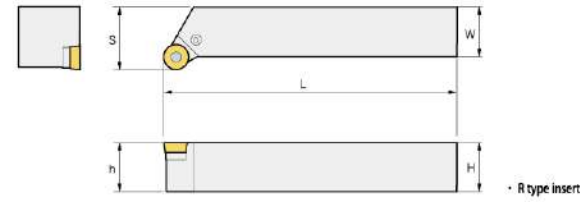
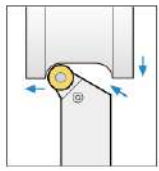
## PRDCN



Designation	Stock		Size						Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	ℓ	h	S						
PRDCN 2020K12	●		20	20	125	25	20	10	RC□□1204□□	SR12	LR12	VHX0617	SP3	HW25L
2525M12	●		25	25	150	25	25	12.5						
2525M16	●		25	25	150	35	25	10	RC□□1606□□	SR16	LR16	VHX0621	SP4	HW25L
3232P16	●		32	32	170	32	32	16						
3232P20	●		32	32	170	40	32	16	RC□□2006□□	SR20	LR20	VHX0830	SP20	HW30L
4040T20			40	40	300	45	40	20						
3232P25			32	32	170	45	32	16	RC□□2507□□	SR25	LR25	VHX1030	SP6N	HW40L
4040T25			40	40	300	50	40	20						

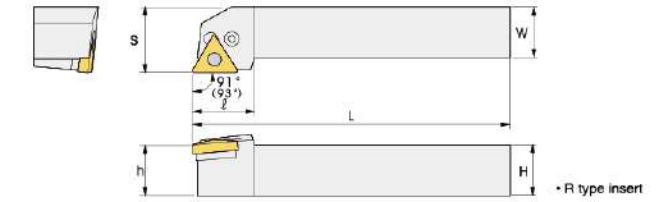
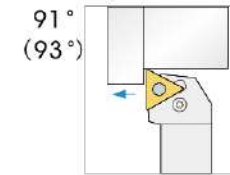


## PRGCR/L



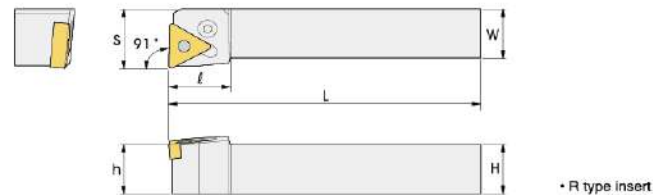
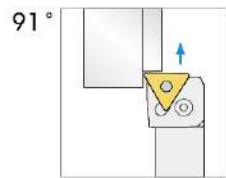
Designation	Stock		Size					Inserts	Shim	Lever	Screw	Shim pin	Wrench
	R	L	H	W	L	h	S						
PRGCR/L 2020K12	●		20	20	125	20	25	RC□□1204□□	SR12	LR12	VHX0617	SP3	HW25L
2525M12	●		25	25	150	25	32	RC□□1606□□	SR16	LR16	VHX0621	SP4	HW25L
2525M16	●		25	25	150	25	25						
3232P16	●		32	32	170	32	42	RC□□2006□□	SR20	LR20	VHX0830	SP20	HW30L
3232P20	●		32	32	170	32	40						
4040T20			40	40	300	40	50	RC□□2507□□	SR25	LR25	VHX1030	SP6N	HW40L
3232P25			32	32	170	32	45						
4040T25			40	40	300	40	56						

## PTGNR/L



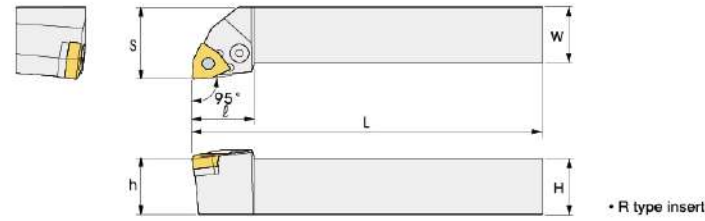
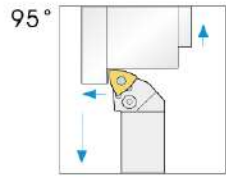
Designation	Stock		Size					Inserts	Shim	Lever	Screw	Shim pin	Wrench	
	R	L	H	W	L	ℓ	h							S
PTGNR/L 1616H11			16	16	100	18	16	20	TN□□1103□□	-	LV2	VHX0509B	-	HW20L
2020K11			20	20	125	19	20	25						
2525M11			25	25	100	20	25	32	TN□□1604□□	ST317	LV3	VHX0617	SP3	HW25L
1616H16	●	●	16	16	100	26	16	20						
2020K16	●	●	20	20	125	26	20	25	TN□□2204□□	ST42	LV4	VHX0821	SP4	HW30L
2525M16	●	●	25	25	150	26	25	32						
3232P16			32	32	170	20	32	40	TN□□2706□□	ST53	LV5	VHX0825	SP5	HW30L
2525M22			25	25	150	28	25	32						
3232P22			32	32	170	30	32	40						
3232P27			32	32	170	33	32	40						
4040S27			40	40	250	33	40	50						

## PTFNR/L



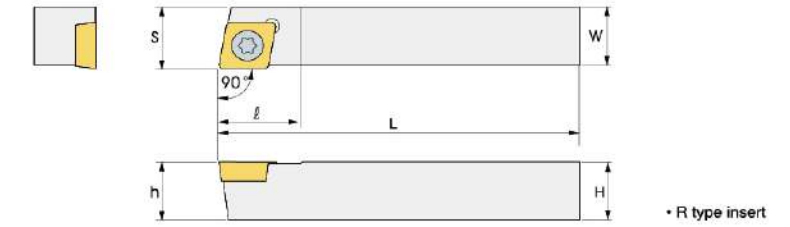
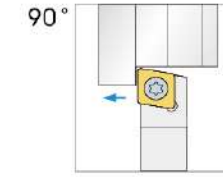
Designation	Stock		Size					Inserts	Shim	Lever	Screw	Shim pin	Wrench	
	R	L	H	W	L	ℓ	h							S
PTFNR/L 1616H16	●	●	16	16	100	20	16	20	TN□□1604□□	ST317	LV3	VHX0617	SP3	HW25L
2020K16	●	●	20	20	125	26	20	25						
2525M16	●	●	25	25	150	26	25	32	TN□□2204□□	ST42	LV4	VHX0821	SP4	HW30L
2525M22			25	25	150	25	25	32						
3232P22			32	32	170	30	32	40	TN□□2706□□	ST53	LV5	VHX0825	SP5	HW30L
3232P27			32	32	170	35	32	40						
4040S27			40	40	250	34	40	50						

## PWLNRL/L



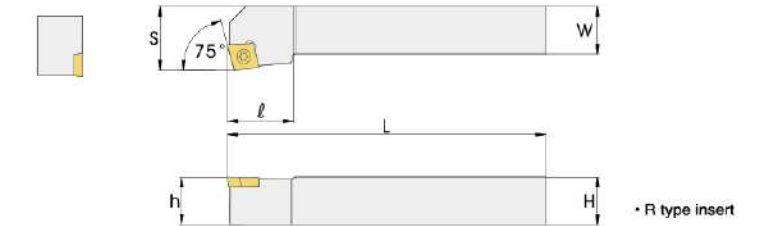
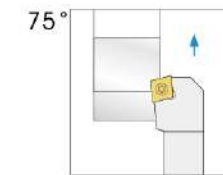
Designation	Stock		Size					Inserts	Shim	Lever	Screw	Shim pin	Wrench	
	R	L	H	W	L	ℓ	h							S
PWLNRL 1616H06	●	●	16	16	100	20	16	20	WN□□0604□□	SW317	LV3	VHX0617	SP3	HW25L
2020K06	●	●	20	20	125	26	20	25						
2525M06	●	●	25	25	150	28	25	32						
1616H08	●	●	16	16	100	26	16	20	WN□□0804□□	SW42	LV4	VHX0821	SP4	HW30L
2020K08	●	●	20	20	125	28	20	25						
2525M08	●	●	25	25	150	27	25	32						
3232P08	●	●	32	32	170	26	32	37						

## SCACR/L



Designation	Stock		Size					Inserts	Screw	Wrench	
	R	L	H	W	L	ℓ	h				S
SCACR/L 0808F06	●		8	8	80	10	8	8	CC□□0602□□	M2.5X6	T-8
1010H06	●		10	10	100	10	10	10			
1212H06	●		12	12	100	13	12	12			
1212H09	●		12	12	100	13	12	12	CC□□09T3□□	M3.5X9	T-15

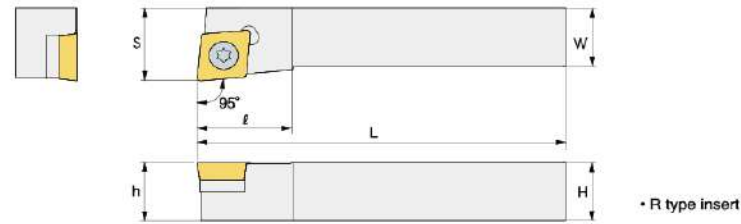
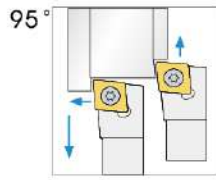
## SCKCR/L



Designation	Stock		Size					Inserts	Screw	Wrench	
	R	L	H	W	L	ℓ	h				S
SCKCR/L 2020K09	●		20	20	125	23	20	25	CC□□09T3□□	M3.5X9	T-15
2525M09	●		25	25	150	23	25	32			
2020K12	●		20	20	125	28	20	25	CC□□1204□□	M5.0X12	T-20
2525M12	●		25	25	150	28	25	32			

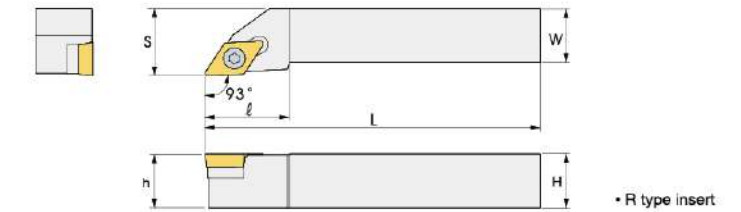
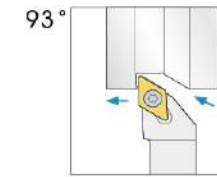


## SCLCR/L



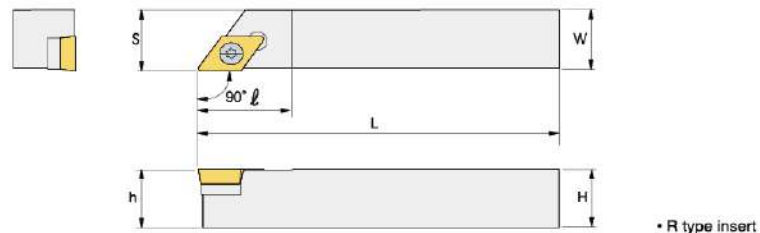
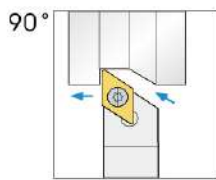
Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
<b>SCLCR/L</b> 0808D06	●	●	08	08	60	10	08	10	CC□□0602□□	M2.5X6.5	T-8
1010F06	●	●	10	10	80	12	10	12			
1212F09	●	●	12	12	80	16	12	16			
1616H09	●	●	16	16	100	16	16	20	CC□□09T3□□	M3.5X9	T-15
2020K09	●	●	20	20	125	16	20	25			
2525M09	●	●	25	25	150	16	25	32			
2020K12	●	●	20	20	125	20	20	25	CC□□1204□□	M5.0X12	T-20
2525M12	●	●	25	25	150	20	25	32			
3232P12	●	●	32	32	170	20	32	40			

## SDJCR/L



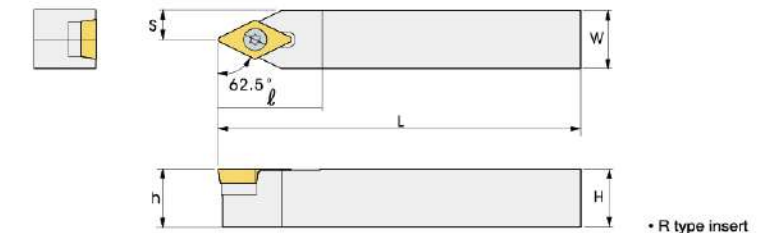
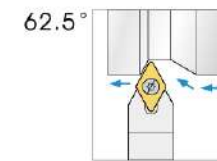
Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench
	R	L	H	W	L	ℓ	h	S					
<b>SDJCR/L</b> 1010F07	●		10	10	80	14	10	12	DC□□0702□□	M2.5x6.5	-	-	T-8
1212F07	●		12	12	80	14	12	16					
1616H07	●	●	16	16	100	14	16	20					
2020K07	●	●	20	20	125	15	20	25	DC□□11T3□□	M3.5X9	-	-	T-15
1212F11	●		12	12	80	20	12	16					
1616H11	●	●	16	16	100	20	16	20					
2020K11			20	20	125	20	20	25	DC□□11T3□□	M3.5X12	SD32S	SHXN0509F	T-15 HW35L
2525M11			25	25	150	22	25	32					
3232P11			32	32	170	23	32	40					

## SDACR/L



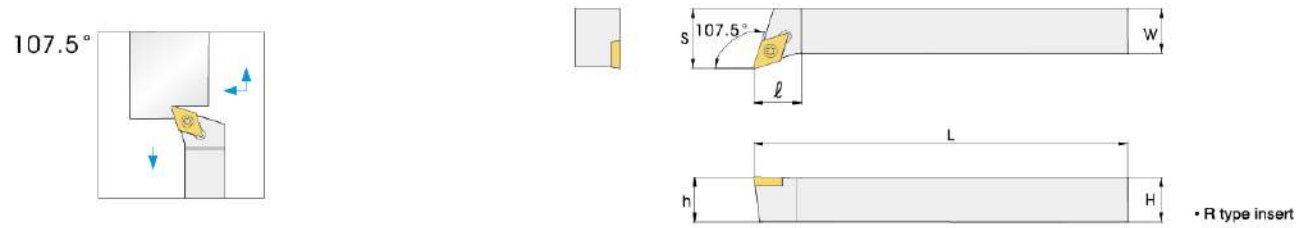
Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
<b>SDACR/L</b> 0808F07	●		08	08	80	15	8	8	DC□□0602□□	M2.5X8	T-8
1010F07	●		10	10	80	15	10	10			
1212F07	●		12	12	80	15	12	12			
1212H11	●		12	12	100	22	12	12	DC□□11T3□□	M3.5X9	T-15
1616H11	●	●	16	16	100	22	16	16			
2020K11	●		20	20	125	22	20	20			
2525M11	●		25	25	150	22	25	25			

## SDNCN



Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench
	R	L	H	W	L	ℓ	h	S					
<b>SDNCN</b> 0808F07	●		8	8	80	14	8	4	DC□□0702□□	M2.5x6.5	-	-	T-8
1010F07	●		10	10	80	14	10	5					
1212F07	●		12	12	80	14	12	6					
1212F11	●		12	12	100	21	12	6	DC□□11T3□□	M3.5X9	-	-	T-15
1616H11	●		16	16	100	21	16	8					
2020K11			20	20	125	21	20	10					
2525M11			25	25	150	21	25	12.5					

## SDQCR/L



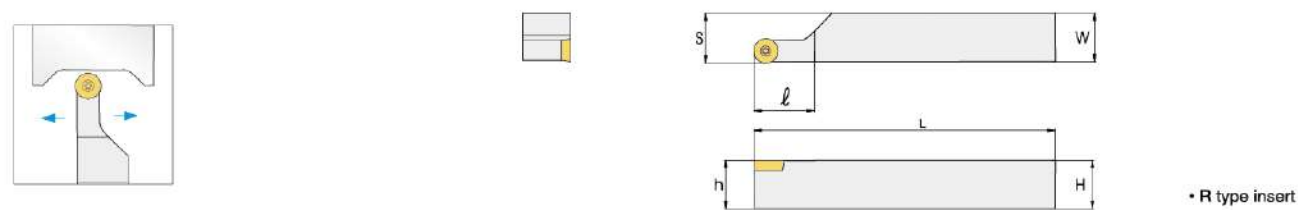
Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench
	R	L	H	W	L	ℓ	h	S					
SDQCR/L 1010F07	●	●	10	10	80	5	10	12	DC□□0702□□	M2.5x6.5	-	-	T-8
1212F07	●	●	12	12	80	13	12	16					
1212F11	●	●	12	12	80	14	12	16	DC□□11T3□□	M3.5X9	-	-	T-15
1616H11			16	16	100	14	16	20					
2020K11			20	20	125	16	20	25		M3.5X12	SD32S	SHXN0509F	T-15 HW35L
2525M11			25	25	150	22	25	32					

## SRDCN



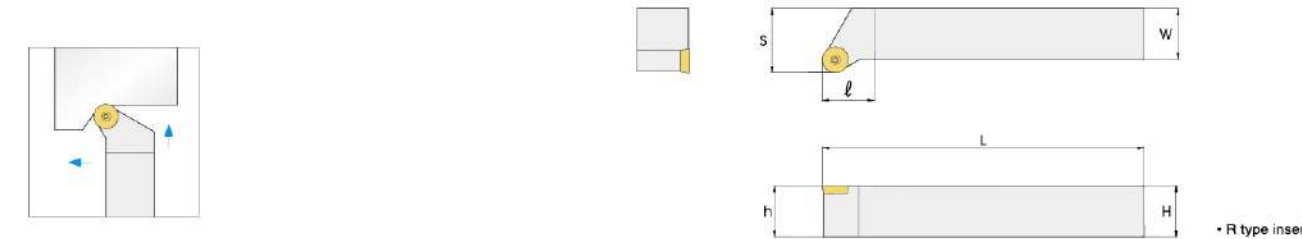
Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SRDCN 1616H08	●		16	16	100	16	16	8	RC□□0803□□	M3.0x8	T-8
2020K08	●		20	20	125	16	20	10			
2525M08	●		25	25	150	16	25	12.5	RC□□1003□□	M3.5X9	T-15
1616H10	●		16	16	100	20.3	16	8			
2020K10	●		20	20	125	20.3	20	10			
2525M10	●		25	25	150	20.3	25	12.5			
2020K12	●		20	20	125	28	20	10	RC□□1204□□	M3.5X12	T-15
2525M12	●		25	25	150	28	25	12.5			

## SRACR/L



Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SRACR/L 1616H08	●	●	16	16	100	16	16	16.5	RC□□0803□□	M3.0x8	T-8
2020K08	●	●	20	20	125	16	20	20.5			
2525M08	●	●	25	25	150	16	25	25.5			
2020K10	●	●	20	20	125	20.3	20	20.4	RC□□1003□□	M3.5X9	T-15
2525M10	●	●	25	25	150	20.3	25	25.4			
2020K12	●	●	20	20	125	28	20	20.4	RC□□1204□□	M3.5X12	T-15
2525M12	●	●	25	25	150	28	25	25.4			

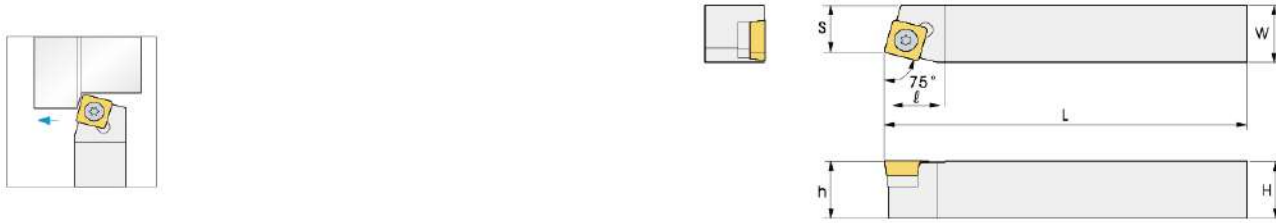
## SRGCR/L



Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SRGCR/L 1616H08	●	●	16	16	100	20	16	20	RC□□0803□□	M3.0x8	T-8
2020K08	●	●	20	20	125	20	20	25			
2525M08	●	●	25	25	150	20	25	32			
1616H10	●	●	16	16	100	20	16	20	RC□□1003□□	M3.5X9	T-15
2020K10	●	●	20	20	125	20	20	25			
2525M10	●	●	25	25	150	20	25	32			
2020K12	●	●	20	20	125	20	20	25			
2525M12	●	●	25	25	150	20	25	32	RC□□1204□□	M3.5X12	T-15

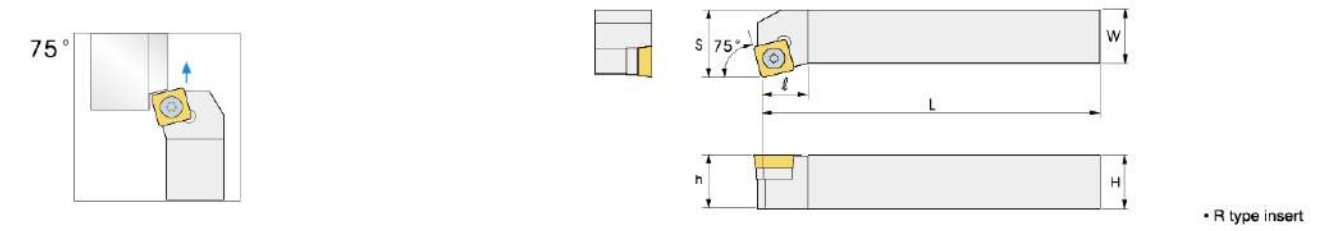


## SSBCR/L



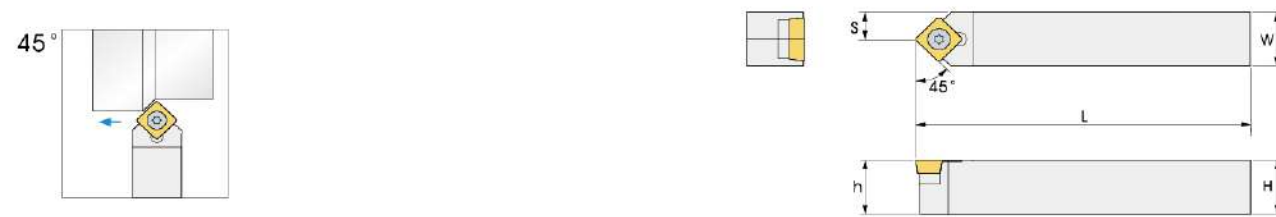
Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SSBCR/L 1212F09	●	●	12	12	80	18	12	9.5	SC□□09T3□□	M3.5X9	T-15
1616H09	●	●	16	16	100	18	16	12			
2020K09	●	●	20	20	125	18	20	17			
2020K12	●	●	20	20	125	22	20	17	SC□□1204□□	M3.5X12	T-20
2525M12	●	●	25	25	150	22	25	22			

## SSKCR/L



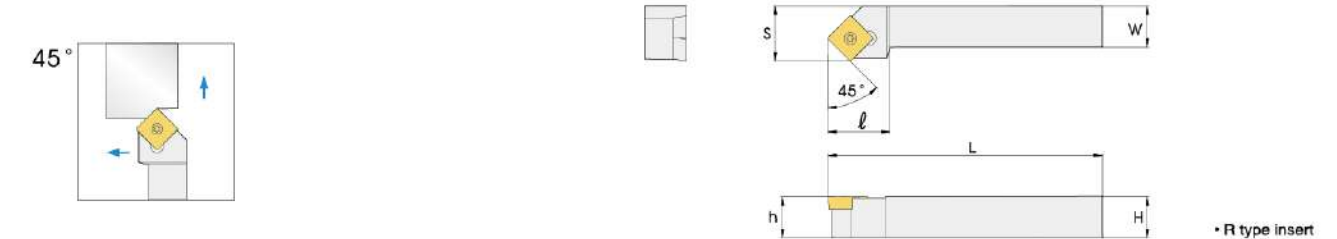
Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SSKCR/L 1212F09	●	●	12	12	80	16	12	16	SC□□09T3□□	M3.5X9	T-15
1616H09	●	●	16	16	100	16	16	20			
2020K09	●	●	20	20	125	18	20	25			
2525M09	●	●	25	25	150	25	25	32	SC□□1204□□	M5.0X12	T-20
2020K12	●	●	20	20	125	18	20	25			
2525M12	●	●	25	25	150	22	25	32			

## SSDCN



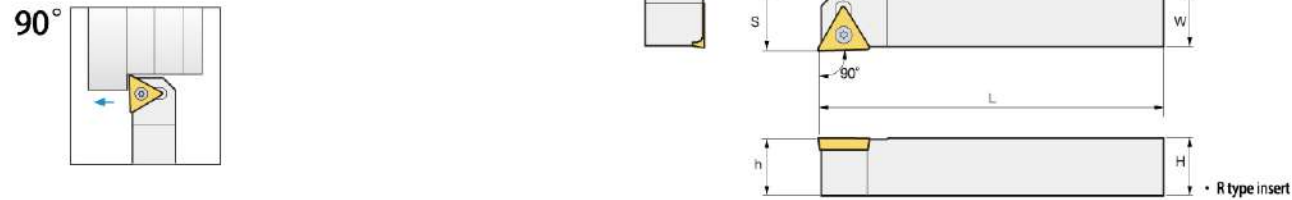
Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SSDCN 1212F09	●	●	12	12	80	16	12	6	SC□□09T3□□	M3.5X9	T-15
1616H09	●	●	16	16	100	16	16	8			
2020K09	●	●	20	20	125	16	20	10			
2525M09	●	●	25	25	150	16	25	12.5	SC□□1204□□	M5.0X12	T-20
2020K12	●	●	20	20	125	25	20	10			
2525M12	●	●	25	25	150	25	25	12.5			

## SSSCR/L



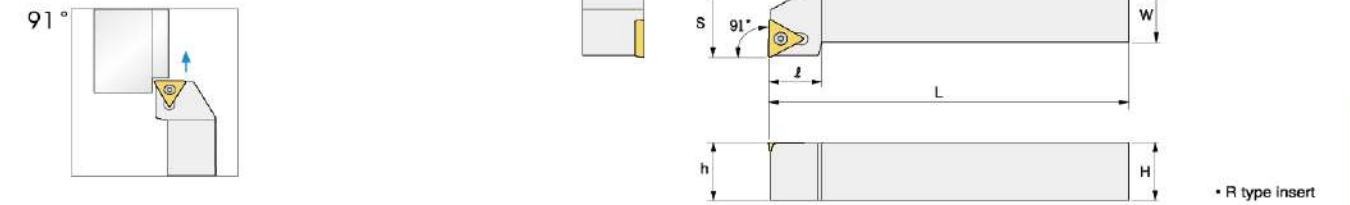
Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SSSCR/L 1212F09	●	●	12	12	80	16	12	16	SC□□09T3□□	M3.5X9	T-15
1616H09	●	●	16	16	100	16	16	20			
2020K09	●	●	20	20	125	18	20	25			
2525M09	●	●	25	25	150	25	25	32	SC□□1204□□	M5.0X12	T-20
2020K12	●	●	20	20	125	23	20	21			
2525M12	●	●	25	25	150	25	25	26			

## STACR/L



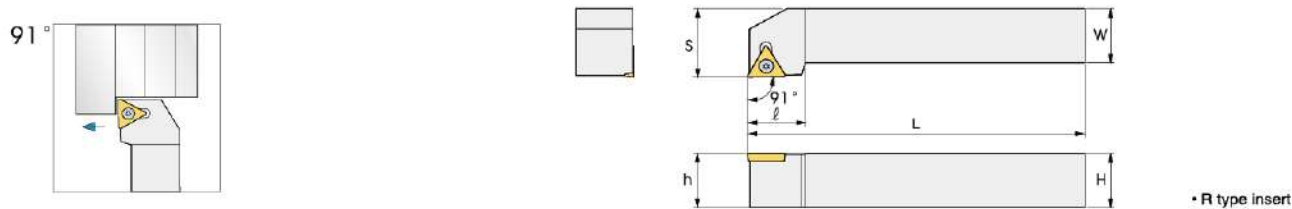
Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	H	W	L	ℓ	h	S				
STACR/L 1010E09	●		10	10	70	11	10	10.5	TC□□0902□□	M2.2x6	T-6	
1212F11	●		12	12	80	14	12	12.5		TC□□1102□□	M2.5x6.5	T-8
1616H11	●		16	16	100	16	16	16.5				

## STFCR/L



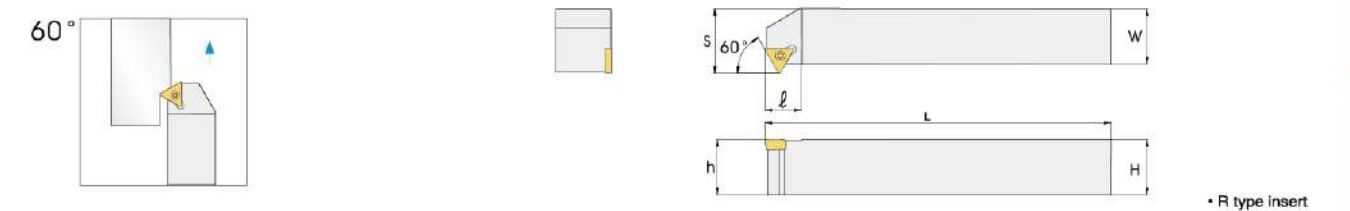
Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	H	W	L	ℓ	h	S				
STFCR/L 1212F09	●	●	12	12	80	14	12	16	TC□□0902□□	M2.2X6	T-6	
1212F11	●	●	12	12	80	14	12	16		TC□□1102□□	M2.5X8	T-8
1616H11	●	●	16	16	100	14	16	20	TC□□16T3□□		M3.5X9	T-15
1616H16	●	●	16	16	100	22	16	20				
2020K16	●		20	20	125	22	20	25				
2525M16	●		25	25	150	22	25	32				
3232P16			32	32	170	22	32	40				

## STGCR/L



Designation	Stock		Size						Inserts	Screw	Wrench			
	R	L	H	W	L	ℓ	h	S						
STGCR/L 0808D09	●	●	8	8	60	11	8	10	TC□□0902□□	M2.2X6	T-6			
1010E09	●	●	10	10	70	11	10	12				TC□□1102□□	M2.5X6.5	T-8
1212F11	●	●	12	12	80	14	12	16						
1616H11	●	●	16	16	100	14	16	20	TC□□16T3□□	M3.5X9	T-15			
1616H16	●		16	16	100	14	16	20						
2020K16	●		20	20	125	20	20	25						
2525M16			25	25	150	20	25	32						

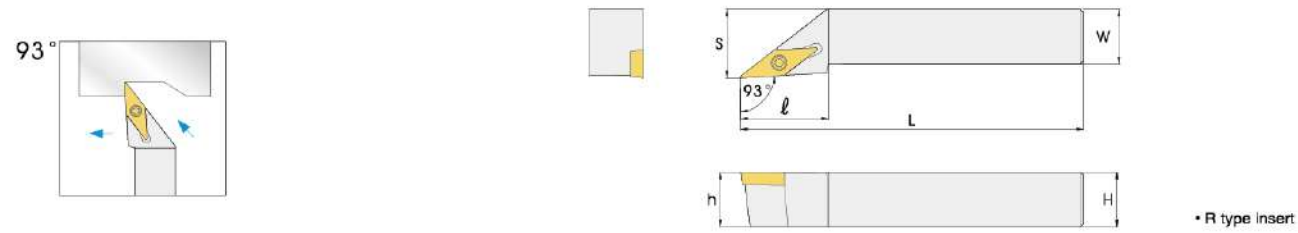
## STWCR/L



Designation	Stock		Size						Inserts	Screw	Wrench			
	R	L	H	W	L	ℓ	h	S						
STWCR/L 1616H11			16	16	100	8	16	19.3	TC□□1102□□	M2.5X8	T-8			
2020K11	●		20	20	125	8	20	23.3				TC□□16T3□□	M3.5X9	T-15
2525M11			25	25	150	8	25	28.3						
1616H16			16	16	100	12	16	21						
2020K16			20	20	125	12	20	26						
2525M16	●		25	25	150	12	25	31						
3232P16	●		32	32	170	12	32	38						

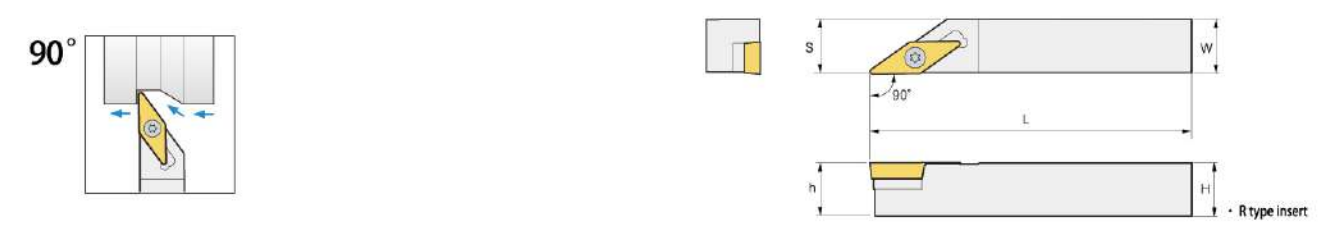


## SVJBR/L, SVJCR/L



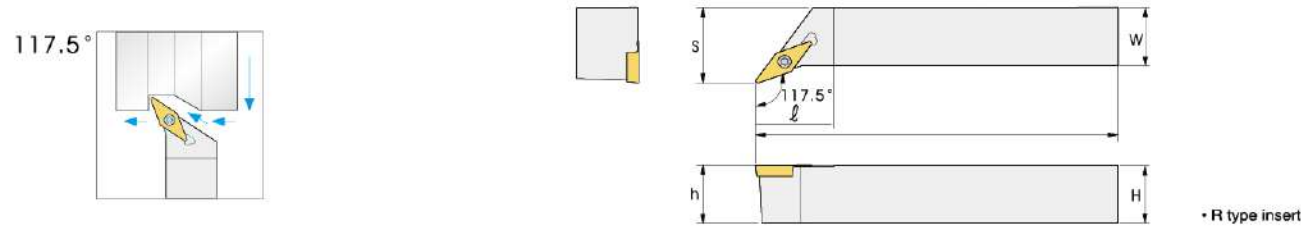
Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench
	R	L	H	W	L	ℓ	h	S					
<b>SVJBR/L</b> 1212F11	●	●	12	12	80	22	12	16	-	M2.5x6.5	-	-	T-8
1616H11	●	●	16	16	100	25	16	20					
2020K11	●	●	20	20	125	32	20	25					
2525M11	●	●	25	25	150	38	25	32					
1616H16	●	●	16	16	100	30	16	20					
2020K16			20	20	125	32	20	25	VB□□1604□□	M3.5X9	-	-	T-15
2525M16			25	35	150	40	25	32					
3225P16			32	25	170	55	32	32					
3232P16			32	32	170	55	32	40					
3232P16			32	32	170	55	32	40					
<b>SVJCR/L</b> 1212F11	●	●	12	12	80	22	12	16	-	M2.5x6.5	-	-	T-8
1616H11	●	●	16	16	100	25	16	20					
2020K11	●	●	20	20	125	32	20	25					
1616H16	●	●	16	16	100	30	16	20					
2020K16			20	20	125	32	20	25					
2525M16			25	25	150	40	25	32	VC□□1604□□	M3.5X9	-	-	T-15
3225P16			32	25	170	55	32	32					
3232P16			32	32	170	55	32	40					
3232P16			32	32	170	55	32	40					
3232P16			32	32	170	55	32	40					

## SVABR/L, SVACR/L



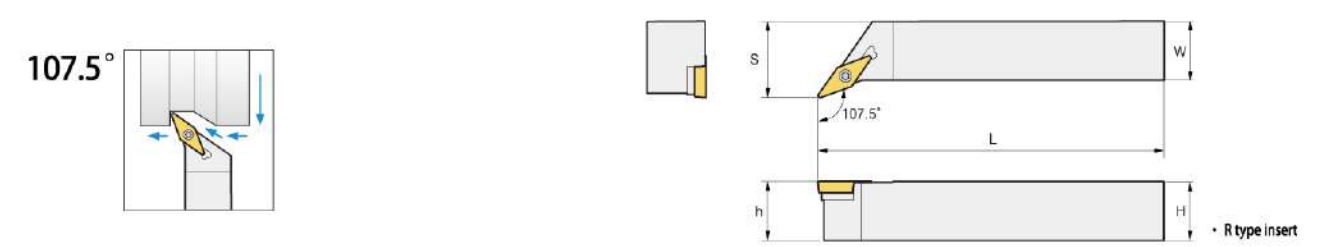
Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench
	R	L	H	W	L	ℓ	h	S					
<b>SVABR/L</b> 1616H16			16	16	100	32	16	16.5	VB□□1604□□	M3.5X9	-	-	T-15
2020K16			20	20	125	32	20	20.5					
2525M16			25	25	150	38	25	25.5					
<b>SVACR/L</b> 1616H16			16	16	100	32	16	16.5	VC□□1604□□	M3.5X9	-	-	T-15
2020K16			20	20	125	32	20	20.5					
2525M16			25	25	150	38	25	25.5					

## SVQBR/L



Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench			
	R	L	H	W	L	ℓ	h	S								
SVQBR/L 1616H11	●	●	16	16	100	35	16	20	VB□□1604□□	M2.5x6.5	-	-	T-8			
2020K11			20	20	125	35	20	25								
2525M11			25	25	150	35	25	32								
1616H16			16	16	100	35	16	20		M3.5x9	-	-	T-15			
2020K16			20	20	125	35	20	25								
2525M16			25	25	150	35	25	32						M3.5x12	SV32S	SHXN0509F
3232P16			32	32	170	35	32	40								
SVQCR/L 1616H11	●	●	16	16	100	35	16	20	VC□□1604□□	M2.5x6.5	-	-	T-8			
2020K11			20	20	125	35	20	25								
2525M11			25	25	150	35	25	32								
1616H16			16	16	100	35	16	20		M3.5x9	-	-	T-15			
2020K16			20	20	125	35	20	25								
2525M16			25	25	150	35	25	32						M3.5x12	SV32S	SHXN0509F
3232P16			32	32	170	35	32	40								

## SVHBR/L, SVHCR/L



Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench	
	R	L	H	W	L	ℓ	h	S						
SVHBR/L 1212F11			12	12	80	13	12	16	VB□□1103□□	M2.5x6.5	-	-	T-8	
1616H11			16	16	100	13	16	20						
2020K11			20	20	125	16.5	20	25						
2020K16			20	20	125	17	20	25		VB□□1604□□	M3.5x12	SV32S	SHXN0509F	T-15
2525M16			25	25	150	23	25	32						
3232P16			32	32	170	26.5	32	40						
SVHCR/L 1212F11			12	12	80	13	12	16	VC□□1103□□					
1616H11			16	16	100	13	16	20						
2020K11			20	20	125	16.5	20	25						
2020K16			20	20	125	17	20	25		VC□□1604□□	M3.5x12	SV32S	SHXN0509F	
2525M16			25	25	150	23	25	32						
3232P16			32	32	170	26.5	32	40						

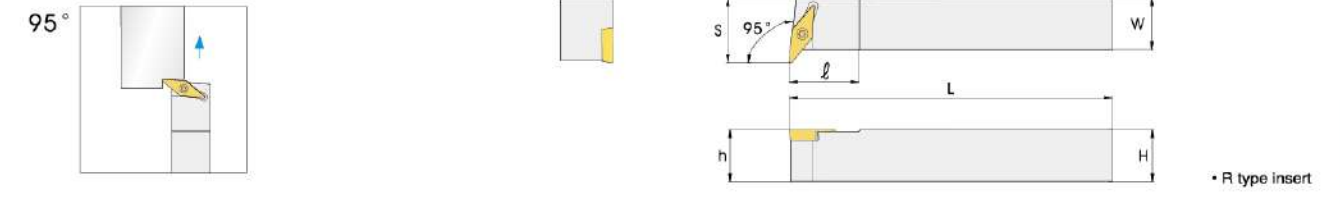


## SVVBN, SVVCN



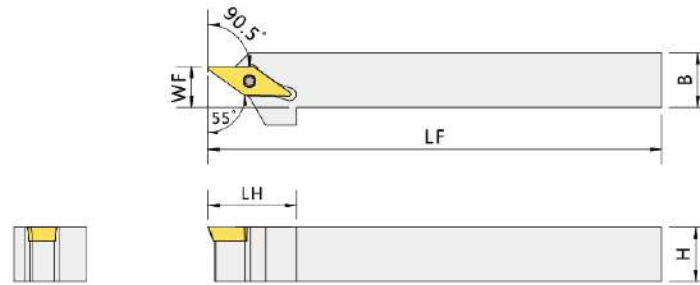
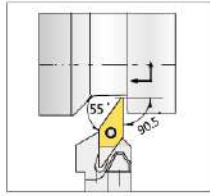
Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench
	R	L	H	W	L	ℓ	h	S					
<b>SVVBN</b> 1212F11	●		12	12	80	24	12	6	VB□□1103□□	M2.5x6.5	-	-	T-8
1616H11	●		16	16	100	24	16	8					
2020K11	●		20	20	125	24	20	10	VB□□1604□□	M3.5X9	-	-	T-15
2525M11	●		25	25	150	24	25	12.5					
1616H16	●		16	16	100	34	16	8					
2020K16			20	20	125	34	20	10					
2525M16			25	25	150	34	25	12.5	M3.5X12	SV32S	SHXN0509F	T-15	
3232P16			32	32	170	34	32	16					
<b>SVVCN</b> 1212F11	●		12	12	80	24	12	6	VC□□1103□□	M2.5x6.5	-	-	T-8
1616H11	●		16	16	100	24	16	8					
2020K11	●		20	20	125	24	20	10	VC□□1604□□	M3.5X9	-	-	T-15
2525M11	●		25	25	150	24	25	12.5					
1616H16	●		16	16	100	34	16	8					
2020K16			20	20	125	34	20	10					
2525M16			25	25	150	34	25	12.5	M3.5X12	SV32S	SHXN0509F	T-15	
3232P16			32	32	170	34	32	16					

## SVUBR/L, SVUCR/L



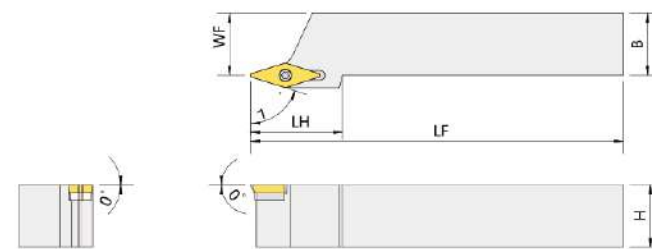
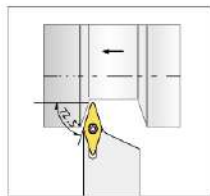
Designation	Stock		Size						Inserts	Screw	Shim	Shim Screw	Wrench
	R	L	H	W	L	ℓ	h	S					
<b>SVUBR/L</b> 1212H11	●	●	12	12	100	14	12	20	VB□□1103□□	M2.5x6.5	-	-	T-8
1616H11	●	●	16	16	100	14	16	20					
2020K16			20	20	125	18	20	30	VB□□1604□□	M3.5X12	SV32S	SHXN0509F	T-15
2525M16			25	25	150	18	25	35					
<b>SVUCR/L</b> 1212H11	●	●	12	12	100	14	12	20	VB□□1103□□	M2.5x6.5	-	-	T-8
1616H11	●	●	16	16	100	14	16	20					
2020K16			20	20	125	18	20	30	VB□□1604□□	M3.5X12	SV32S	SHXN0509F	T-15
2525M16			25	25	150	18	25	35					

## SVKCR



Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SVKCR 1212H11			12	12	100	14	12	9	VC□□1103□□	M2.5x6.5	T-8

## SVVCR/L



Designation	Stock		Size						Inserts	Screw	Wrench
	R	L	H	W	L	ℓ	h	S			
SVVCR/L 2020K16			20	20	125	37	25	20	VC□□1604□□	M3.5x9	T-15
2525M16			25	25	150	37	25	25			

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

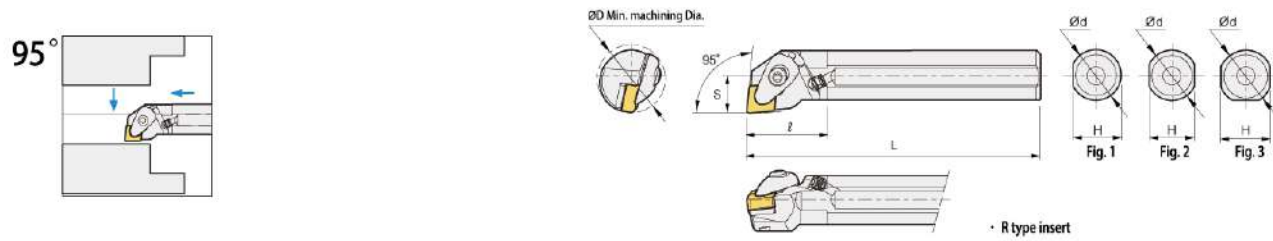
MILL LINE

DRILL LINE

TOOL LINE

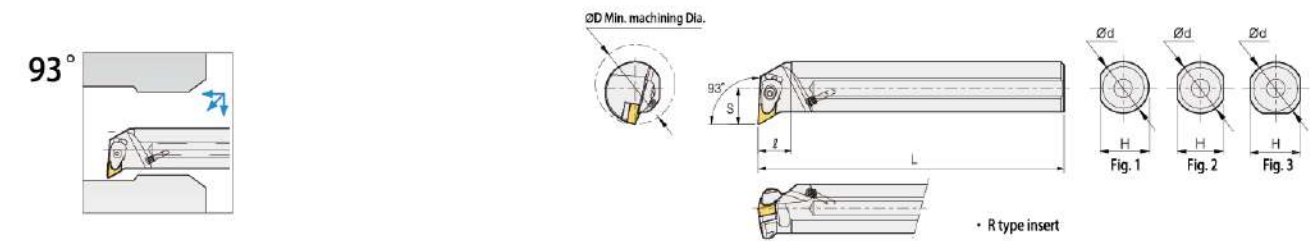


## DCLNR/L



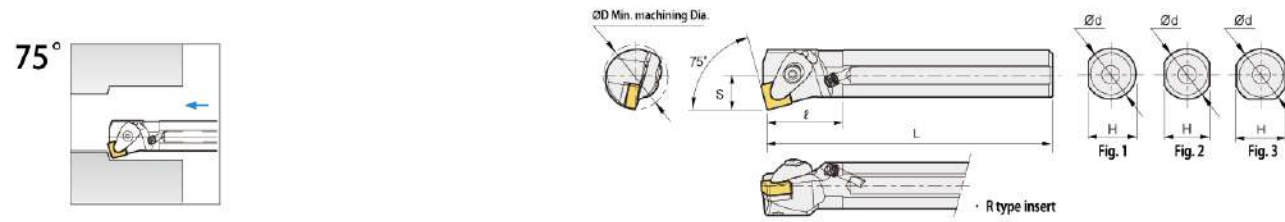
Designation	Stock		Size					Inserts	Clamp	Clamp Screw	Shim	Shim screw	Spring	Wrench	Fig.	
	R	L	ØDmin	Ød	H	L	ℓ									S
S20Q-DCLNR/L09			25	20	18	180	40	14	CN□□0903□□	CVH43	CHX0415	-	-	SPR0510	HW25L	1
S25R-DCLNR/L09			32	25	24	200	40	17								1
S25R-DCLNR/L12	●	●	32	25	24	200	40	17								1
S32S-DCLNR/L12	●	●	40	32	30	250	50	22								3
S40T-DCLNR/L12	●	●	48	40	38	300	60	27			MSC-432	DSP0611F				3
S50U-DCLNR/L12			58	50	48	350	70	35					SPR0714	HW30L		3
A25R-DCLNR/L12			32	25	24	200	40	17	CN□□1204□□	CVH54	CHX0518	-	-			1
A32S-DCLNR/L12			40	32	30	250	50	22								3
A40T-DCLNR/L12			48	40	38	300	60	27			MSC-432	DSP0611F				3
A50U-DCLNR/L12			58	50	48	350	70	35								3

## DDUNR/L



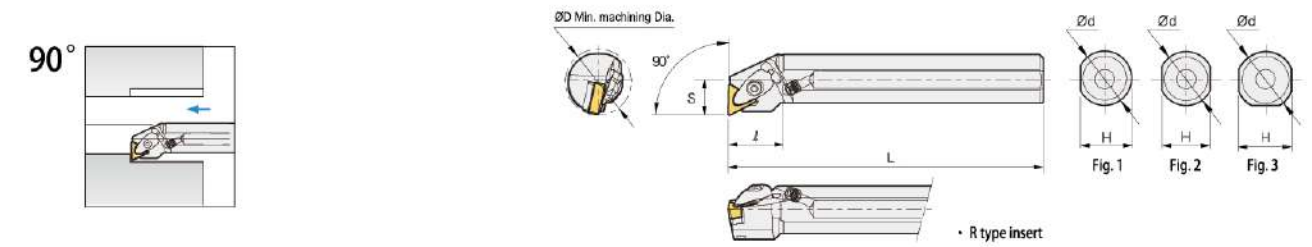
Designation	Stock		Size					Inserts	Clamp	Clamp Screw	Shim	Shim screw	Spring	Wrench	Fig.	
	R	L	ØDmin	Ød	H	L	ℓ									S
S20Q-DDUNR/L11			25	20	18	180	40	14	DN□□1104□□	CVH43	CHX0415	-	-	SPR0510	HW25L	1
S25R-DDUNR/L11			32	25	24	200	40	17								1
S25R-DDUNR/L15	●	●	32	25	24	200	40	17								1
S32S-DDUNR/L15	●	●	40	30	30	250	50	22								3
S40T-DDUNR/L15	●	●	50	40	38	300	60	27								3
S50U-DDUNR/L15			63	50	47	350	70	35	DN□□1504□□							3
A25R-DDUNR/L15			32	25	24	200	40	17	DN□□1506□□	CVH54	CHX0518	-	-	SPR0714	HW30L	1
A32S-DDUNR/L15			40	30	30	250	50	22								3
A40T-DDUNR/L15			50	40	38	300	60	27			MSC-432	DSP0611F				3
A50U-DDUNR/L15			63	50	47	350	70	35			MSD-442					3

## DSKNR/L



Designation	Stock		Size					Inserts	Clamp	Clamp Screw	Shim	Shim screw	Spring	Wrench	Fig.	
	R	L	ØDmin	Ød	H	L	l									S
S20Q-DSKNR/L09			25	20	18	180	40	14	SN□□0903□□	CVH43	CHX0415	-	-	SPR0510	HW25L	1
S25R-DSKNR/L09			32	25	24	200	40	17								1
S25R-DSKNR/L12	●	●	32	25	24	200	40	17	-	-	-	-	-	-	-	1
S32S-DSKNR/L12	●	●	40	32	30	250	50	22								3
S40T-DSKNR/L12	●	●	50	40	38	300	60	27	MSS-432	DSP0611F	-	-	-	-	-	3
S50U-DSKNR/L12			63	50	48	350	70	35								3
A25R-DSKNR/L12			32	25	24	200	40	17	SN□□1204□□	CVH54	CHX0518	-	-	SPR0714	HW30L	1
A32S-DSKNR/L12			40	32	30	250	50	22								3
A40T-DSKNR/L12			50	40	38	300	60	27	MSS-432	DSP0611F	-	-	-	-	-	3
A50U-DSKNR/L12			63	50	48	350	70	35								3

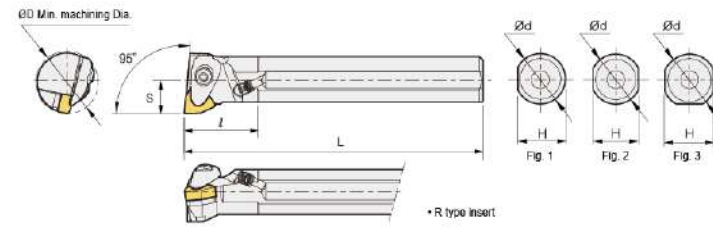
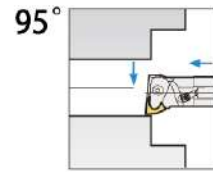
## DTFNR/L



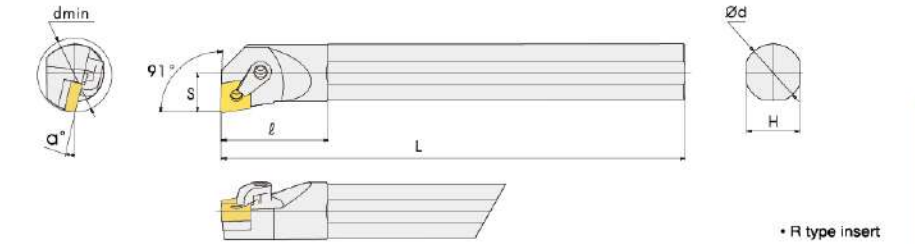
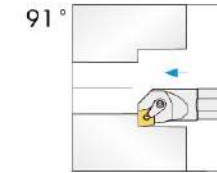
Designation	Stock		Size					Inserts	Clamp	Clamp Screw	Shim	Shim screw	Spring	Wrench	Fig.	
	R	L	ØDmin	Ød	H	L	l									S
S20Q-DTFNR/L16	●	●	28	20	18	180	40	14	TN□□1604□□	CVH43	CHX0415	-	-	SPR0510	HW25L	1
S25R-DTFNR/L16	●	●	32	25	24	200	40	17								1
S32S-DTFNR/L16	●	●	40	32	30	250	50	22	MST-322	DSP0408F	-	-	-	-	-	3
S40T-DTFNR/L16	●	●	50	40	38	300	60	27								3
A20Q-DTFNR/L16			28	20	18	180	40	14	-	-	-	-	-	-	-	1
A25R-DTFNR/L16			32	25	24	200	40	17								1
A32S-DTFNR/L16			40	32	30	250	50	22	MST-322	DSP0408F	-	-	-	-	-	3
A40T-DTFNR/L16			50	40	38	300	60	27								3



## DWLNR/L



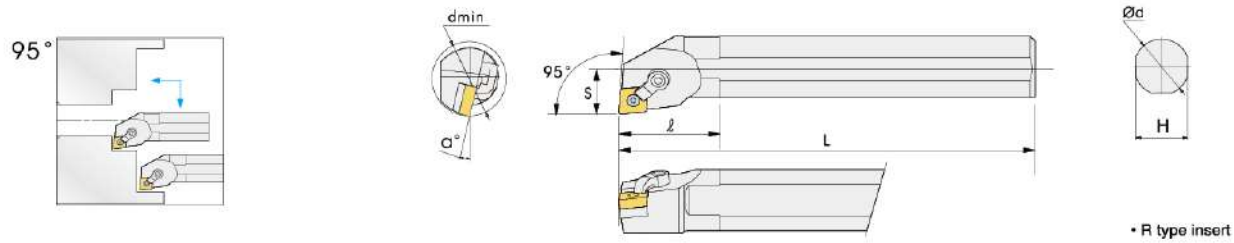
## MCKNR/L



Designation	Stock		Size					Inserts	Clamp	Clamp Screw	Shim	Shim screw	Spring	Wrench	Fig.
	R	L	ØDmin	Ød	H	L	ℓ								
S20Q-DWLNR/L06			25	20	18	180	40	13	WN□□0603□□	CVH43	CHX0415		SPR0510	HW25L	1
S25R-DWLNR/L06			32	25	24	200	40	17							1
S25R-DWLNR/L08	●	●	32	25	24	200	40	17							1
S32S-DWLNR/L08	●	●	40	32	30	250	50	22							3
S40T-DWLNR/L08	●	●	50	40	38	300	60	27			MSW-432	DSP0611F			3
S50U-DWLNR/L08			63	50	47	350	70	35							3
A25R-DWLNR/L08			32	25	24	200	40	17	WN□□0804□□	CVH54	CHX0518		SPR0714	HW30L	1
A32S-DWLNR/L08			40	32	30	250	50	22							3
A40T-DWLNR/L08			50	40	38	300	60	27			MSW-432	DSP0611F			3
A50U-DWLNR/L08			63	50	47	350	70	35							3

Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S							α
S20Q-MCKNR/L12	●	●	24	20	18	180	45	14	15°	CNC□□1204□□		MLP44A	MCP618-2	MCS622-3	HW25L
S25R-MCKNR/L12	●	●	30	25	23	200	45	17	13°				MCP618	MCS625-3	HW30L
S32S-MCKNR/L12	●	●	38	32	30	250	50	22.5	17°			MCP618	MCS625-3	HW25L	HW30L
S40T-MCKNR/L12			47	25	38	300	55	27	15°						
S50U-MCKNR/L12			60	32	48	350	70	35	12°	MSC-432	MLP406	MCP618	MCS625-3		

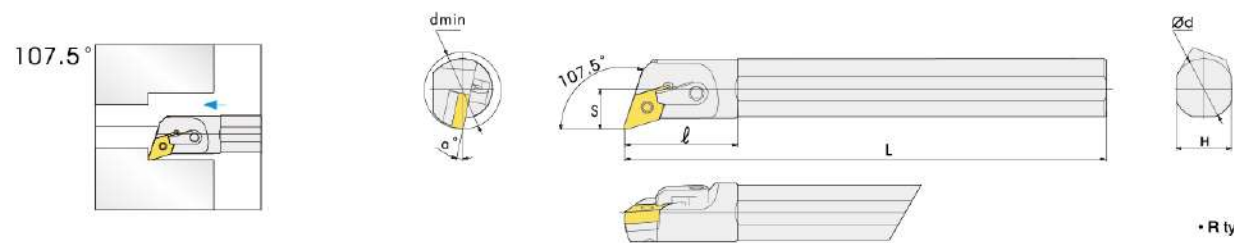
## MCLNR/L



• R type insert

Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S16Q-MCLNR/L09	●	●	22	16	11	180	35	15	17°	CN□□0903□□	-	MLP33A	MCP515	MCS519-2.5	HW20L HW25L
S20Q-MCLNR/L09	●	●	23	20	18	180	33	13	15°	-	MLP44A	MCP618-2	MCS625-3	HW25L	
S20Q-MCLNR/L12	●	●	23	20	18	180	45	13	15°			MCP618	MCS625-3	HW30L	
S25R-MCLNR/L12	●	●	30	25	23	200	45	17	12°	CN□□1204□□	MSC-432	MLP406	MCP618	MCS625-3	HW25L HW30L
S32S-MCLNR/L12	●	●	38	32	30	250	50	22.5	17°						
S40T-MCLNR/L12	●	●	47	40	38	300	55	27	15°						
S50U-MCLNR/L12			60	50	48	350	70	31	12°	CN□□1606□□	MSC-533	MLP508	MCP822	MCS830-4	HW40L
S32S-MCLNR/L16			38	32	30	250	50	22.5	17°						
S40T-MCLNR/L16			47	40	38	300	55	27	15°						
S50U-MCLNR/L16			60	50	48	350	75	31	12°						

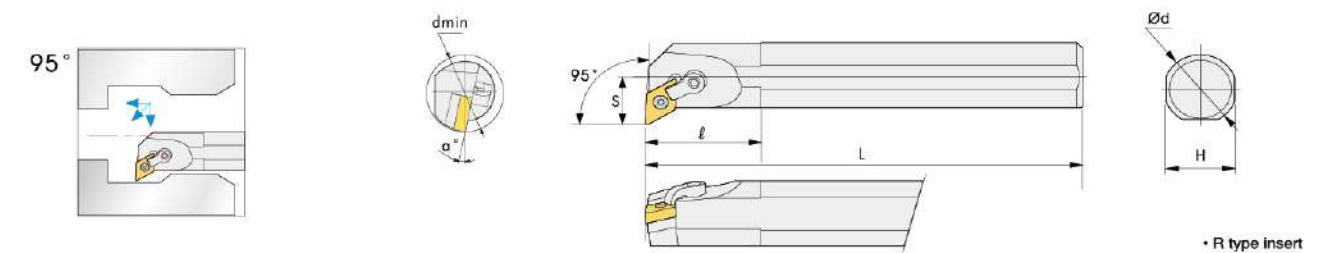
## MDQNR/L



• R type insert

Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S25R-MDQNR/L15	●	●	32	25	23	200	45	17	12°	CN□□1204□□	-	MLP44A	MCP621	MCS625-3	HW25L HW30L
S32S-MDQNR/L15	●	●	42	32	30	250	50	22.5	17°	DN□□1504□□	MSD-432	MLP406			
S40T-MDQNR/L15	●		50	40	38	300	60	27	15°	DN□□1506□□	MSD-442				
S50U-MDQNR/L15			63	50	48	350	70	33	12°						

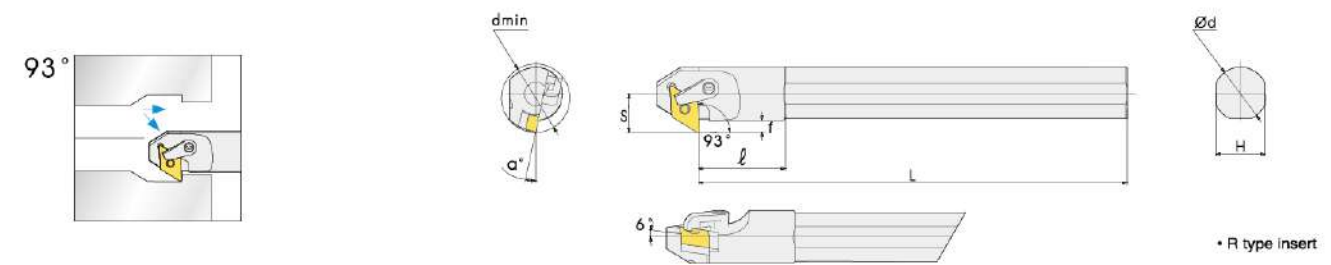
## MDUNR/L



• R type insert

Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S20Q-MDUNR/L11	●	●	26	20	18	180	33	13	15°	DN□□1104□□	-	MLP33A	MCP621	MCS625-3	HW25L HW30L
S25R-MDUNR/L11	●	●	30	25	23	180	45	17	12°	DN□□1504□□	-	MLP44A			
S25R-MDUNR/L15	●	●	38	25	23	200	45	17	12°						
S32S-MDUNR/L15	●	●	47	32	30	250	50	22	17°	DN□□1504□□	MSD-432	MLP406			
S40T-MDUNR/L15	●		50	40	38	300	60	27	15°	DN□□1506□□	MSD-442				
S50U-MDUNR/L15			60	50	48	350	70	32	12°						

## MDZNR/L

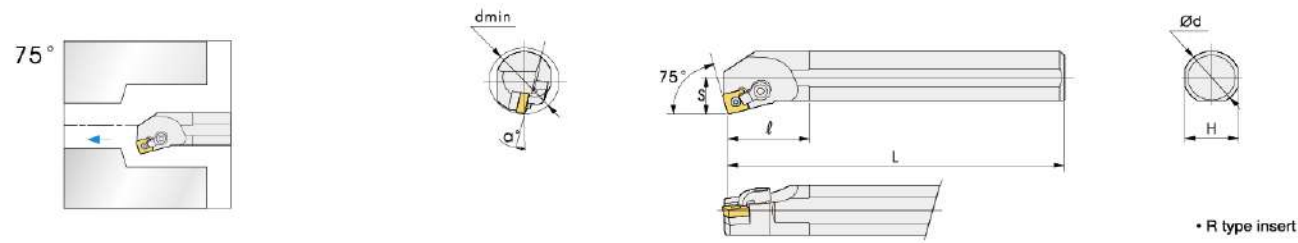


• R type insert

Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S25R-MDZNR/L15	●	●	30	25	23	200	45	18	13°	DN□□1504□□	-	MLP44A	MCP621	MCS622-3	HW25L HW30L
S32S-MDZNR/L15	●		38	32	30	250	50	22	17°	DN□□1504□□	MSD-432	MLP406			
S40T-MDZNR/L15	●		47	40	38	300	55	27	13°	DN□□1506□□	MSD-442				
S50U-MDZNR/L15			60	50	48	350	70	33	12°						

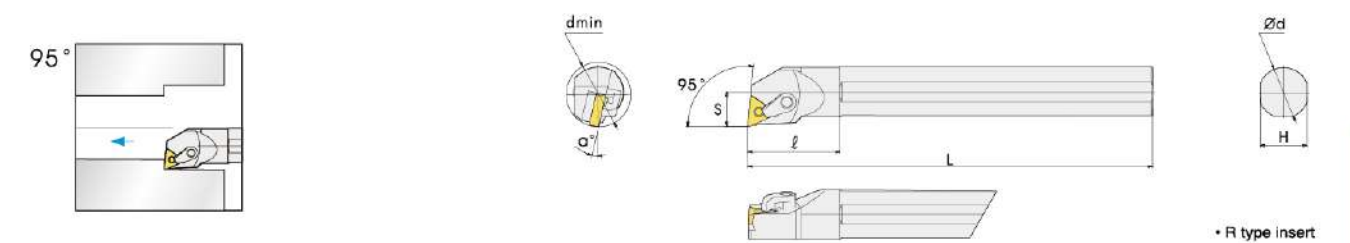


## MSKNR/L



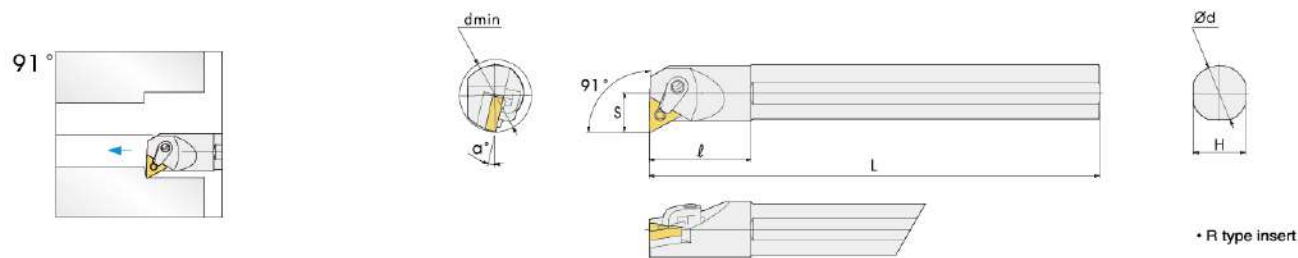
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench			
	R	L	ØDmin	Ød	H	L	l	S							α		
S20Q-MSKNR/L12	●		25	20	18	180	45	13	15°	SN□□1204□□	-	MLP44A	MCP618-2	MCS622-3	HW25L HW30L		
S25R-MSKNR/L12	●		30	25	23	200	45	17	12°				MCP618	MCS625-3			
S32S-MSKNR/L12	●		38	32	30	250	50	22	12°				MSS-432	MLP406		MCP618	MCS625-3
S40T-MSKNR/L12			47	40	38	300	55	27	15°								
S50U-MSKNR/L12			60	50	48	350	70	34	12°								

## MTUNR/L



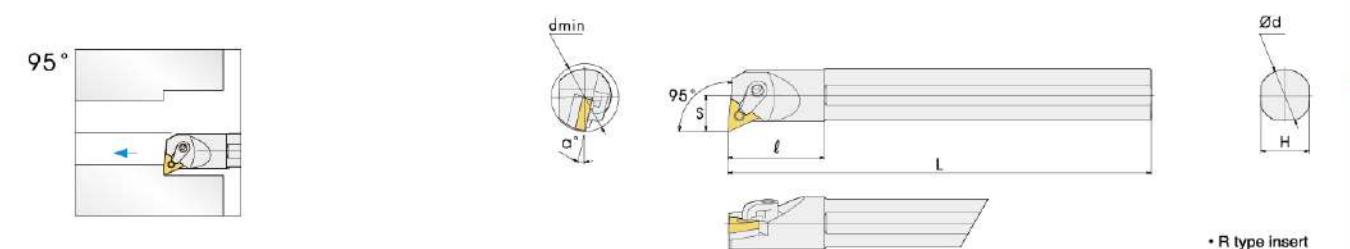
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench			
	R	L	ØDmin	Ød	H	L	l	S							α		
S20Q-MTUNR/L16	●	●	25	20	18	180	42	13	15°	TN□□1604□□	-	MLP33A	MCP618-2	MCS622-3	HW20L HW30L		
S25R-MTUNR/L16	●	●	30	25	23	200	45	17	12°				MCP618	MCS625-3			
S32S-MTUNR/L16	●	●	38	32	30	250	54	22	17°				MST-322	MLP305		MCP618	MCS625-3
S40T-MTUNR/L16	●		47	40	38	300	60	27	15°								
S50U-MTUNR/L16			60	50	48	350	65	31	12°								
S40T-MTUNR/L22			47	40	38	300	55	27	15°	TN□□2204□□	MST-432	MLP406	MCP819	MCS830-4	HW25L HW40L		
S50U-MTUNR/L22			60	50	48	350	70	31	12°								

## MTFNR/L



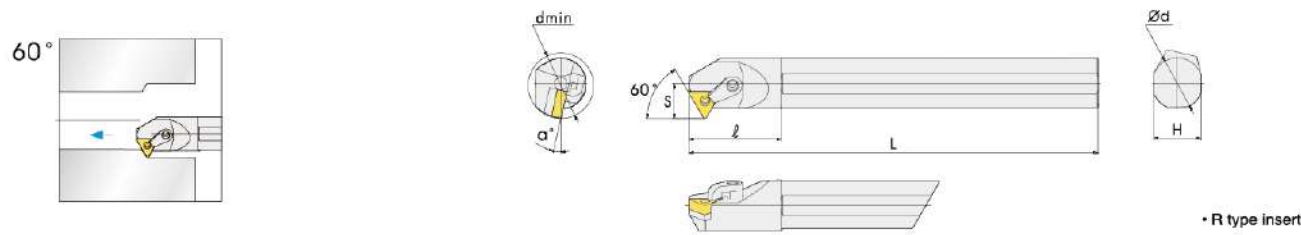
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench			
	R	L	ØDmin	Ød	H	L	l	S							α		
S20Q-MTFNR/L16	●	●	25	20	18	180	40	13	15°	TN□□1604□□	-	MLP33A	MCP618-2	MCS622-3	HW20L HW30L		
S25R-MTFNR/L16	●	●	30	25	23	200	45	17	12°				MCP618	MCS625-3			
S32S-MTFNR/L16	●	●	38	32	30	250	54	22	17°				MST-322	MLP305		MCP618	MCS625-3
S40T-MTFNR/L16	●		47	40	38	300	60	27	15°								
S50U-MTFNR/L16			60	50	48	350	65	31	12°								
S40T-MTFNR/L22			50	40	38	300	55	27	15°	TN□□2204□□	MST-432	MLP406	MCP819	MCS830-4	HW25L HW40L		
S50U-MTFNR/L22			60	50	48	350	70	31	12°								

## MTUNR/L-A



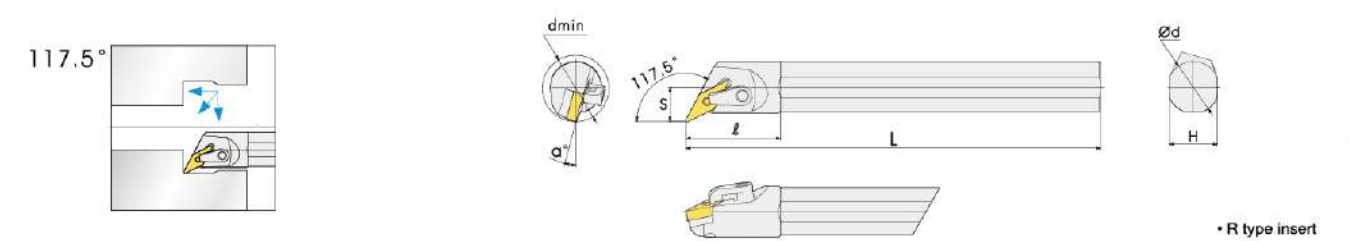
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench			
	R	L	ØDmin	Ød	H	L	l	S							α		
S20Q-MTUNR/L16A	●	●	25	20	18	180	40	13	15°	TN□□1604□□	-	MLP33A	MCP618-2	MCS622-3	HW20L HW30L		
S25R-MTUNR/L16A	●	●	30	25	23	200	45	17	12°				MCP618	MCS625-3			
S32S-MTUNR/L16A	●	●	38	32	30	250	54	22	17°				MST-322	MLP305		MCP618	MCS625-3
S40T-MTUNR/L16A			47	40	38	300	60	27	15°								
S50U-MTUNR/L16A			60	50	48	350	65	31	12°								

## MTWNR/L



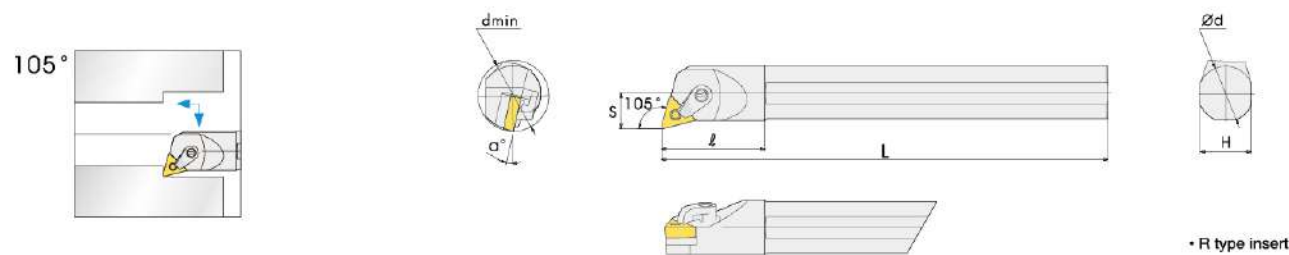
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench			
	R	L	ØDmin	Ød	H	L	l	S							α		
S20Q-MTWNR/L16	●		25	20	18	180	40	14	15°	TN□□1604□□	-	MLP33A	MCP618-2	MCS622-3	HW20L HW30L		
S25R-MTWNR/L16	●		30	25	23	200	45	17	12°				MCP618	MCS625-3			
S32S-MTWNR/L16	●		38	32	30	250	54	22	17°				MST-322	MLP305		MCP618	MCS625-3
S40T-MTWNR/L16			47	40	38	300	60	27	15°								
S50U-MTWNR/L16			60	50	48	350	65	31	12°								

## MVQNR/L



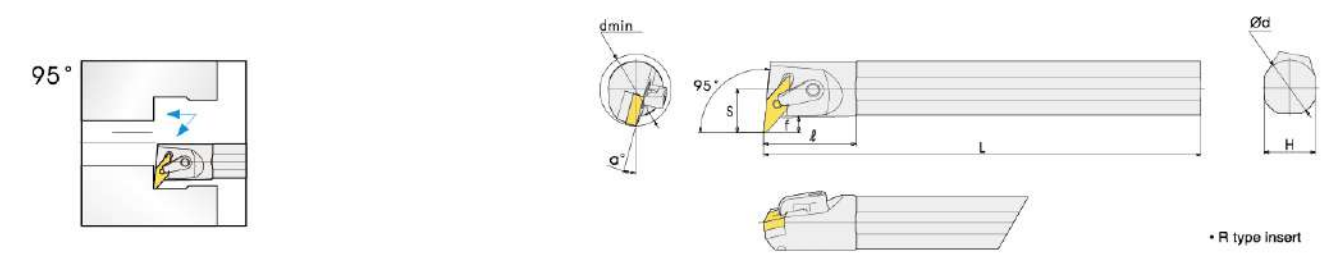
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S25R-MVQNR/L16	●	●	30	25	23	200	45	17	12°	VN□□1604□□	-	MLP33A	MCP824	MCS625-3	HW20L HW30L
S32S-MVQNR/L16	●	●	38	32	30	250	50	22	17°						
S40T-MVQNR/L16			47	40	38	300	55	27	15°						
S50U-MVQNR/L16			60	50	48	350	70	31	12°						

## MTQNR/L



Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench			
	R	L	ØDmin	Ød	H	L	l	S							α		
S20Q-MTQNR/L16	●	●	25	20	18	180	42	13	15°	TN□□1604□□	-	MLP33A	MCP618-2	MCS622-3	HW20L HW30L		
S25R-MTQNR/L16	●	●	30	25	23	200	45	17	12°				MCP618	MCS625-3			
S32S-MTQNR/L16	●	●	38	32	30	250	54	22	17°				MST-322	MLP305		MCP618	MCS625-3
S40T-MTQNR/L16	●		47	40	38	300	60	27	15°								
S50U-MTQNR/L16			60	50	48	350	65	31	12°								

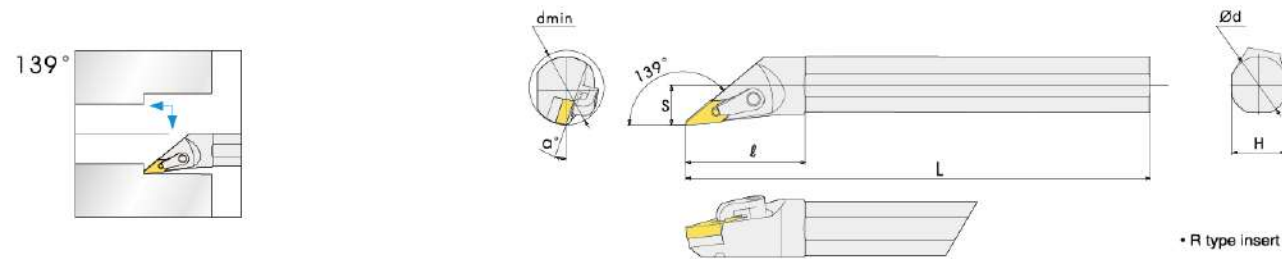
## MVUNR/L



Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S25R-MVUNR/L16	●	●	32	25	23	200	45	20	12°	VN□□1604□□	-	MLP33A	MCP721	MCS625-3	HW20L HW30L
S32S-MVUNR/L16	●	●	38	32	30	250	50	22	17°						
S40T-MVUNR/L16			47	40	38	300	55	27	15°						
S50U-MVUNR/L16			60	50	48	350	70	31	12°						

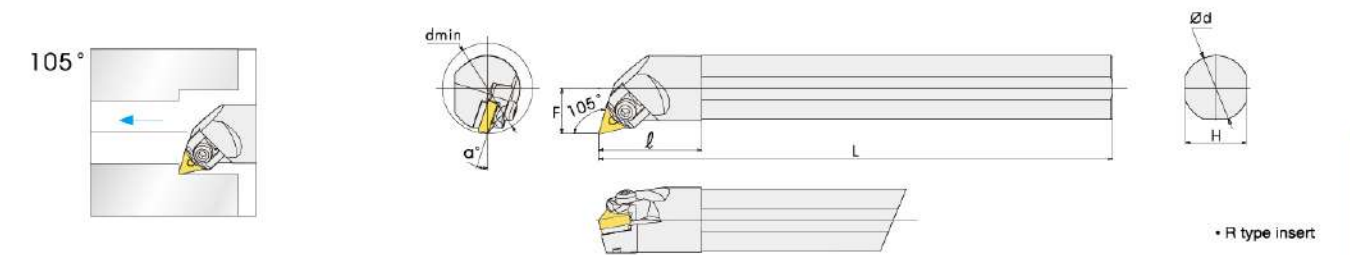


## MVXNR/L



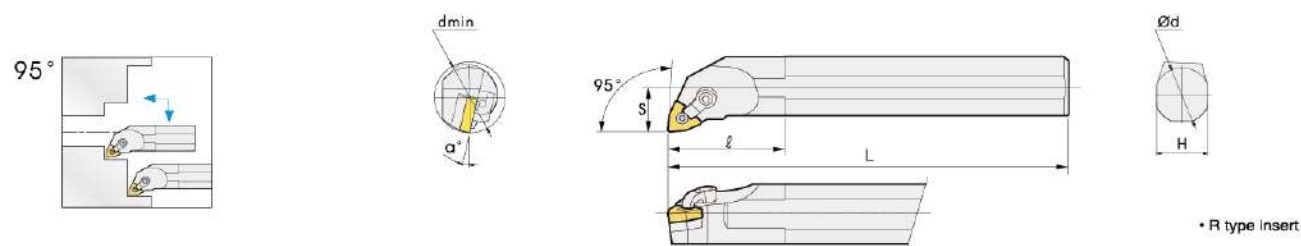
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S20Q-MVXNR/L16	●	●	24	20	18	180	45	14	15°	VN□□1604□□	-	MLP33A	MCP824-2	MCS622-3	HW20L HW30L
S25R-MVXNR/L16	●	●	30	25	23	200	50	17	12°						
S32S-MVXNR/L16	●	●	38	32	30	250	55	22	17°						
S40T-MVXNR/L16			47	40	38	300	60	27	15°						
S50U-MVXNR/L16			60	50	48	350	65	31	12°						
										MSV-322	MLP305	MCP824	MCS625-3		

## WTQNR



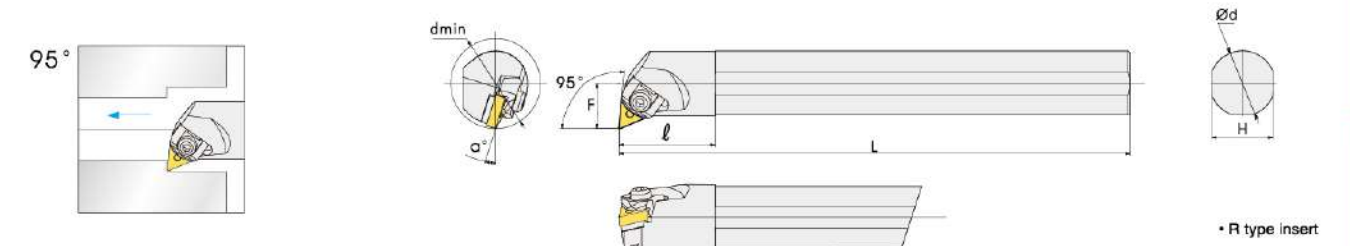
Designation	Stock		Size						Inserts	Shim	pin	Wedge	Screw	Slopper ring	Wrench
	R	L	ØDmin	Ød	H	L	l	S							
S25R-WTQNR/L16			32	25	200	47	17	13°	TN□□1604□□	-	SCP311	MCW3-P25N	WCS626-4	ER04	HW25L HW40L
S32S-WTQNR/L16			40	32	250	47	22	17°							
S40T-WTQNR/L16			50	40	300	60	27	15°							
S32S-WTQNR/L22			44	32	250	47	22	17°							
S40T-WTQNR/L22			52	40	300	60	27	15°							
									TN□□2204□□	MST-432	SCP418	MCW4-P30N	WCS626-4	ER04	HW30L HW40L

## MWLNR/L



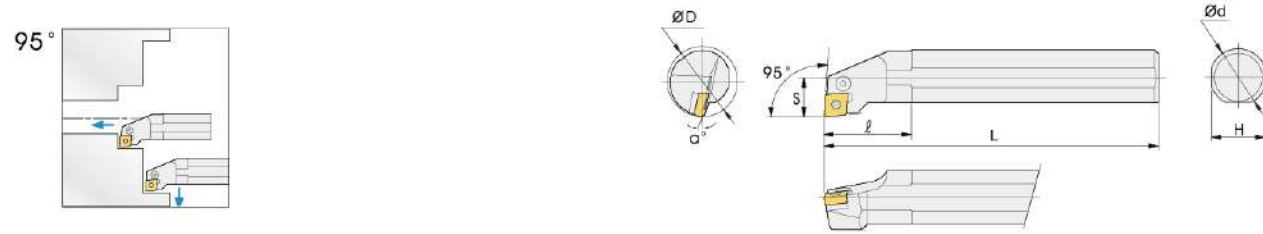
Designation	Stock		Size						Inserts	Shim	pin	Clamp	Screw	Wrench						
	R	L	ØDmin	Ød	H	L	l	S							α					
S16Q-MWLNR/L06	●	●	19	16	15	180	28	11	18°	WN□□0604□□	-	MLP33A	MCP824-2	MCS519-2.5	HW20L HW25L					
S20Q-MWLNR/L06	●	●	23	20	18	180	42	13	15°											
S25R-MWLNR/L06	●	●	30	25	23	200	45	17	12°											
S20Q-MWLNR/L08	●	●	23	20	18	180	40	13	15°											
S25R-MWLNR/L08	●	●	30	25	23	200	45	17	12°											
S32S-MWLNR/L08	●	●	38	32	30	250	50	22	17°	WN□□0804□□	-	MLP44A	MCP618-2	MCS622-3	HW25L HW30L					
S40T-MWLNR/L08			47	40	38	300	55	27	15°											
S50U-MWLNR/L08			60	50	48	350	70	31	12°											
																MSW-432	MLP406	MCP618	MCS625-3	

## WTUNR



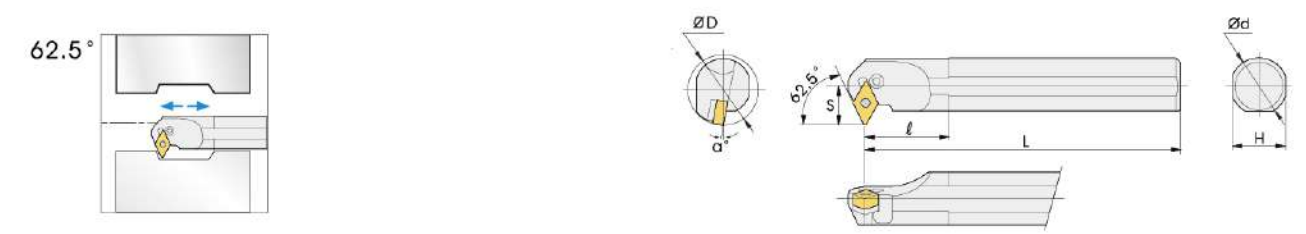
Designation	Stock		Size						Inserts	Shim	pin	Wedge	Screw	Slopper ring	Wrench	
	R	L	ØDmin	Ød	H	L	l	S								α
S20S-WTUNR/L16			32	20	18	250	47	16	17°	TN□□1604□□	-	SCP311	MCW3-P25N	WCS626-4	ER04	HW25L HW40L
S25T-WTUNR/L16			32	25	23	300	47	17	12°							
S32U-WTUNR/L16			40	32	30	350	60	22	10°							
S40V-WTUNR/L16			50	40	38	400	47	27	10°							
S40V-WTUNR/L22			50	40	38	400	60	27	10°							
S50W-WTUNR/L22			63	50	48	450	60	35	8°	TN□□2204□□	MST-432	SCP418	MCW4-P30N	WCS626-4	ER04	HW30L HW40L

## PCLNR/L



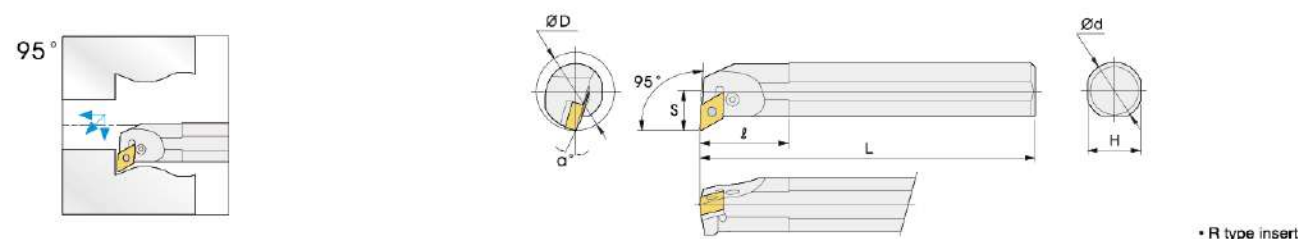
Designation	Stock		Size						Inserts	Lever	Screw	Shim	Shim Pin	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S16Q-PCLNR/L09			20	16	15	180	28	11	12°	CN□□0903□□	LV3C	VHX0509B	-	-	HW20L
S20Q-PCLNR/L09			25	20	18	180	32	13	11°		LV4A	VHX0613A	-	-	HW25L
S25R-PCLNR/L09			32	25	23	200	36	17	10°	CN□□1204□□	LV4	VHX0821	SC42B	SP4	HW30L
S25R-PCLNR/L12			32	25	23	200	40	17	12°						
S32S-PCLNR/L12			40	32	30	250	50	22	11°						
S40T-PCLNR/L12			50	40	37	300	55	27	10°						
S50U-PCLNR/L12			63	50	47	350	55	35	10°						
S50U-PCLNR/L19			70	50	47	350	63	35	10°	CN□□1906□□	LV6	VHX1207	SC63	SP6	HW40L

## PDSNR/L



Designation	Stock		Size						Inserts	Lever	Screw	Shim	Shim Pin	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S32S-PDSNR/L1506	●		40	32	30	250	45	22	11°	DN□□1506□□	LV4B	VHX0821	SD42	SP4	HW30L
S40T-PDSNR/L1506	●		50	40	37	300	45	27	11°		LV4	VHX0821	SD42	SP4	HW30L
S32S-PDSNR/L1504	●		40	32	30	250	45	22	11°	DN□□1504□□	LV4	VHX0821	SD42	SP4	HW30L
S40T-PDSNR/L1504	●		50	40	37	300	45	27	11°						

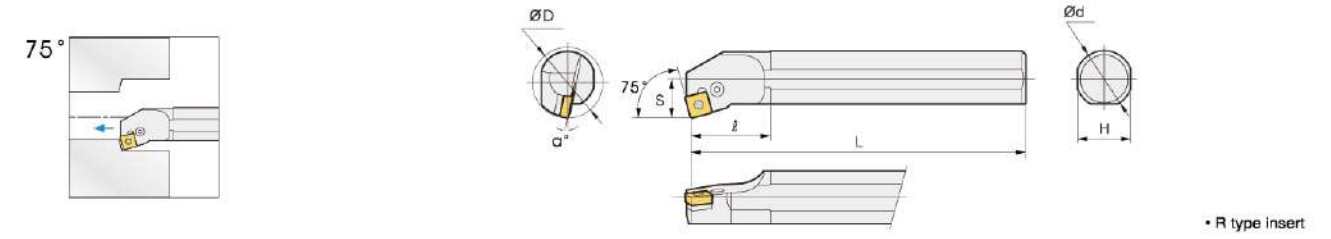
## PDUNR/L



• R type insert

Designation	Stock		Size						Inserts	Lever	Screw	Shim	Shim Pin	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S20Q-PDUNR/L11			25	20	18	180	30	13	16°	DN□□1104□□	LV3D	VHX0509B	-	-	HW20L
S25R-PDUNR/L11			32	25	23	200	35	17	13°		LV3	VHX0617	SD317	SP3	HW25L
S32S-PDUNR/L11			40	32	30	250	40	22	16°	DN□□1506□□	LV4B	VHX0821	SD42	SP4	HW30L
S32S-PDUNR/L1506			40	32	30	250	50	22	16°						
S40T-PDUNR/L1506			50	40	37	300	50	27	11°						
S32S-PDUNR/L1504			40	32	30	250	50	22	16°						
S40T-PDUNR/L1504			50	40	37	300	50	27	11°						

## PSKNR/L

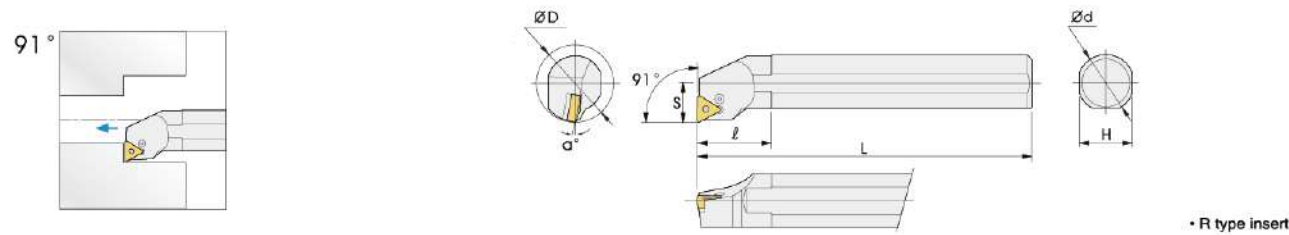


• R type insert

Designation	Stock		Size						Inserts	Lever	Screw	Shim	Shim Pin	Wrench	
	R	L	ØDmin	Ød	H	L	l	S							α
S25R-PSKNR/L12	●	●	32	25	23	200	42	17	12°	SN□□1204□□	LV4B	VHX0613A	-	-	HW25L
S32S-PSKNR/L12	●	●	40	32	30	250	45	22	12°		LV4	VHX0821	SS42B	SP4	HW30L
S40T-PSKNR/L12	●	●	50	40	37	300	50	27	12°						

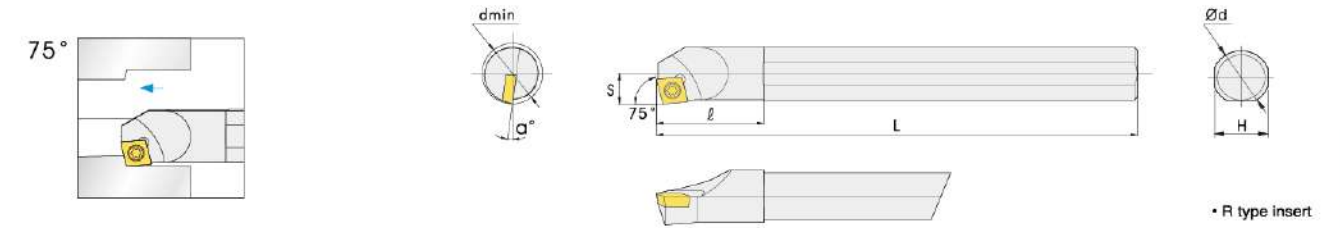


## PTFNR/L



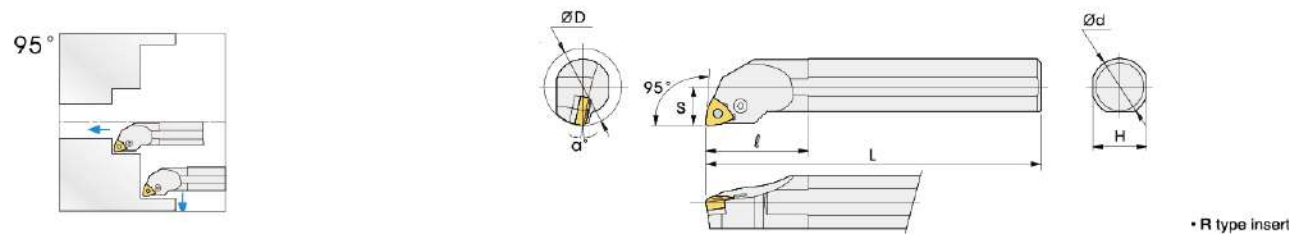
Designation	Stock		Size							Inserts	Lever	Screw	Shim	Shim Pin	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α						
S16Q-PTFNR/L11			20	16	23	180	25	11	20°	TN□□1604□□	LV2	VHX0509B	-	-	HW25L
S20Q-PTFNR/L11			25	20	30	180	32	13	18°						
S25R-PTFNR/L11			32	25	38	200	40	17	15°						
S25R-PTFNR/L16	●	●	32	25	23	200	42	17	15°	TN□□1103□□	LV3B	VHX0512B	-	-	HW20L
S32S-PTFNR/L16	●	●	44	32	30	250	50	22	12°						
S40T-PTFNR/L16	●	●	54	40	37	300	55	27	10°						

## SCKCR/L



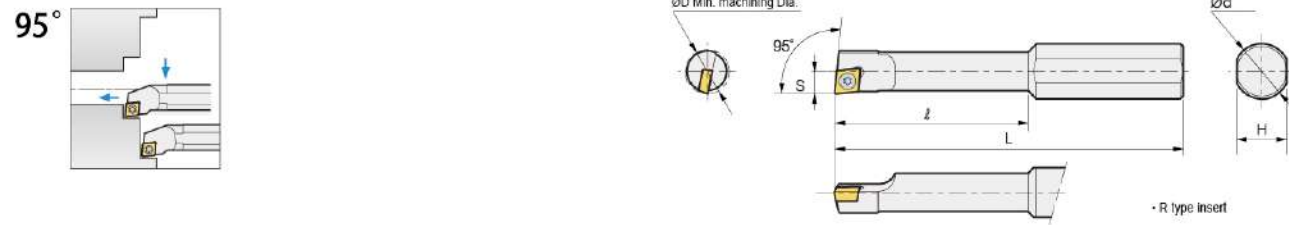
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S08K-SCKCR/L06	●		10	8	7	125	21	5.5	13°	CC□□0602□□	M2.5X5	T-8
S10K-SCKCR/L06	●		11	10	9	125	25	6	12°			
S12M-SCKCR/L06	●		13	12	11	150	25	7	10°			
S12M-SCKCR/L09	●		14	12	11	150	30	8	12°	CC□□09T3□□	M3.5X9	T-15
S16Q-SCKCR/L09	●		17	16	15	180	36	9.5	10°			
S20Q-SCKCR/L09	●		21	20	18	180	38	11.5	8°			
S25R-SCKCR/L12			27	26	23	200	42	15	8°	CC□□1204□□	M5X12	T-20

## PWLNLR/L



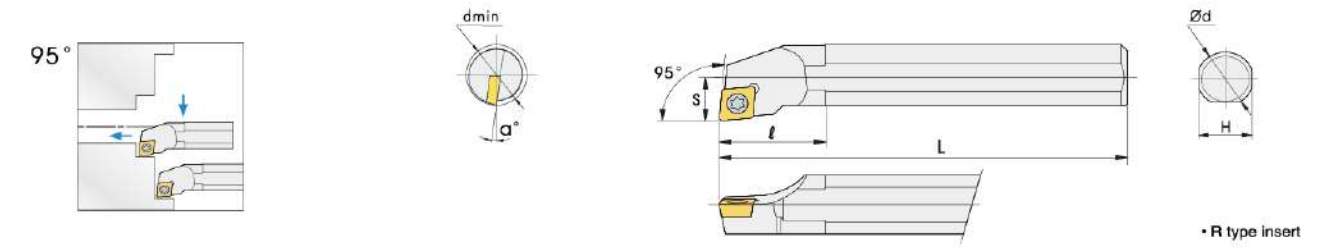
Designation	Stock		Size							Inserts	Lever	Screw	Shim	Shim Pin	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α						
S16Q-PWLNLR/L06			20	16	15	180	25	11	13°	WN□□0604□□	LV3B	VHX0512B	-	-	HW20L
S20Q-PWLNLR/L06			25	20	18	180	40	13	12°						
S25R-PWLNLR/L06			32	25	23	200	40	17	12°						
S32S-PWLNLR/L06	●	●	44	32	30	250	45	22	10°	WN□□0804□□	LV3	VHX0617	SW317	SP3	HW25L
S20Q-PWLNLR/L08	●	●	25	20	18	180	32	13	13°						
S25R-PWLNLR/L08	●	●	32	25	23	200	45	17	12°						
S32S-PWLNLR/L08	●	●	44	32	30	250	50	22	10°	LV4	VHX0821	SW42	SP4	HW30L	
S40T-PWLNLR/L08	●	●	50	40	42	300	55	30	13°						

## SCLCR/L



Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S0510J-SCLCR/L03			6	10	9	110	15	3	15°	CC□□0301□□	M1.6x3	T-6
S0610J-SCLCR/L03			7	10	9	110	15	3	15°			
S0610J-SCLCR/L04			7	10	9	110	15	3.5	13°	CC□□0401□□	M2.0x4	T-6
S0612K-SCLCR/L04	●	●	7	12	11	125	18	3.5	13°			
S0812K-SCLCR/L06	●	●	10	12	11	125	24	5	13°	CC□□0602□□	M2.5X6	T-8
S0616M-SCLCR/L06	●	●	7	16	11	150	18	3.5	12°			
S1016M-SCLCR/L06	●	●	13	16	15	150	30	6	12°			
S1216M-SCLCR/L06	●	●	16	16	15	150	36	7	10°			
S1020M-SCLCR/L06	●	●	13	20	18	150	30	6	8°	CC□□09T3□□	M3.5X9	T-15
S1220M-SCLCR/L06	●	●	16	20	18	150	36	7	8°			
S1220M-SCLCR/L09			16	20	18	150	36	7.5	8°			

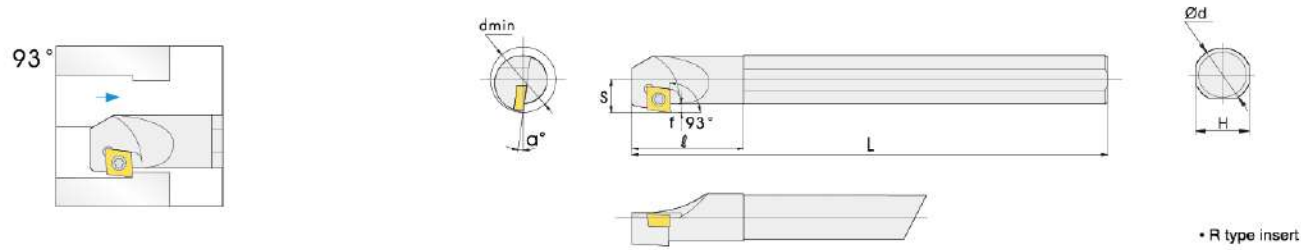
## SCLCR/L



Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S07K-SCLCR/L06	●	●	8	8	7	125	18	5	15°	CC□□0602□□	M2.5X5	T-8
S08K-SCLCR/L06	●	●	9	8	7	125	18	5.5	13°			
S10K-SCLCR/L06	●	●	11	10	9	125	22	7	12°	CC□□09T3□□	M3.5X9	T-15
S12M-SCLCR/L06	●	●	13	12	11	150	25	8	10°			
S12M-SCLCR/L09	●	●	16	14	13	150	27	5.5	10°			
S14Q-SCLCR/L09	●	●	15	12	11	180	27	8	12°			
S16Q-SCLCR/L09	●	●	17	16	15	180	34	11	10°	CC□□1204□□	M5.0X12	T-20
S20Q-SCLCR/L09	●	●	21	20	18	180	38	13	8°			
S25R-SCLCR/L09	●	●	26	25	23	200	45	17	6°			
S32S-SCLCR/L09	●	●	33	32	30	250	45	22	4°	CC□□1204□□	M5.0X12	T-20
S20Q-SCLCR/L12	●	●	21	20	18	180	42	13	8°			
S25R-SCLCR/L12	●	●	26	25	23	200	45	17	8°			
S32S-SCLCR/L12	●	●	33	32	30	250	45	22	6°			
S40T-SCLCR/L12			41	40	38	300	48	27	4°			

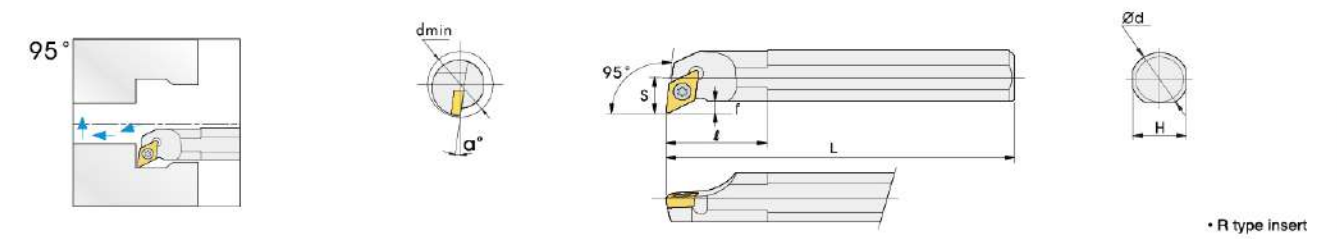


## SCZCR/L



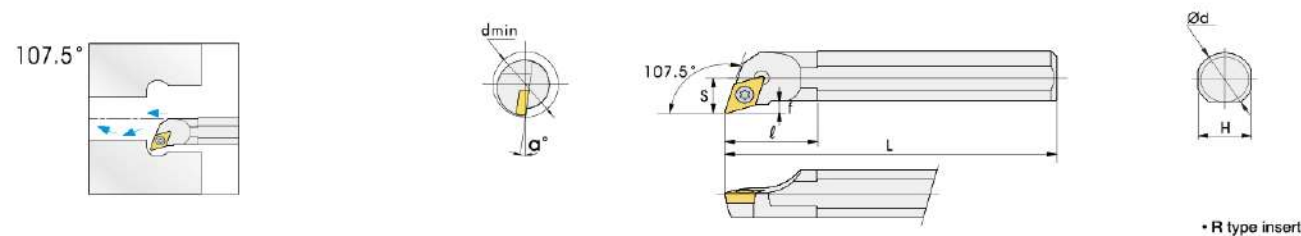
Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
S08K-SCZCR/L06B	●		10	8	7	125	25	6.5	13°	CC□□0602□□	M2.5X5	T-8
S10K-SCZCR/L06B	●	●	12	10	9	125	27	7.5	12°		M2.5X6	
S12M-SCZCR/L06B	●	●	14	12	11	150	32	8.5	10°			
S16Q-SCZCR/L09	●	●	21	16	15	180	35	13	10°			
S20Q-SCZCR/L09			25	20	18	180	40	15	8°	CC□□09T3□□	M3.5X9	T-15
S25R-SCZCR/L09			32	28	23	200	42	18	6°			

## SDUCR/L



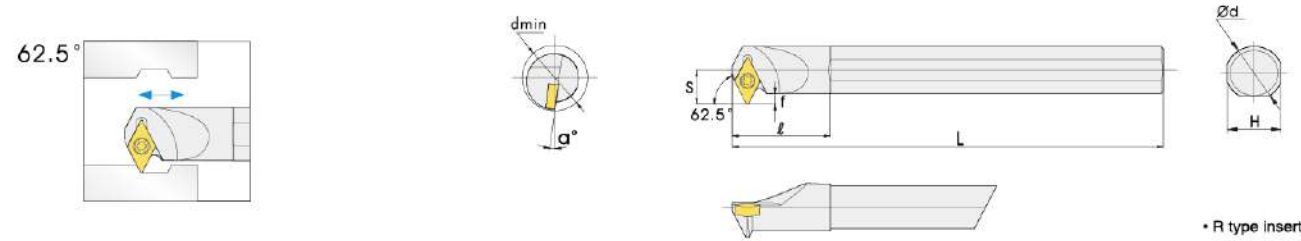
Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
S08K-SDUCR/L07	●	●								DC□□0702□□	M2.5X5	T-8
S10K-SDUCR/L07	●	●	15	10	9	125	25	8	10°			
S12M-SDUCR/L07	●	●	17	12	11	150	25	9	8°			
S16Q-SDUCR/L07	●	●	22	16	15	180	30	11	6°			
S16Q-SDUCR/L11	●	●	19	16	15	180	34	11	8°	DC□□11T3□□	M3.5X9	T-15
S20Q-SDUCR/L11	●	●	23	20	18	180	40	13	6°			
S25R-SDUCR/L11	●	●	29	25	23	200	42	17	5°			
S32S-SDUCR/L11	●	●	38	32	30	250	45	22	4°			
S40T-SDUCR/L11			45	40	38	300	50	25	4°			
S50U-SDUCR/L11			60	50	48	350	55	31	0°			

## SDQCR/L



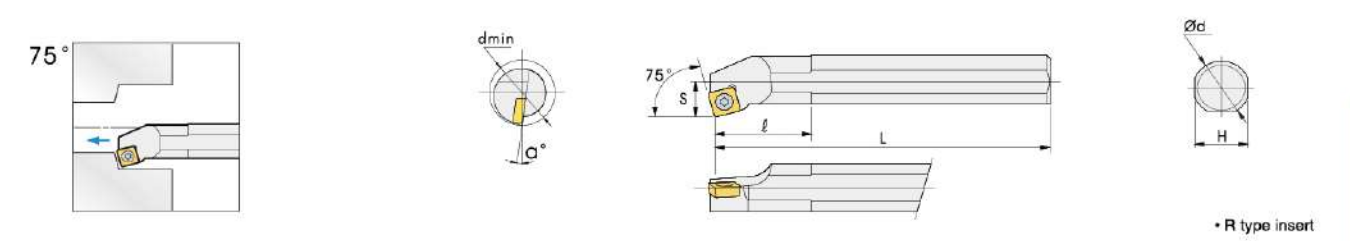
Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
S08K-SDQCR/L07	●	●	10	7	7	125	18	6	12°	DC□□0702□□	M2.5X5	T-8
S10K-SDQCR/L07	●	●	11	10	9	125	24	7	10°			
S12M-SDQCR/L07	●	●	15	12	11	150	30	9	8°			
S16Q-SDQCR/L07	●	●	17	16	15	180	30	11	6°			
S20Q-SDQCR/L11	●	●								DC□□11T3□□	M3.5X9	T-15
S16Q-SDQCR/L11	●	●										
S20Q-SDQCR/L11	●	●	23	20	18	180	42	13	5°			
S25R-SDQCR/L11	●	●	29	25	23	200	42.5	17	4°			
S32S-SDQCR/L11	●	●	40	32	30	250	45	22	4°			

## SDWCR/L



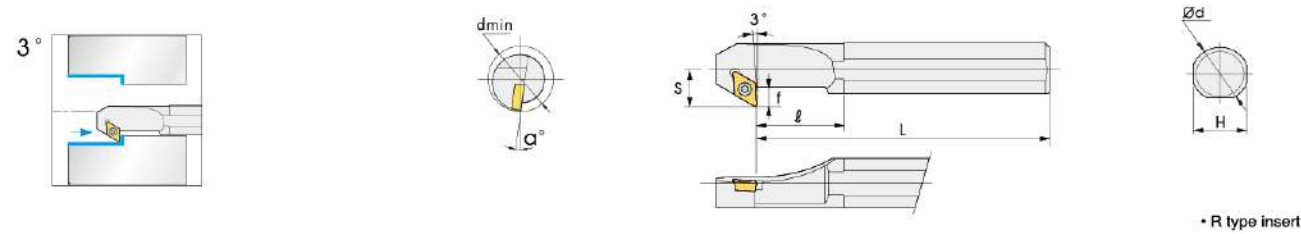
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S10K-SDWCR/L07	●	●	16	12	11	150	25	10.5	10°	DC□□0702□□	M2.5X5	T-8
S12M-SDWCR/L07	●	●	20	16	15	180	34.5	12.5	8°		M2.5X6	
S16Q-SDWCR/L07	●	●	27	20	18	180	30	14.5	6°			
S20Q-SDWCR/L11	●	●	24	20	18	180	40	14.5	6°	DC□□11T3□□	M3.5X9	T-15
S20Q-SDWCR/L11	●	●	29	25	23	200	45	17	5°			
S25R-SDWCR/L11	●	●	40	32	30	250	45	22	2°			
S32S-SDWCR/L11	●	●										

## SSKCR/L



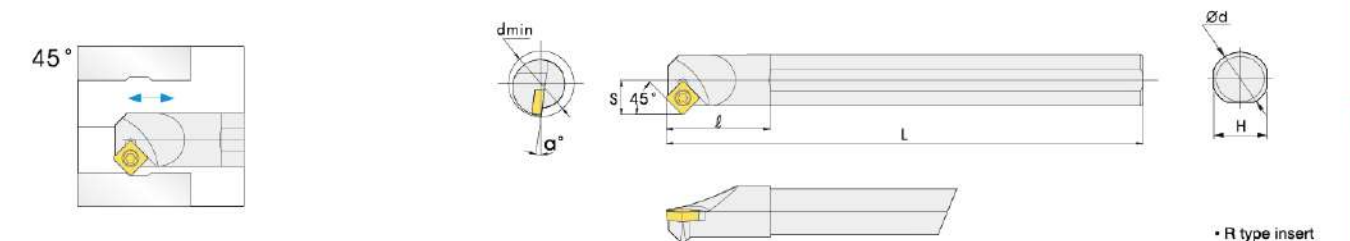
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S12M-SSKCR/L09	●	●	16	12	11	150	30	8.5	12°	SC□□09T13□□	M3.5X9	T-15
S16Q-SSKCR/L09	●	●	18	16	15	180	32.6	11.5	10°			
S20Q-SSKCR/L09	●		23	20	16	180	40	13	8°			
S25R-SSKCR/L09	●		31	25	23	200	40	17	6°			

## SDZCR/L



Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S10K-SDZCR/L07	●	●	13	10	9	125	22	8.5	12°	DC□□0702□□	M2.5X5	T-8
S12M-SDZCR/L07	●	●	16	12	11	150	31	10	10°			
S16Q-SDZCR/L07	●	●	21	16	15	180	37	13	6°			
S20Q-SDZCR/L11	●	●	25	20	18	180	50	15	8°	DC□□11T3□□	M3.5X9	T-15
S25R-SDZCR/L11	●	●	29	25	23	202	45	17	6°			

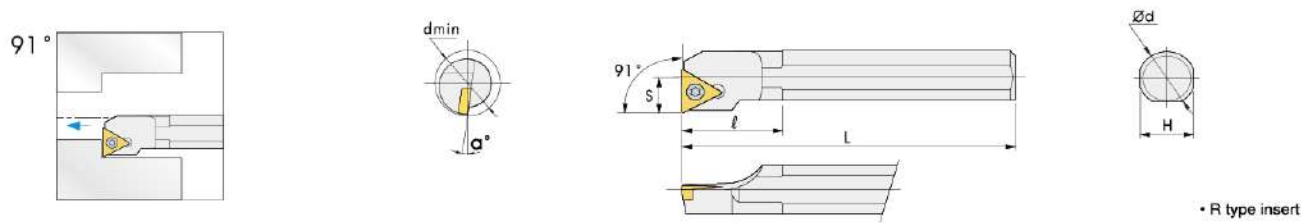
## SSSCR/L



Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S12M-SSSCR/L09	●	●	15	12	11	150	32	9	12°	SC□□09T3□□	M3.5X9	T-15
S16Q-SSSCR/L09	●	●	19	16	15	180	32	11.5	10°			
S20Q-SSSCR/L09	●		27	20	18	180	40	13.5	8°			
S25R-SSSCR/L0	●		27	25	23	200	40	15	6°			
S32S-SSSCR/L09			38	32	30	250	46	22	6°			
S20Q-SSSCR/L12			20	20	18	180	42	13.5	8°	SC□□1204□□	M5.0X12	T-20
S25R-SSSCR/L12			25	25	23	200	40	17	6°			
S32S-SSSCR/L12			32	32	30	250	46	22	4°			



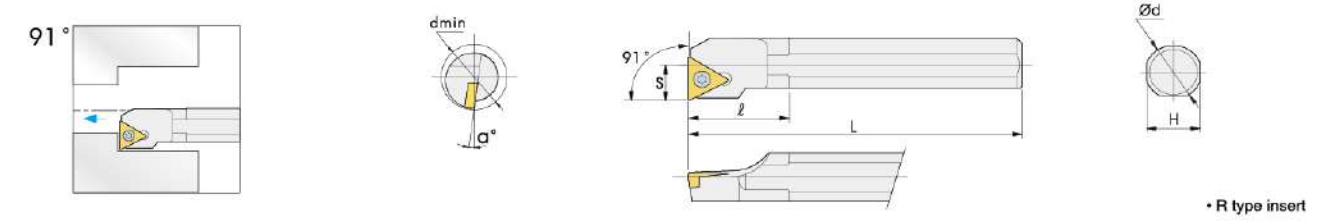
## STFCR/L



• R type insert

Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S08K-STFCR/L09	●	●	9	8	7	125	20	5.5	15°	TC□□0902□□	M2.2X5	T-6
S10K-STFCR/L09	●	●	11	10	9	125	24	6	13°			
S12M-STFCR/L09	●	●	13	12	11	150	27	7	10°			
S10K-STFCR/L11	●	●	11	10	9	125	24	6	12°	TC□□1102□□	M2.5X6	T-8
S12M-STFCR/L11	●	●	13	12	11	150	26	7	10°			
S16Q-STFCR/L11	●	●	17	16	15	180	32	9	8°			
S20Q-STFCR/L11	●	●	21	20	18	180	40	11	6°			
S20Q-STFCR/L16	●	●	22	20	18	180	42	11.5	8°			
S25R-STFCR/L16	●	●	26	25	23	200	42	14	6°	TC□□16T3□□	M3.5X9	T-15
S32S-STFCR/L16	●	●	33	32	30	250	45	17.5	6°			
S40T-STFCR/L16	●	●	43	40	38	300	60	23.5	4°			
S50U-STFCR/L16	●	●	51	50	48	350	65	26.5	4°			

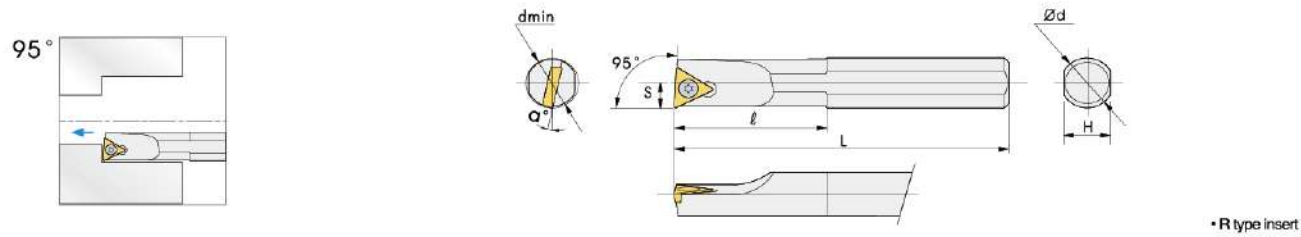
## STFPR/L



• R type insert

Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S08K-STFPR/L09	●	●	9	8	7	125	20	5	10°	TP□□0902□□	M2.5X6	T-8
S10K-STFPR/L09	●	●	11	10	9	125	22	6	13°			
S10K-STFPR/L11	●	●	11	10	9	125	22	6	12°	TP□□1103□□	M3.0X6	T-8
S12M-STFPR/L11	●	●	12	12	11	150	24	7	10°			
S16Q-STFPR/L11	●	●	17	16	15	180	30	9	8°			
S20Q-STFPR/L11	●	●	21	20	18	180	37	11	6°			

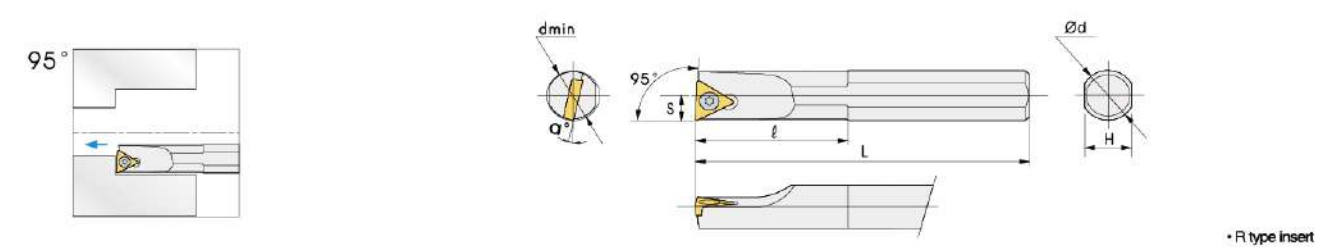
## STUCR/L



• R type insert

Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S08K-STUCR/L09	●	●	9	8	7	125	20	5.5	15°	TC□□0902□□	M2.2X5	T-6
S08K-STUCR/L09-A16	●	●	9	16	15	125	30	5.5	15°			
S10K-STUCR/L09	●	●	11	10	9	125	22	6.5	13°			
S10K-STUCR/L09-A16	●	●	11	16	15	125	30	6.5	13°	TC□□1102□□	M2.5X5	T-8
S10K-STUCR/L11	●	●	11	10	9	125	24	6	12°			
S10K-STUCR/L11-A16	●	●	11	16	15	125	30	6	12°			
S12M-STUCR/L11	●	●	13	12	11	150	27	7	10°	TC□□1102□□	M2.5X6	T-8
S12M-STUCR/L11-A16	●	●	13	16	15	150	30	7	10°			
S16Q-STUCR/L11	●	●	17	16	15	180	32	9	8°			
S20Q-STUCR/L11	●	●	21	20	18	180	37	11	6°	TC□□16T3□□	M2.5X8	T-15
S25R-STUCR/L11	●	●	26	25	23	200	42	14	6°			
S20Q-STUCR/L16	●	●	23	20	18	180	42	13	7°			
S25R-STUCR/L16	●	●	26	25	23	200	45	14	6°	TC□□16T3□□	M3.5X9	T-15
S32S-STUCR/L16	●	●	33	32	30	250	47	17.5	4°			
S40T-STUCR/L16	●	●	42	40	38	300	55	22	4°			
SS0U-STUCR/L16	●	●	51	50	48	350	65	26.5	4°			

## STUPR/L

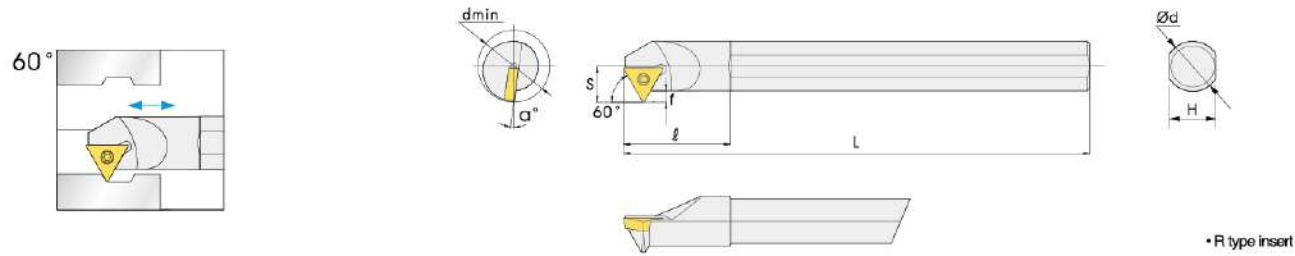


• R type insert

Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S08K-STUPR/L09	●	●	9	8	7	125	20	6	10°	TP□□0902□□	M2.5X6	T-8
S10K-STUPR/L09	●	●	11	10	9	125	22	7	13°			
S10K-STUPR/L11	●	●	11	10	9	125	22	6	12°	TP□□1103□□	M3.0X6	T-8
S12M-STUPR/L11	●	●	13	12	11	150	27	7	10°			
S16Q-STUPR/L11	●	●	17	16	15	180	32	9	8°			
S20Q-STUPR/L11	●	●	21	20	18	180	37	11	6°			

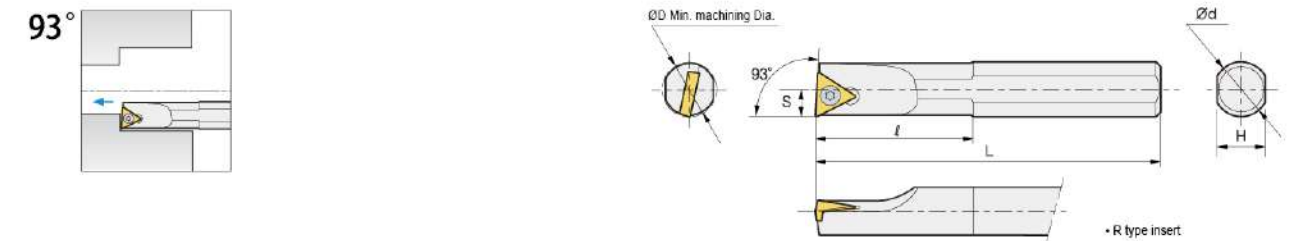


## STWCR/L



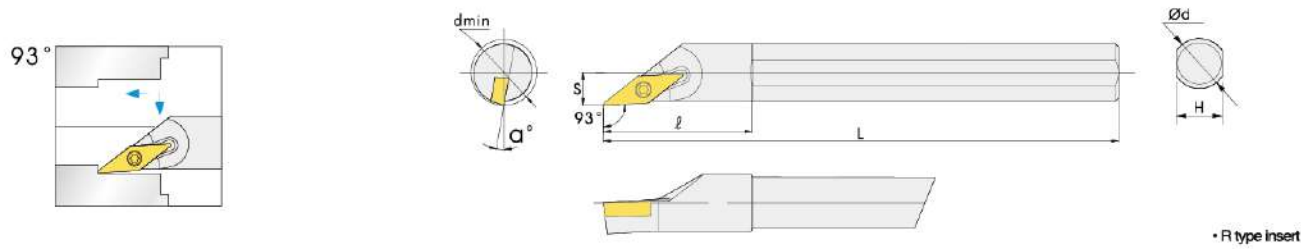
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S08K-STWCR/L09	●		11	8	7	125	25	6	12°	TC□□0902□□	M2.2X5	T-8
S10K-STWCR/L11	●		13	10	9	125	23	8	10°			
S12M-STWCR/L11	●		15	12	11	150	30	9	8°			
S16Q-STWCR/L11	●		19	16	15	180	35	11	6°			
S20Q-STWCR/L11			23	20	18	180	35	13	4°	TC□□1102□□	M2.5X8	T-8
S20Q-STWCR/L16			25	20	19	180	40	14.5	8°			
S25R-STWCR/L16			29	25	24	200	35	17	6°			
S32S-STWCR/L16			39	32	30	250	40	22	4°			
S40T-STWCR/L16			50	40	38	320	50	27	2°			
S50U-STWCR/L16			60	50	48	350	60	31	0°			
										TC□□16T3□□	M3.5X9	T-15

## STUBR/L



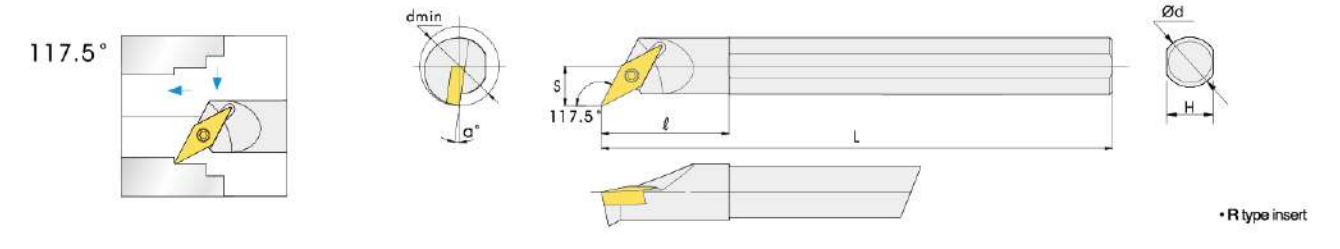
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S06H-STUBR/L06	●	●	7	6	5	100	30	3.5	12°	TB□□0601□□	M2.0x4	T-6
S07K-STUBR/L06	●	●	8	8	6	125	30	4	12°			
S08K-STUBR/L06	●	●	10	8	7	125	30	5	12°			
S0608J-STUBR/L06	●	●	7	8	7	110	20	3.5	12°			
S0610K-STUBR/L06	●	●	7	10	9	125	20	3.5	12°			
S0712K-STUBR/L06	●	●	8	12	11	125	20	4	12°			
S0616K-STUBR/L06	●	●	7	16	15	125	30	3.5	12°			
S0716M-STUBR/L06	●	●	8	16	15	150	30	4	12°			

## SVJBR/L



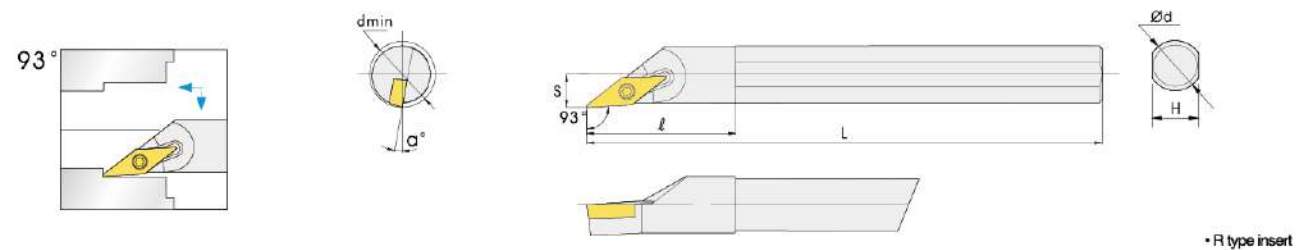
Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
S10K-SVJBR/L11	●		11	10	9	125	28	6	13°	VB□□1103□□	M2.5x6	T-8
S12M-SVJBR/L11	●	●	13	12	11	150	35	7	10°			
S16Q-SVJBR/L11	●	●	17	16	15	180	40	9.5	10°			
S20Q-SVJBR/L11	●	●	21	20	18	180	45	11.5	8°		M2.5x8	
S16Q-SVJBR/L16	●		19	16	15	180	48	11.5	11°	VB□□1604□□	M3.5x9	T-15
S20Q-SVJBR/L16			21	20	18	180	52	11.5	11°			
S25R-SVJBR/L16			26	25	23	200	54	14	7°			

## SVQBR/L



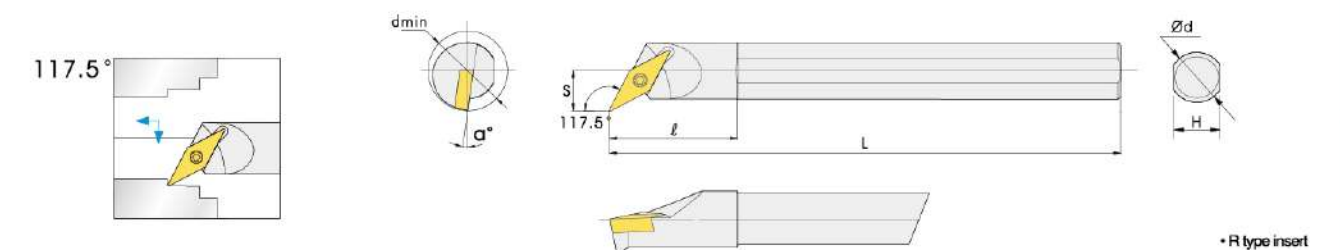
Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
S12M-SVQBR/L11	●	●	16	12	11	150	30	10	10°	VB□□1103□□	M2.5x6	T-8
S16Q-SVQBR/L11	●	●	19	16	15	180	34	11.5	10°		M2.5x8	
S20Q-SVQBR/L11	●	●	24	20	18	180	45	14	8°			
S20Q-SVQBR/L16	●	●	24	20	18	180	50	14	8°	VB□□1604□□	M3.5x9	T-15
S25R-SVQBR/L16	●	●	29	25	23	200	50	17	6°			
S32S-SVQBR/L16	●	●	38	32	30	250	55	22.5	8°			
S40T-SVQBR/L16			47	40	38	300	55	27	6°			
S50U-SVQBR/L16			57	50	48	350	65	32	4°			

## SVJCR/L



Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
S10K-SVJCR/L11	●	●	11	10	9	125	28	6	13°	VC□□1103□□	M2.5x6	T-8
S12M-SVJCR/L11	●	●	13	12	11	150	35	7	10°			
S16Q-SVJCR/L11	●	●	17	16	15	180	40	9.5	10°			
S20Q-SVJCR/L11	●	●	21	20	18	180	45	11.5	8°		M2.5x8	
S16Q-SVJCR/L16	●	●	19	16	15	180	48	11.5	11°	VC□□1604□□	M3.5x9	T-15
S20Q-SVJCR/L16	●		21	20	18	180	52	14	11°			
S25R-SVJCR/L16	●		26	25	23	200	54	11.5	7°			

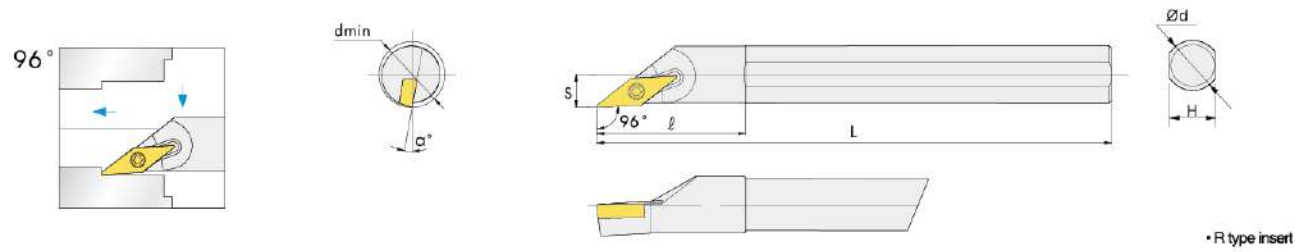
## SVQCR/L



Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
S12M-SVQCR/L11			16	12	11	150	30	10	10°	VC□□1103□□	M2.5x6	T-8
S16Q-SVQCR/L11	●	●	22	19	15	180	35	11.5	10°		M2.5x8	
S20Q-SVQCR/L11	●	●	27	24	18	180	34	14	8°			
S20Q-SVQCR/L16	●	●	27	24	18	180	45	14	8°	VC□□1604□□	M3.5x9	T-15
S25R-SVQCR/L16	●	●	32	29	23	200	50	17	6°			
S32S-SVQCR/L16	●	●	41	38	30	250	55	22.5	8°			
S40T-SVQCR/L16	●		50	47	38	300	55	27	6°			
S50U-SVQCR/L16			61	60	48	350	65	32	4°			

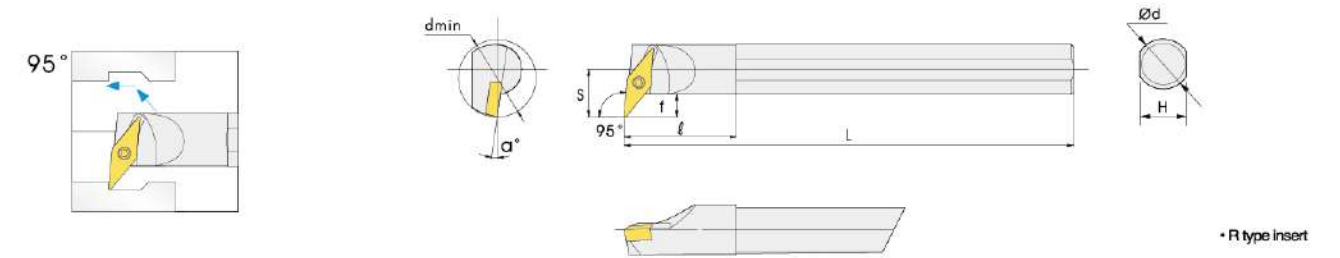


## SVXBR/L



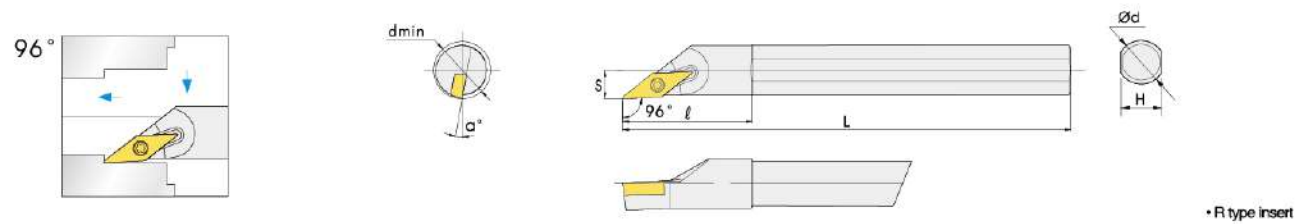
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S16Q-SVXBR/L11			19	16	15	180	40	11	10°	VB□□1103□□	M2.5x8	T-8
S20Q-SVXBR/L11	●	●	23	20	18	180	45	13	8°			
S20Q-SVXBR/L16	●	●	23	20	18	180	45	13	8°	VB□□1604□□	M3.5x9	T-15
S25R-SVXBR/L16	●	●	30	25	23	200	50	17	6°			
S32S-SVXBR/L16	●	●	38	32	30	250	60	22	8°			
S40T-SVXBR/L16	●	●	47	40	38	300	65	27	6°			

## SVUBR/L



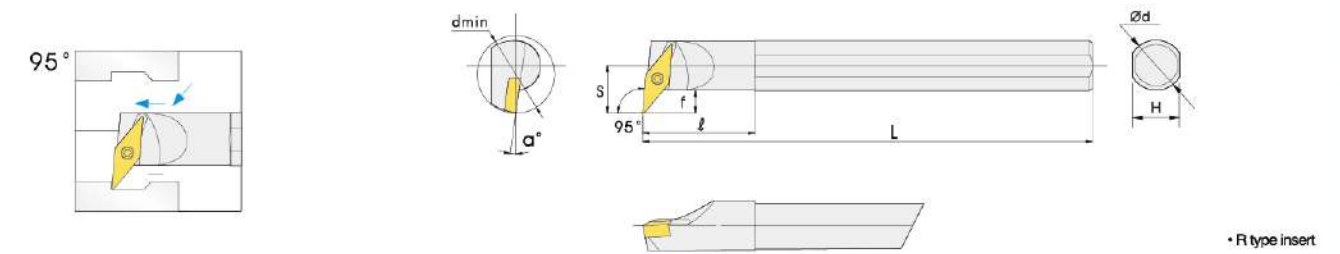
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S16Q-SVUBR/L11	●	●	20	16	15	180	30	11.5	10°	VB□□1103□□	M2.5x8	T-8
S20Q-SVUBR/L11	●	●	24	20	18	180	30	14	8°			
S20R-SVUBR/L16	●	●	29	20	18	200	45	19	8°	VB□□1604□□	M3.5x9	T-15
S25R-SVUBR/L16	●	●	32	25	23	200	50	20	6°			
S32R-SVUBR/L16	●	●	38	32	30	250	50	22	6°			
S40T-SVUBR/L16			47	40	38	300	55	27	4°			

## SVXCR/L



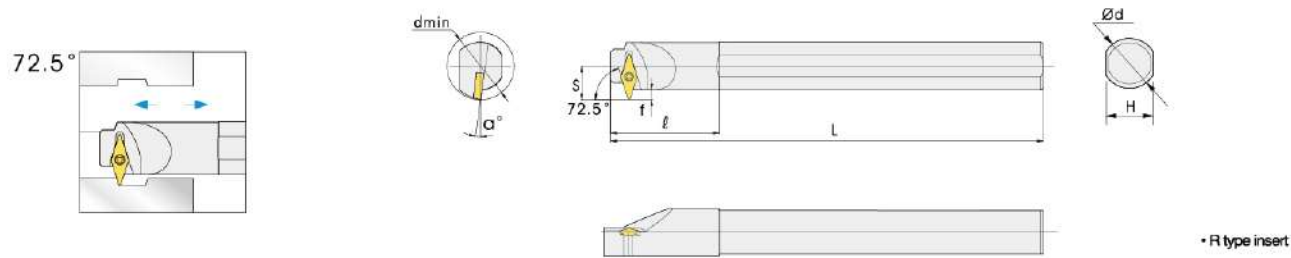
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S16Q-SVXCR/L11	●	●	19	16	15	180	40	11	10°	VC□□1103□□	M2.5x8	T-8
S20Q-SVXCR/L11	●	●	23	20	18	180	45	13	8°			
S20Q-SVXCR/L16	●	●	23	20	18	180	50	13	8°	VC□□1604□□	M3.5x9	T-15
S25R-SVXCR/L16	●	●	30	25	23	200	50	17	6°			
S32S-SVXCR/L16	●	●	38	32	30	250	60	22	8°			
S40T-SVXCR/L16			47	40	38	300	65	27	6°			

## SVUCR/L



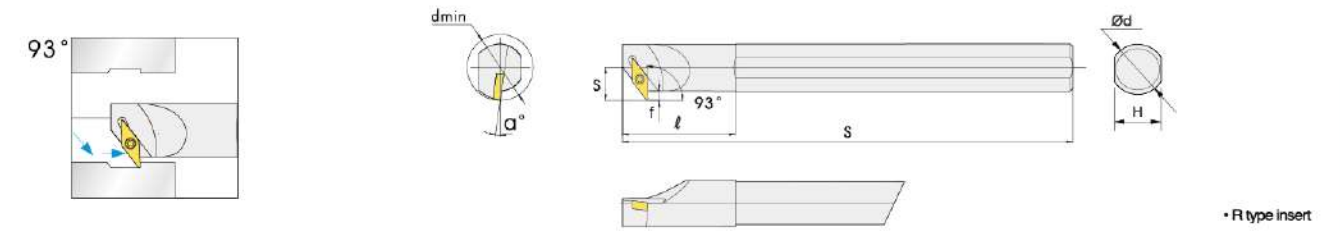
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S16Q-SVUCR/L11	●	●	20	16	15	180	30	11.5	10°	VC□□1103□□	M2.5x8	T-8
S20Q-SVUCR/L11	●	●	24	20	18	180	30	14	8°			
S20R-SVUCR/L16	●	●	29	20	18	200	45	19	8°	VC□□1604□□	M3.5x9	T-15
S25R-SVUCR/L16	●	●	32	25	23	200	50	20	6°			
S32S-SVUCR/L16	●	●	38	32	30	250	50	22	6°			
S40T-SVUCR/L16			47	40	38	300	55	27	4°			

## SVWBR/L



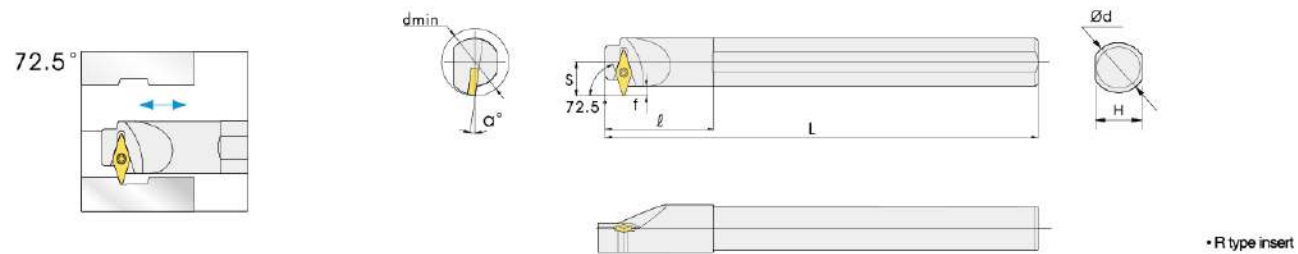
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S20Q-SVWBR/L11	●		24	20	18	180	35	14	8°	VB□□1103□□	M2.5x8	T-8
S25R-SVWBR/L16	●	●	35	25	23	200	40	23	5°			
S32S-SVWBR/L16	●	●	42	32	30	250	45	26	5°			

## SVZBR/L



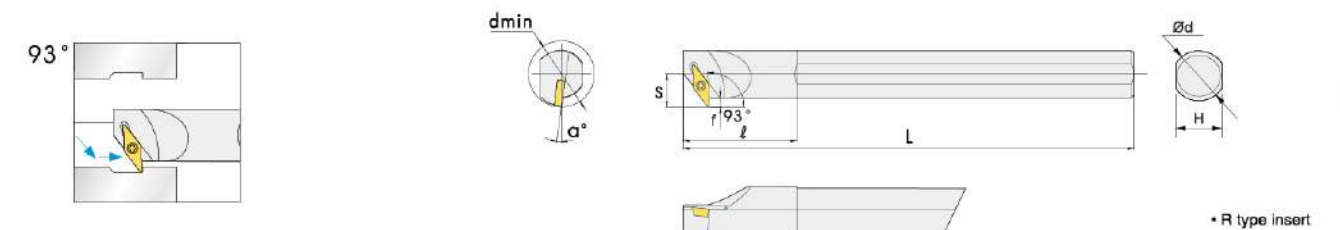
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S16Q-SVZBR/L11	●		19	16	15	180	30	11.5	10°	VB□□1103□□	M2.5x8	T-8
S20Q-SVZBR/L11	●	●	24	20	18	180	35	14	8°			
S25R-SVZBR/L16	●	●	33	25	23	200	50	19.5	6°			
S32S-SVZBR/L16			39	32	30	250	50	23.5	8°	VB□□1604□□	M3.5x9	T-15
S40T-SVZBR/L16			47	40	38	300	60	27	6°			

## SVWCR/L



Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S20Q-SVWCR/L11	●		24	20	18	180	35	14	8°	VC□□1103□□	M2.5x8	T-8
S25R-SVWCR/L16	●	●	35	25	23	200	40	23	5°			
S32S-SVWCR/L16	●	●	42	32	30	250	45	26	5°			

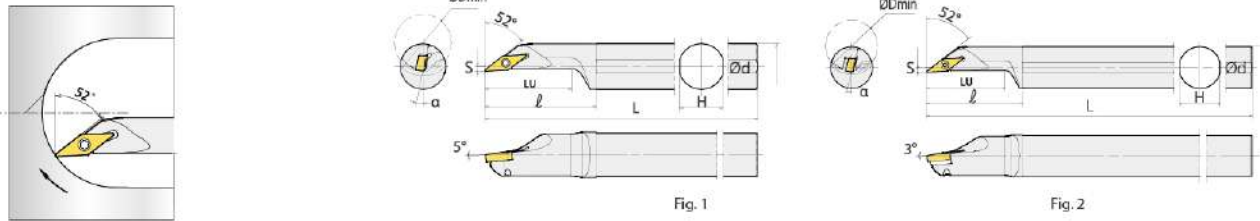
## SVZCR/L



Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	l	S	α			
S16Q-SVZCR/L11	●		19	16	15	180	30	11.5	10°	VC□□1103□□	M2.5x8	T-8
S20Q-SVZCR/L11	●		24	20	18	180	35	14	8°			
S25R-SVZCR/L16	●		33	25	23	200	50	19.5	6°			
S32S-SVZCR/L16			39	32	30	250	50	23.5	8°	VC□□1604□□	M3.5x9	T-15
S40T-SVZCR/L16			47	40	38	300	60	27	6°			



## SVJBR/L, SVJCR/L



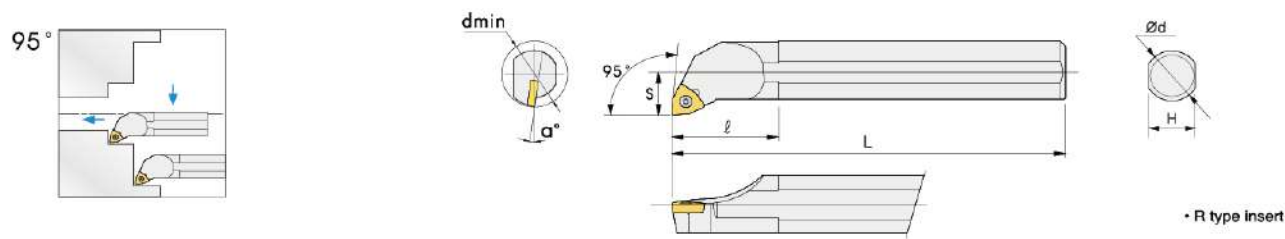
Designation	Stock		Size							Inserts	Screw	Wrench	Fig.	
	R	L	ØDmin	Ød	H	L	ℓ	LU	S					α
S12M-SVJCR/L08-16A	●	●	16	12	11	150	33	26	2	5°	VC□□0802□□	M2.0x5	T-6	1
S16Q-SVJCR/L08-20A			20	16	15	180	43	36	2	5°				1
S20Q-SVJBR/L11-25A			25	20	19	180	48	37.5	2	5°	VB□□1103□□	M2.5x7	T-8	1
S25R-SVJBR/L11-30A			30	25	24	200	58	45	3.5	5°				1
S32S-SVJBR/L16-40A			40	32	31	250	74	60	3.5	8°	VB□□1604□□	M3.5x9	T-15	2
S40T-SVJBR/L16-50A			50	40	39	300	91	75	4.5	7°				2

## SWUBR/L



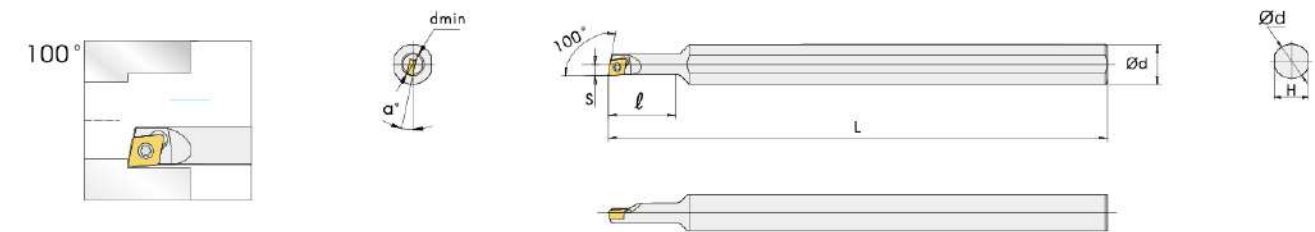
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S0507H-SWUBR/L06			5.5	7	6	100	18	3	15°	WB□□0601□□	M2.0x3	T-6
S0508H-SWUBR/L06			5.5	8	7	100	18	3	15°			
S0608J-SWUBR/L06			7	8	7	110	18	3.5	13°			
S0510K-SWUBR/L06	●	●	6	10	9	125	21	3	15°			
S0610K-SWUBR/L06	●	●	7	10	9	125	25	3.5	13°			
S0710K-SWUBR/L06	●	●	8	10	9	125	28	4	13°			
S0810K-SWUBR/L06	●	●	10	10	9	125	-	5	13°			
S0512K-SWUBR/L06	●	●	6	12	11	125	15	3	12°			
S0612K-SWUBR/L06			7	12	11	125	15	3.5	12°			
S0712K-SWUBR/L06			8	12	11	125	15	4	12°			
S0812K-SWUBR/L06			10	12	11	125	15	5	12°			
S0716M-SWUBR/L06			8	16	15	150	15	4	12°			

## SWLCR/L



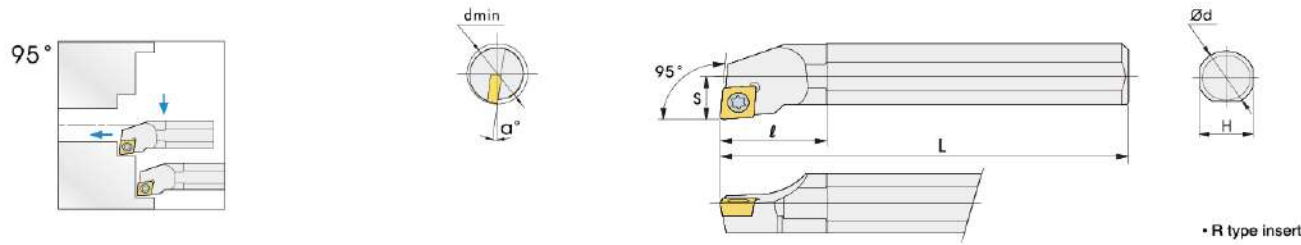
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
S12M-SWLCR/L06			14	12	11	150	37	8.5	13°	WC□□06T3□□	M3.5x9	T-15
S16Q-SWLCR/L06			19	16	15	180	40	11	10°			
S20Q-SWLCR/L06			23	20	18	180	40	13	8°			
S25R-SWLCR/L06			31	25	23	200	40	17	6°			

## SEXP



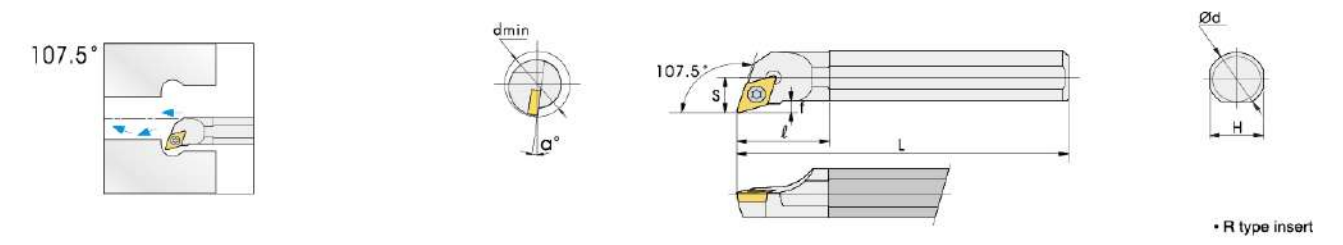
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S				
S08H-SEXP045-A10			5.7	10	9	100	17	2.85	EPG040104	M2x4	T-6	
S08H-SEXP047-A12			7.1	12	11	100	20	3.55				

## SCLCR/L



Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S				α
C04G-SCLCR/L03	●		5	4	3.7	90	15	2.5	15°	CC□□0301□□	M1.6x3	T-6
C05H-SCLCR/L03	●		6	5	4.7	100	15	3	13°			
C05H-SCLCR/L04	●		6	5	4.7	100	15	3	13°			
C06J-SCLCR/L04	●		7	6	5.7	100	15	3.5	13°	CC□□0401□□	M2.0x4	
C07K-SCLCR/L06	●		8	8	7	125	18	5	15°	CC□□0602□□	M2.5x5	T-8
C08K-SCLCR/L06	●		9	8	7	125	18	5.5	13°			
C10M-SCLCR/L06	●		11	10	9	125	22	7	12°			
C12Q-SCLCR/L06	●		13	12	11	150	25	8	10°		M2.5x6	
C12Q-SCLCR/L09	●		16	14	13	150	27	5.5	10°	CC□□09T3□□	M3.5x9	T-15
C16R-SCLCR/L09	●		17	16	15	180	34	11	10°			
C20S-SCLCR/L09	●		21	20	18	180	38	13	8°			
C25T-SCLCR/L09			26	25	23	200	45	17	6°			

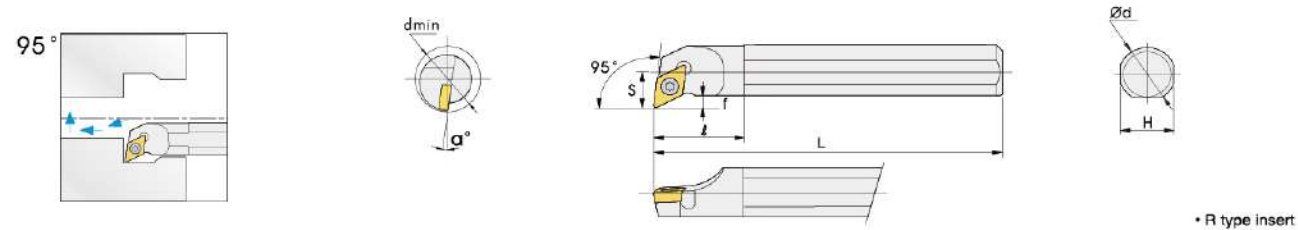
## SDQCR/L



Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S				α
C08K-SDQCR/L07	●		10	7	7	125	18	6	12°	DC□□0702□□	M2.5x5	T-8
C10M-SDQCR/L07	●		11	10	9	125	24	7	10°			
C12Q-SDQCR/L07	●		15	12	11	150	30	9	8°			
C16R-SDQCR/L07	●		17	16	15	180	30	11	6°		M2.5x6	
C20S-SDQCR/L11	●		23	20	18	180	42	13	5°	DC□□11T3□□	M3.5x9	T-15
C25T-SDQCR/L11	●		29	25	23	200	42.5	17	4°			

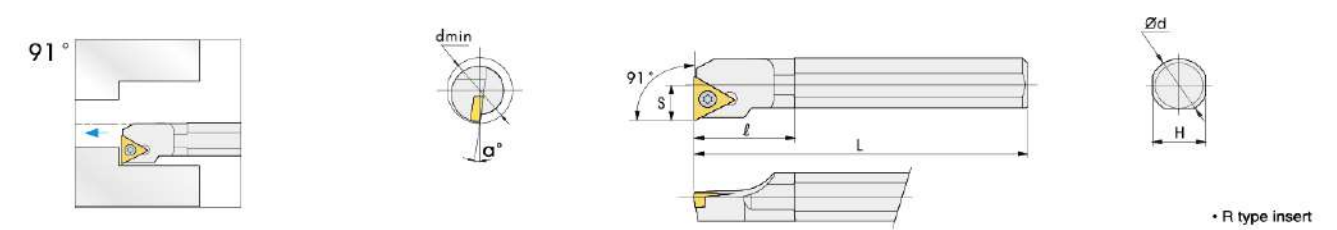


## SDUCR/L



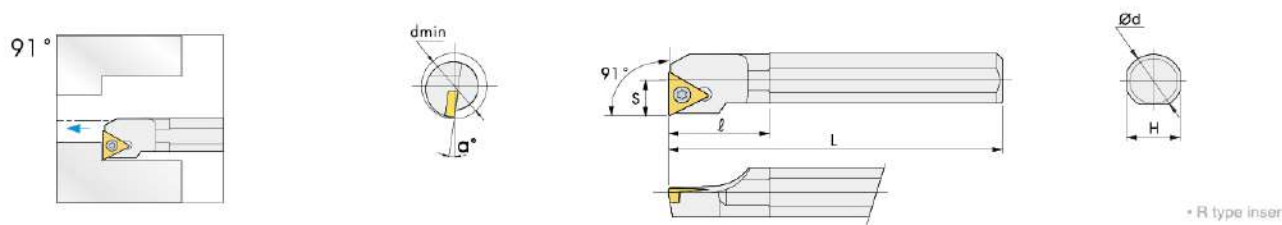
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
C10M-SDUCR/L07	●		15	10	9	125	25	8	10°	DC□□0702□□	M2.5x5	T-8
C12Q-SDUCR/L07	●		17	12	11	150	25	9	8°		M2.5x6	
C16R-SDUCR/L07	●		22	16	15	180	30	11	6°			
C20S-SDUCR/L11	●		23	20	18	180	40	13	6°	DC□□11T3□□	M3.5x9	T-15
C25T-SDUCR/L11	●		29	25	23	200	42	17	5°			

## STFCR/L



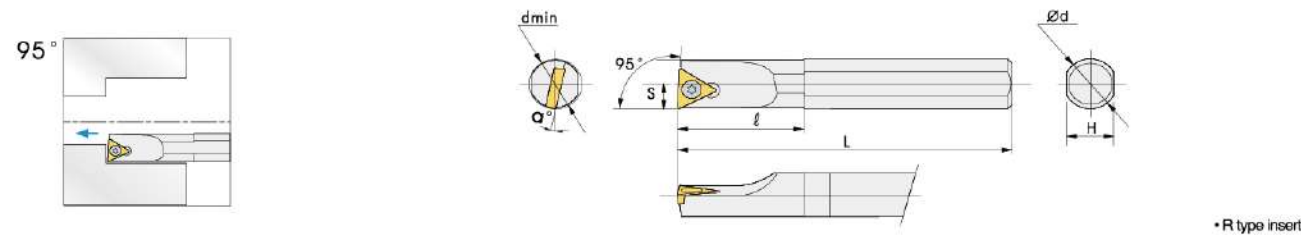
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
C08K-STFCR/L09	●		9	8	7	125	20	5.5	15°	TC□□0902□□	M2.2x5	T-6
C10M-STFCR/L09	●		11	10	9	125	24	6	13°			
C12Q-STFCR/L09	●		13	12	11	150	27	7	10°			
C10M-STFCR/L11	●		11	10	9	125	24	6	12°	TC□□1102□□	M2.5x6	T-8
C12Q-STFCR/L11	●		13	12	11	150	26	7	10°			
C16R-STFCR/L11	●		17	16	15	180	32	9	8°		M2.5x8	
C20S-STFCR/L11	●		21	20	18	180	40	11	6°	TC□□16T3□□	M3.5x9	T-15
C20S-STFCR/L16			22	20	18	180	42	11.5	8°			
C25T-STFCR/L16			26	25	23	200	42	14	6°			

## STFPR/L



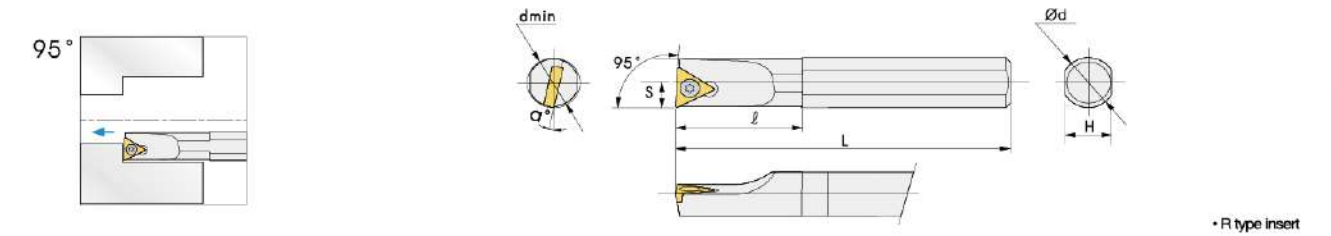
Designation	Stock		Size							Inserts	Screw	Wrench
	R	L	ØDmin	Ød	H	L	ℓ	S	α			
C08K-STFPR/L09	●		9	8	7	125	20	5.5	15°	TP□□0902□□	M2.5x6	T-6
C10M-STFPR/L09	●		11	10	9	125	24	6	13°			
C12Q-STFPR/L09	●		13	12	11	150	27	7	10°			
C10M-STFPR/L11	●		11	10	9	125	24	6	12°	TP□□1103□□	M3.0x6	T-8
C12Q-STFPR/L11	●		13	12	11	150	26	7	10°			
C16R-STFPR/L11	●		17	16	15	180	32	9	8°		M3.0x8	
C20S-STFPR/L11	●		21	20	18	180	40	11	6°			

## STUPR/L



Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
C08K-STUPR/L09	●		9	8	7	125	20	5.5	15°	TP□□0902□□	M2.5x6	T-6
C10M-STUPR/L09	●		11	10	9	125	24	6	13°			
C12Q-STUPR/L09	●		13	12	11	150	27	7	10°			
C10M-STUPR/L11	●		11	10	9	125	24	6	12°	TP□□1103□□	M3.0x6	T-8
C12Q-STUPR/L11	●		13	12	11	150	26	7	10°		M3.0x8	
C16R-STUPR/L11	●		17	16	15	180	32	9	8°			
C20S-STUPR/L11	●		21	20	18	180	40	11	6°			

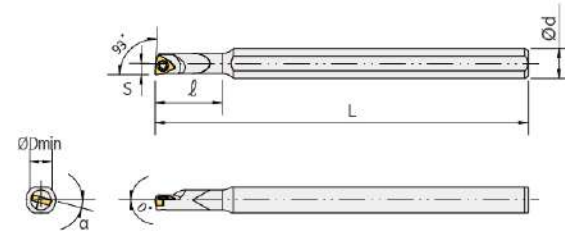
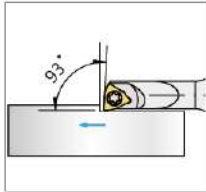
## STUCR/L



Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	ℓ	S				α
C08K-STUCR/L09	●		9	8	7	125	20	5.5	15°	TC□□0902□□	M2.2x5	T-6
C10M-STUCR/L09	●		11	10	9	125	24	6	13°			
C12Q-STUCR/L09	●		13	12	11	150	27	7	10°			
C10M-STUCR/L11	●		11	10	9	125	24	6	12°	TC□□1102□□	M2.5x6	T-8
C12Q-STUCR/L11	●		13	12	11	150	26	7	10°		M2.5x8	
C16R-STUCR/L11	●		17	16	15	180	32	9	8°			
C20S-STUCR/L11	●		21	20	18	180	40	11	6°			
C20S-STUCR/L16	●		22	20	18	180	42	11.5	8°	TC□□16T3□□	M3.5x9	T-15
C25T-STUCR/L16	●		26	25	23	200	42	14	6°			

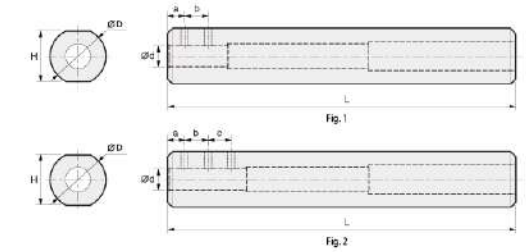


## SWURB/L



Designation	Stock		Size						Inserts	Screw	Wrench	
	R	L	ØDmin	Ød	H	L	l	S				α
C05H-SWUBR/L06	●		5.5	5	4.7	100	-	3	15°	WB□□0601□□	M2.0x4	T-6
C06J-SWUBR/L06	●		7	6	5.7	110	-	3.5	13°			
C07K-SWUBR/L06	●		8	7	6.7	125	-	4	13°			
C08K-SWUBR/L06	●		9	8	7	125	30	4.5	13°			

## Mini Boring Bar Sleeve



Designation	Stock	Size							Screw	Wrench	Fig.
		ØDmin	Ød	L	H	a	b	c			
TSL 1603-100L	●	16	3	100	14	5	-	-	M3	HW15L	1
1604-100L	●	16	4	100	14	5	6	-	M4	HW20L	1
1605-100L	●	16	5	100	14	5	8	-	M4	HW20L	1
1606-100L	●	16	6	100	14	5	6	6	M4	HW20L	2
1607-100L	●	16	7	100	14	5	6	8	M4	HW20L	2
1608-100L	●	16	8	100	14	5	10	10	M4	HW20L	2
2003-100L	●	20	3	100	18	5	-	-	M3	HW15L	1
2004-100L	●	20	4	100	18	5	6	-	M4	HW20L	1
2005-100L	●	20	5	100	18	5	8	-	M4	HW20L	1
2006-100L	●	20	6	100	18	5	6	6	M4	HW20L	2
2007-100L	●	20	7	100	18	5	6	8	M4	HW20L	2
2008-100L	●	20	8	100	18	5	10	10	M4	HW20L	2
2010-100L	●	20	10	100	18	5	10	10	M5	HW20L	2

## Sleeve for Boring Bars

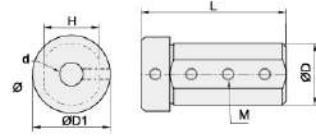


Fig.-1

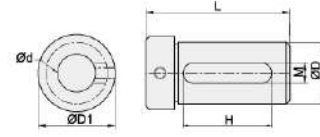


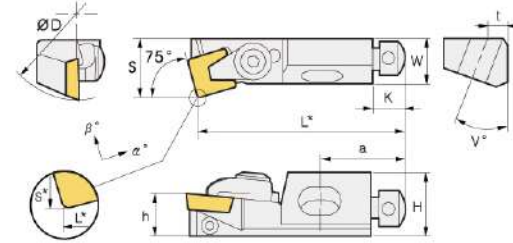
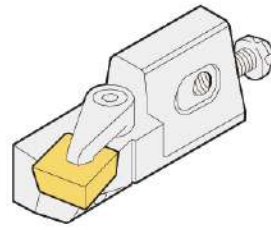
Fig.-2

Designation	Stock	Size						Fig.
		ØDmin	Ød	L	H	D1	M	
NC 1603	●	20	4	62	14.5	19	M4	1
1604	●	20	5	62	14.5	19	M5	1
1605	●	20	6	62	14.5	19	M5	1
1606	●	20	7	62	14.5	19	M5	1
1607	●	20	8	62	14.5	19	M5	1
1608	●	20	10	62	14.5	19	M5	1
1609	●	20	12	62	14.5	19	M5	1
1610	●	20	14	62	14.5	19	M5	1
1612	●	20	14	62	49	19	11	2
2004	●	20	4	65	17.5	26	M5	1
2005	●	20	5	65	17.5	26	M5	1
2006	●	20	6	65	17.5	26	M6	1
2007	●	20	7	65	17.5	26	M6	1
2008	●	20	8	65	17.5	26	M6	1
2009	●	20	8	65	17.5	26	M6	1
2010	●	20	10	65	17.5	26	M6	1
2012	●	20	12	65	17.5	26	M6	1
2014	●	20	14	65	54	26	13	2
2016	●	20	16	65	54	26	13	2
2506	●	25	6	70	23.5	30	M6	1
2507	●	25	7	70	23.5	30	M6	1
2508	●	25	8	70	23.5	30	M6	1
2510	●	25	10	70	23.5	30	M6	1
2512	●	25	12	70	23.5	30	M6	1
2514	●	25	14	70	51	30	12	2
2516	●	25	16	70	51	30	12	2
2518	●	25	18	70	51	30	12	2
2520	●	25	20	70	51	30	12	2
3206	●	32	6	85	29.5	36	M6	1
3207	●	32	7	85	29.5	36	M6	1
3208	●	32	8	85	29.5	36	M8	1

Designation	Stock	Size						Fig.
		ØDmin	Ød	L	H	D1	M	
NC 3210	●	32	10	85	29.5	36	M8	1
3212	●	32	12	85	29.5	36	M8	1
3214	●	32	14	85	29.5	36	M8	1
3216	●	32	16	85	29.5	36	M8	1
3218	●	32	18	85	29.5	36	M8	1
3220	●	32	20	85	77	36	14	2
3222	●	32	22	85	77	36	14	2
3225	●	32	25	85	77	36	14	2
4006	●	40	6	100	38	46	M6	1
4008	●	40	8	100	38	46	M8	1
4010	●	40	10	100	38	46	M8	1
4012	●	40	12	100	38	46	M8	1
4014	●	40	14	100	38	46	M8	1
4016	●	40	16	100	38	46	M8	1
4018	●	40	18	100	38	46	M8	1
4020	●	40	20	100	78	46	14	2
4025	●	40	25	100	78	46	14	2
4032	●	40	32	100	78	46	14	2
5008	●	50	8	115	48	58	M8	1
5010	●	50	10	115	48	58	M8	1
5012	●	50	12	115	48	58	M8	1
5014	●	50	14	115	48	58	M8	1
5016	●	50	16	115	48	58	M8	1
5018	●	50	18	115	48	58	M8	1
5020	●	50	20	115	48	58	M8	1
5022	●	50	22	115	48	58	M8	1
5025	●	50	25	115	48	58	M8	1
5032	●	50	32	115	77	58	14	2
5040	●	50	40	115	77	58	14	2

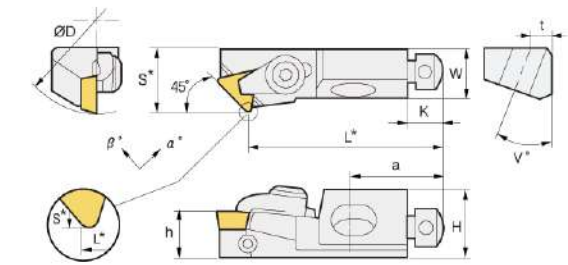
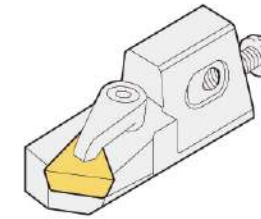


## CSKPR/L



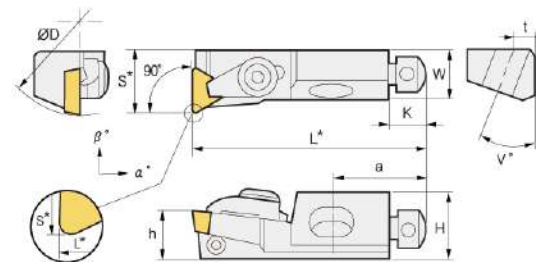
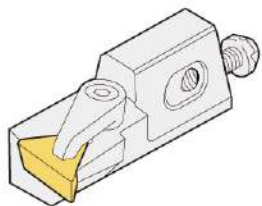
Designation	Stock		Size											Inserts	
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t		v
CSKPR/L 10CA-09			40	15	11	50	14	10	8	6	0	20	5	20	SP□R0903□□
12CA-12			50	20	15	55	20	12	8	6	0	20	6	20	SP□R1203□□
Designation	Clamp		Axial Adjust Screw		Radial Adjust Screw		Mounting Screw		Wrench						
CSKPR/L 10CA-09	CS5R1		AS02508		KHA0304C		MCS511-2.5		HW15L HW25L						
12CA-12	CS6R1		AS02508		KHA0306C		MCS616-3		HW15L HW30L						

## CTSPR/L



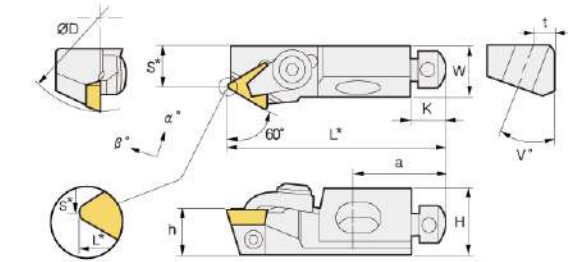
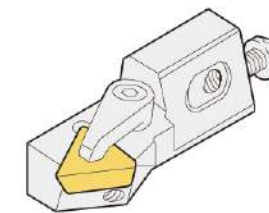
Designation	Stock		Size											Inserts	
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t		v
CTSPR/L 10CA-11			40	15	11	44	14	10	8	4	0	20	5	20	SP□R0903□□
12CA-16			50	20	15	47	20	12	8	5	0	20	6	20	SP□R1203□□
Designation	Clamp		Axial Adjust Screw		Radial Adjust Screw		Mounting Screw		Wrench						
CTSPR/L 10CA-11	CS5R1		AS02508		KHA0304C		MCS511-2.5		HW15L HW25L						
12CA-16	CS6R1		AS02508		KHA0306C		MCS616-3		HW15L HW30L						

## CTFPR/L



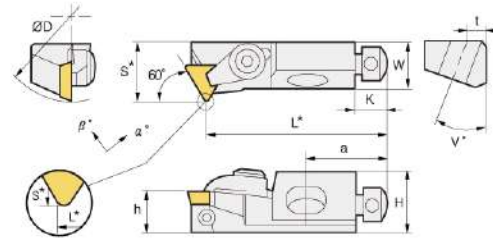
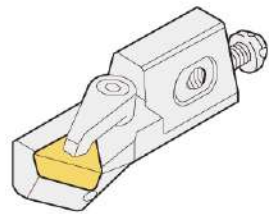
Designation	Stock		Size											Inserts	
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t		v
CTFPR/L 10CA-11			40	15	11	50	14	10	8	6	0	20	5	20	TP□R1103□□
12CA-16			50	20	15	55	20	12	8	6	0	20	6	20	TP□R1603□□
Designation	Clamp		Axial Adjust Screw		Radial Adjust Screw		Mounting Screw		Wrench						
CTFPR/L 10CA-11	CS5R1		AS02508		KHA0304C		MCS511-2.5		HW15L HW25L						
12CA-16	CS6R1		AS02508		KHA0306C		MCS616-3		HW15L HW30L						

## CTTPR/L



Designation	Stock		Size											Inserts	
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t		v
CTTPR/L 10CA-11			40	15	11	50	9	10	8	5	0	20	5	20	TP□R1103□□
12CA-16			50	20	15	55	20	12	8	5	0	20	6	20	TP□R1603□□
Designation	Clamp		Axial Adjust Screw		Radial Adjust Screw		Mounting Screw		Wrench						
CTTPR/L 10CA-11	CS5R1		AS02508		KHA0304C		MCS511-2.5		HW15L HW25L						
12CA-16	CS6R1		AS02508		KHA0306C		MCS616-3		HW15L HW30L						

## CTWPR/L

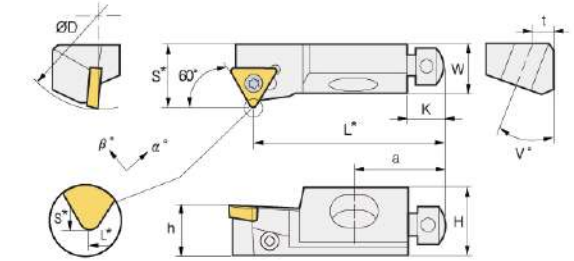
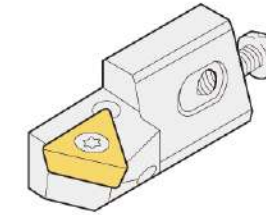


Designation	Stock		Size												Inserts
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t	v	
CTWPR/L 10CA-11			40	15	11	44	14	10	8	5	0	20	5	20	TP□R1103□□
12CA-16			50	20	15	47	20	12	8	5	0	20	6	20	TP□R1603□□

Designation					
CTWPR/L 10CA-11	M3.5X9	AS02508	KHA0304C	MCS511-2.5	HW15L HW25L
12CA-16	M5X12	AS02508	KHA0306C	MCS616-3	HW15L HW30L

## STTCR/L

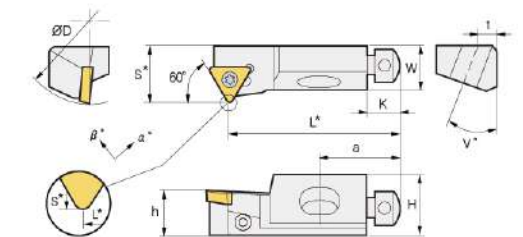
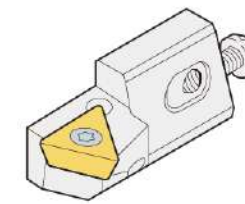


Designation	Stock		Size												Inserts
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t	v	
STTCR/L 10CA-11			40	15	11	50	9	10	8	-5	0	20	5	20	TC□T1102□□
12CA-16			50	20	15	47	20	12	8	-3	0	20	6	20	TC□T16T3□□

Designation					
STTCR/L 10CA-11	M2.5X6	AS02508	KHA0304C	T8	L1.5
12CA-16	M3.5X9	AS02508	KHA0306C	T15	L1.5

## STWCR/L



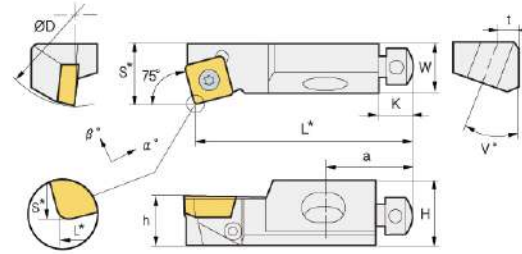
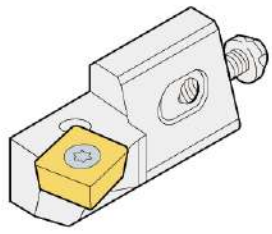
Designation	Stock		Size												Inserts
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t	v	
STWCR/L 10CA-11			40	15	11	44	14	10	8	0	-4	20	5	20	TC□T1102□□
12CA-16			50	20	15	47	20	12	8	-5	0	20	6	20	TC□T16T3□□

Designation					
STWCR/L 10CA-11	M2.5X6	AS02508	KHA0304C	T8	L1.5
12CA-16	M3.5X9	AS02508	KHA0306C	T15	L1.5

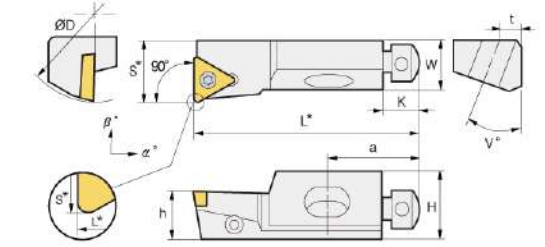
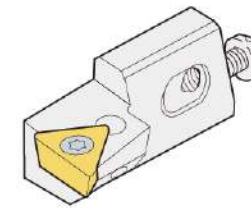


## SSKCR/L



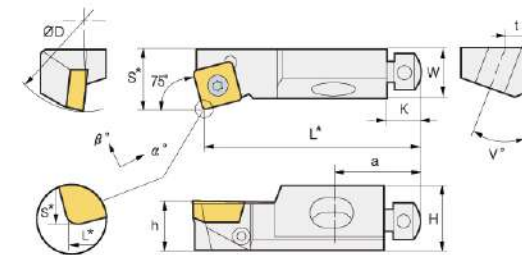
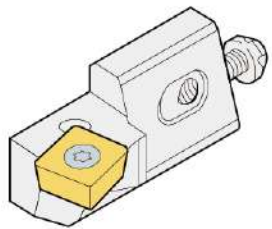
Designation	Stock		Size												Inserts
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t	v	
SSKCR/L 10CA-09			40	15	11	50	14	10	8	0	-4	20	5	20	SC□T09T3□□
12CA-12			50	20	15	55	20	12	8	0	-4	20	6	20	SC□T1204□□
Designation	Insert Screw		Axial Adjust Screw		Radial Adjust Screw		Wrench		Wrench						
SSKCR/L 10CA-09	M3.5X9		AS02508		KHA0304C		T15		L1.5						
12CA-12	M5X12		AS02508		KHA0306C		T20		L1.5						

## STFCR/L



Designation	Stock		Size												Inserts
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t	v	
STFCR/L 10CA-11			40	15	11	50	14	10	8	0	-3	20	5	20	TC□T1102□□
12CA-16			50	20	15	55	20	12	8	0	-3	20	6	20	TC□T16T3□□
Designation	Insert Screw		Axial Adjust Screw		Radial Adjust Screw		Wrench		Wrench						
STFCR/L 10CA-11	M2.5X6		AS02508		KHA0304C		T8		L1.5						
12CA-16	M3.5X9		AS02508		KHA0306C		T15		L1.5						

## SSSCR/L



Designation	Stock		Size												Inserts
	R	L	ØDmin	H	W	L	S	H	K	α	β	a	t	v	
SSSCR/L 10CA-09			40	15	11	44	14	10	8	-5	0	20	5	20	SC□T09T3□□
12CA-12			50	20	15	47	20	12	8	-5	0	20	6	20	SC□T1204□□
Designation	Insert Screw		Axial Adjust Screw		Radial Adjust Screw		Wrench		Wrench						
SSSCR/L 10CA-09	M3.5X9		AS02508		KHA0307C		T15		L1.5						
12CA-12	M5X12		AS02508		KHA0306C		T20		L1.5						

# Threading Code System

**S E R 20 20 - K 16 V**

1 2 3 4 5 6 7 8

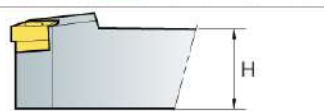
Clamping Method of Insert   Holder Type   Hand of holder   Height of shank   Width of shank   Length of Holder   Insert Size   Special features

**1 Clamping System**  
S E R 20 20 - K 16 V  
S : Screw on system  
C : Clamp on system

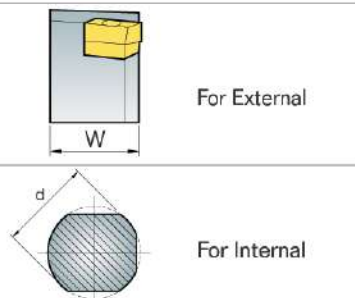
**2 Holder Type**  
S E R 20 20 - K 16 V  
E : For External   N : For Internal

**3 Hand of holder**  
S E R 20 20 - K 16 V  
R : Right handed   L : Left handed

**4 Height of shank**  
S E R 20 20 - K 16 V



**5 Width of shank Bar Diameter**  
S E R 20 20 - K 16 V



For External  
For Internal

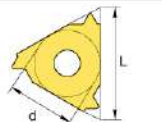
**6 Length of Holder**  
S E R 20 20 - K 16 V

A=32	H=100	Q=180
B=40	J=110	R=200
C=50	K=125	S=250
D=60	L=140	T=300
E=70	M=150	U=350
F=80	N=160	V=400
G=90	P=170	W=450

X-Special Item

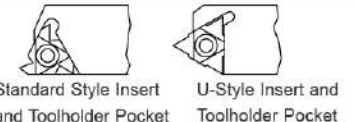
**7 Insert Size (mm)**  
S E R 20 20 - K 16 V

08 : d=4.76  
11 : d=6.35  
16 : d=9.525  
22 : d=12.7  
27 : d=15.875



**8 Special features**  
S E R 20 20 - K 16 V

B-Coolant Hole	None Code
C-Carbide Shank	
CB-Carbide Shank with Coolant Hole	Standard
A-Api(coil)	
U-U_Style Insert	
V-Vertical Type Insert	
G-Gang Tool	
VS-Slim Throat	



Standard Style Insert and Toolholder Pocket   U-Style Insert and Toolholder Pocket

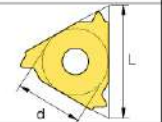
**16 □ E R □ 1.50 ISO □ □ TTIP30**

1 2 3 4 5 6 7 8 9 10

Insert Size   Insert Style   Insert Type   Hand of Insert   Chip Breaker   Pitch   Standard   API Size   Multi-Tooth Style   Carbide Grade

**1 Insert Size (mm)**  
16 □ E R □ 1.50 ISO □ □ TTIP30

08 : d = 4.76  
11 : d = 6.35  
16 : d = 9.525  
22 : d = 12.7  
27 : d = 15.875



**5 Chip Breaker**  
16 □ E R □ 1.50 ISO □ □ TTIP30

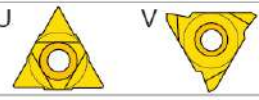
None Code: Regular Type  
M: M type Chip Breaker

**7 Standard**  
16 □ E R □ 1.50 ISO □ □ TTIP30

60° - Partial Profile 60°	NPT - NPT
55° - Partial Profile 55°	NPTF - NPTF
STACME - Stub ACME	NPS - NPS
UN - American UN	PG - Pg DIN 40430
W - Whitworth for BSW, BSP	API - API
BSPT - British Standard Pipe Thread	VAM - VAM
ABUT - American Buttrss	H90 - H90
BBUT - British Buttrss	ISO - ISO Metric
SAGE - Metric Buttrss DIN 513	UNJ - UNJ
RD - Round DIN 405	MJ - ISO 5855
RD20400 - Round DIN 20400	TR - Tarpex DIN 103
BUT - API Buttrss Casing	ACME - ACME
APIRD - API Round Casing & Tubing	
EL - Extreme Line Casing	

**2 Insert Style**  
16 □ E R □ 1.50 ISO □ □ TTIP30

U   V



**6 Pitch**  
16 □ E R □ 1.50 ISO □ □ TTIP30

Full profile		Partial profile	
mm	tpi	mm	tpi
0.35 - 6.0	72 - 3	A 0.5 - 1.5	48 - 16
		AG 0.5 - 3.0	48 - 8
		G 1.75 - 3.0	14 - 8
		N 3.5 - 5.0	7 - 5
		Q 5.5 - 6.0	4.5 - 4

**8 API Size&Taper**  
16 □ E R □ 1.50 ISO □ □ TTIP30

380.5 APIV-0.38R	502 APIV-0.050 1:6
382 APIV-0.038R1:6	503 APIV-0.050 1:4
383 APIV-0.038R1:4	551 APIV-0.055 1:8
403 APIV-0.040 1:4	

**3 Insert Type**  
16 □ E R □ 1.50 ISO □ □ TTIP30

E: External thread   I: Internal thread

**4 Hand of Insert**  
16 □ E R □ 1.50 ISO □ □ TTIP30

R : Right handed   L : Left handed

**9 No. of Teeth**  
16 □ E R □ 1.50 ISO □ □ TTIP30

For Multi-Tooth Style  
2 3 5 6 8

**10 Carbide Grade**  
16 □ E R □ 1.50 ISO □ □ TTIP30

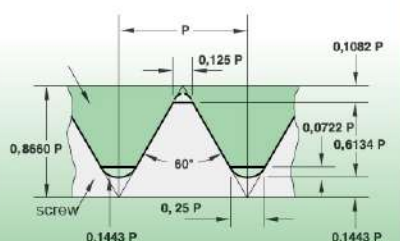
TTIP30   TTIM45   TTIG30   TTIN30



## Common Thread Forms

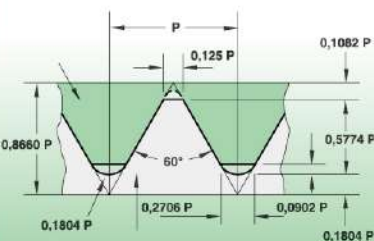
### Common Thread Forms

ISO M (Metric) and UN (Unified National)



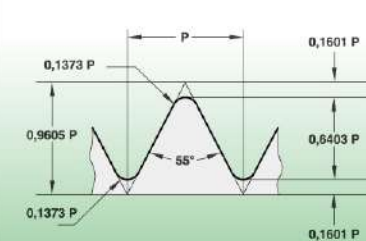
Use: All branches of mechanical industry

UNJ (controlled root radius)



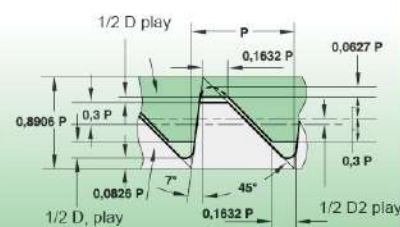
Use: Aircraft and space industry

Whitworth (BSW)



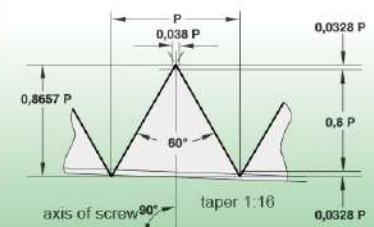
Use: Fittings and pipe couplings for gas, water, and sewer lines (replaced by ISO).

American Buttress



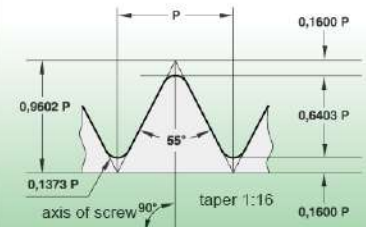
Use: Fittings and pipe couplings

NPT (American National Pipe Thread)



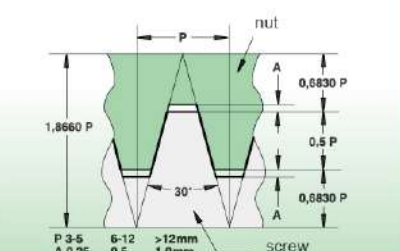
Use: Fittings and pipe couplings

BSPT (British Standard Pipe Thread)



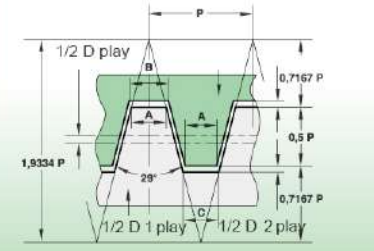
Use: Pipe thread for steam, gas, and water lines.

TR DIN 103



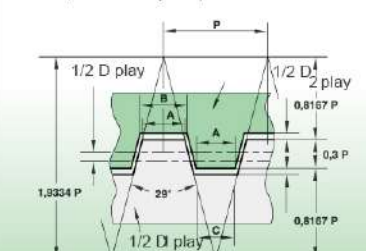
Use: Mechanical industry for motion transmission screws.

Acme



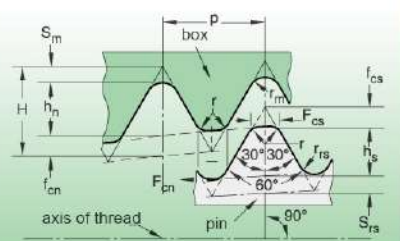
A = 0,0307 P  
B = 0,3707 P—x D play  
C = 0,3707 P—(D1 play—D2 play)  
Use: Acme-General is used in mechanical industry for motion transmission screws.

Acme, truncated (Stub)



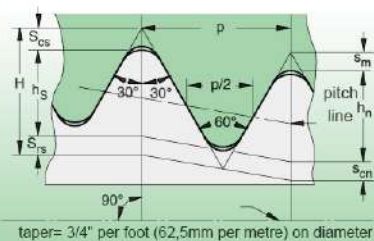
A = 0,4224 P  
B = 0,4224 P—x D play  
C = 0,4224 P—(D1 play—D2 play)  
Use: Where normal Acme is too deep.

API Rotary Shoulder Connection



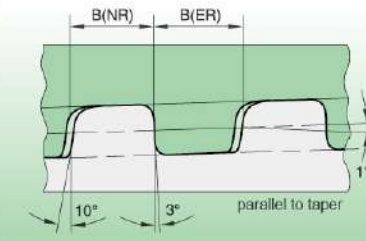
NOTE: Taper shown exaggerated.

API Casing and Tubing Round Thread Form



NOTE: Taper shown exaggerated.

API Buttress



### Special Features

External Thread

A thread on the external surface of a cylinder screw or cone

Depth of Thread

The distance between the crest and root measured from normal to the axis

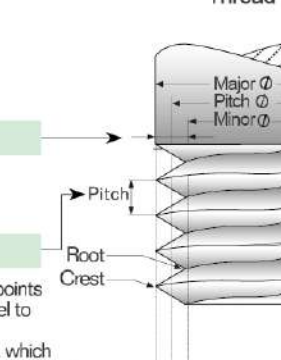
Pitch

The distance between the corresponding points on adjacent thread forms measured parallel to the axis. This distance can be defined in millimeters or by the tpi (threads per inch), which is the reciprocal of the pitch

Nominal Diameter

The diameter of which the diameter limits are derived by the application of deviation allowances and tolerances

External Thread



Internal Thread  
A thread on the internal surface of a cylinder or cone

Major Diameter

The largest diameter of a screw thread

Pitch Diameter

On a straight thread, the diameter of an imaginary cylinder, the surface of which cuts the thread forms where the width of the thread and groove are equal

Minor Diameter

The smallest diameter of a screw thread

Helix Angle

For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite of the lead

Straight Thread

A thread formed on a cylinder

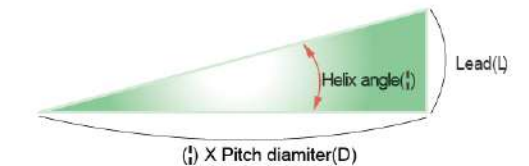
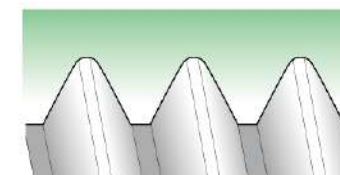
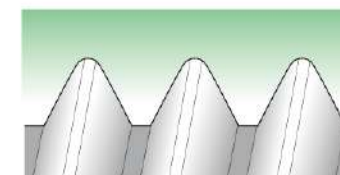
Taper Thread

A thread formed on a cone

Left handed thread

Right handed thread

The Helix Angle(!)



A thread which, when viewed axially, winds in a counter clockwise and receding direction. All left handed threads are designated LH

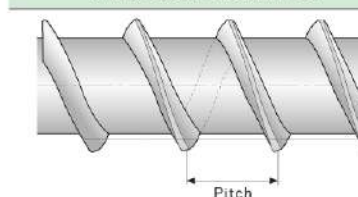
A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right handed unless they are specified

For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite of the lead

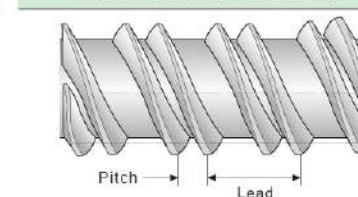
### Machining a Multi-start Thread

A thread in which the lead is an integral multiple, greater than one, of the pitch. A multi-start thread permits a more rapid advance without a coarser (larger) thread form

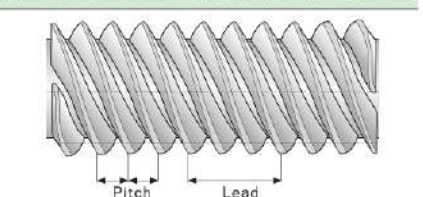
First Start Machined



Second Start Machined

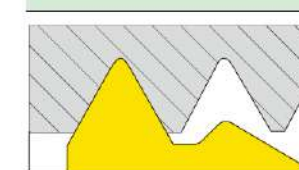


Third Start Machined (Final, 3 Starts Thread)



### Insert Profile Style

Partial Profile



The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle

Full Profile



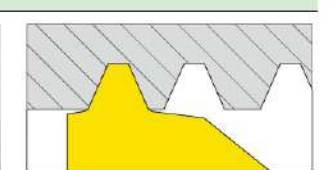
The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required

Full Profile for Fine Pitches



The full profile for Fine Pitches will form a complete thread. The topping of the outer diameter is generated by second tooth

Semi Full

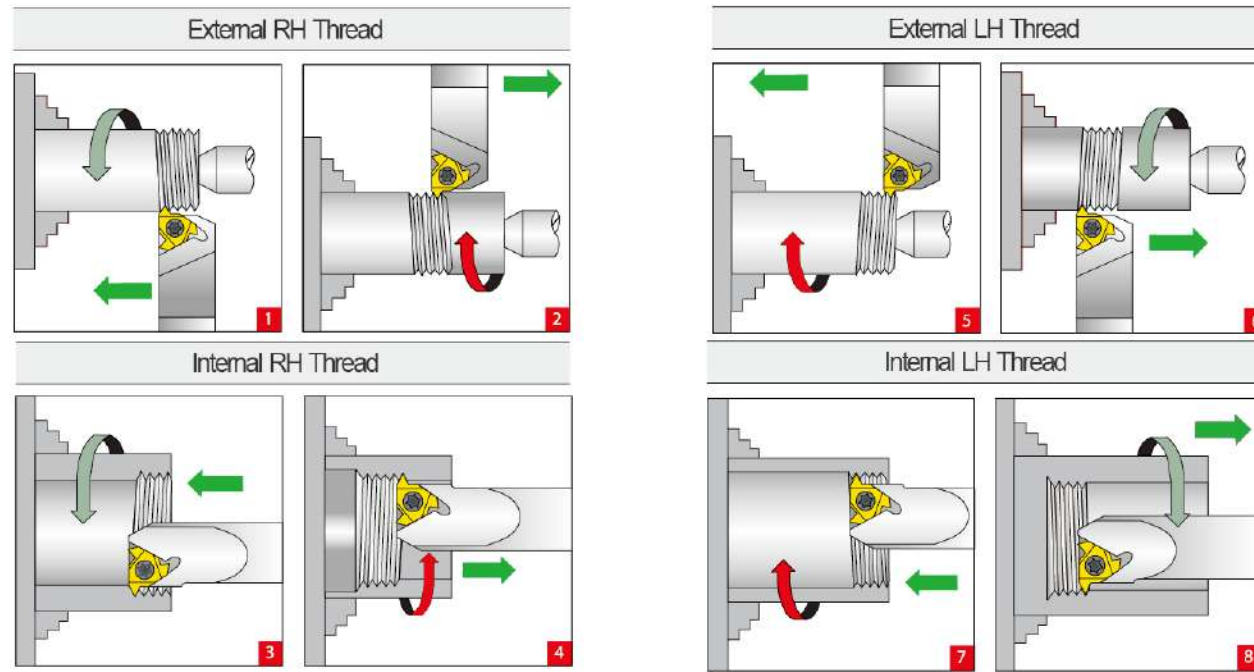


The Semi profile insert will form a complete thread including crest radius but without topping the outer diameter. Mainly used for trapezoidal profiles

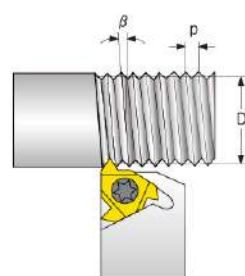


## Thread Turning Method

Thread	Inserts & Tool holder	Rotation	Feed Direction	Helix Method	Drawing No.
Right Hand External	EX RH	Counter clockwise	Towards chuck	Regular	1
	EX LH	Clockwise	From chuck	Reversed	2
Right Hand Internal	IN RH	Counter clockwise	Towards chuck	Regular	3
	IN LH	Clockwise	From chuck	Reversed	4
Left Hand External	EX LH	Counter clockwise	Towards chuck	Regular	5
	EX RH	Clockwise	From chuck	Reversed	6
Left Hand Internal	IN LH	Counter clockwise	Towards chuck	Regular	7
	IN RH	Clockwise	From chuck	Reversed	8



### Calculating the Helix Angle (β)

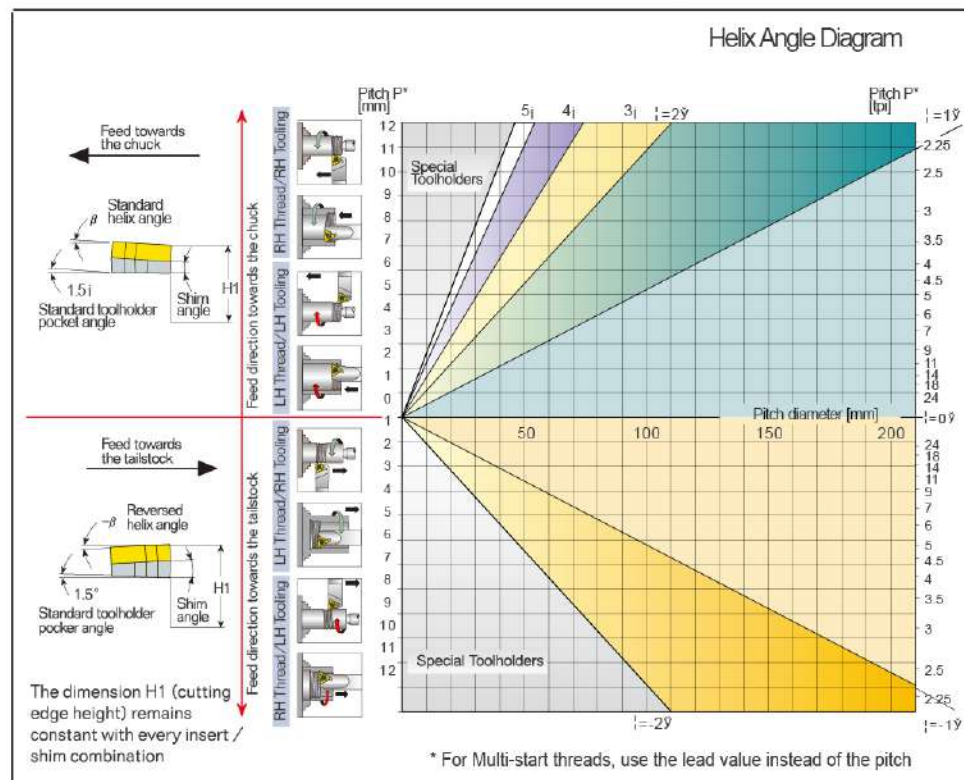


The helix angle is calculated by the following formula:

$$\beta = \tan^{-1} \frac{P \times N}{\pi \times D}$$

β - Helix angle (°)  
 P - Pitch (mm)  
 N - No. of starts  
 D - Pitch diameter (mm)  
 Lead = P x N

The helix angle can also be found from the diagram below



## Infeed Angle Selection And Chip Formation Typical Chip Formation

<p>Infeed Angle 0°</p> <p>Benefit: Cutting edge is protected from chipping by both sides in cut.</p> <p>Problem: Both sides of insert are heated by the workpiece. Produces "Vee" chips which can be very difficult to handle.</p>		
<p>Infeed Angle 30°</p> <p>Benefit: Chip is curled away from thread form.</p> <p>Problem: Trailing edge may drag rather than cut, which may cause chipping.</p>		
<p>Infeed Angle 29°</p> <p>Benefit: Cutting edge is protected from chipping by both sides in cut. Chip is curled away from thread form. Part of the heat generated is dissipated to the trailing edge. Final pass infeed angle should be 0°</p>		
<p>Alternating Flank Infeed</p> <p>For very large thread forms</p> <p>Benefit: Increased tool life because both edges are used effectively. Final pass should be 0°</p>		

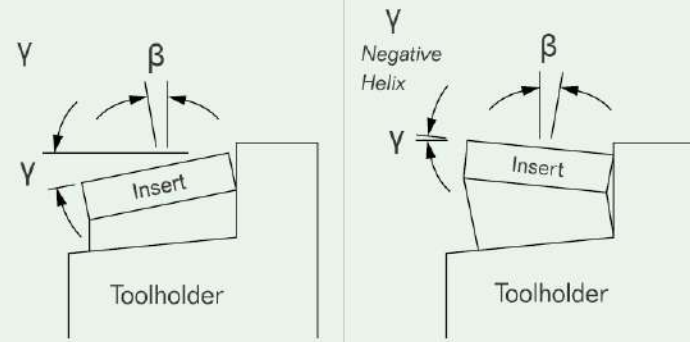
## The coolant should provided

Fast heat removal	Good surface coverage	Non-corrosiveness	Homogeneity and stability	Good lubricant qualities



## Standard and slanted Anvils

TOOTOOL toolholder and boring bar pockets have a built-in 1.5° helix compensation angle. This angle may be adjusted to match the helix angle of the thread being produced by replacing the anvil.



Positive Helix Angles

Applicable when turning RH thread with RH holder or LH thread with LH holder.

Negative Helix Angles

Applicable when turning RH thread with LH holder or LH thread with RH holder.

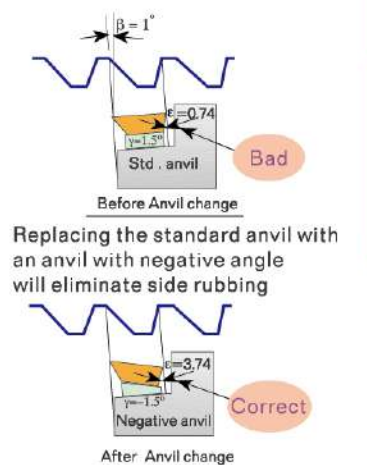
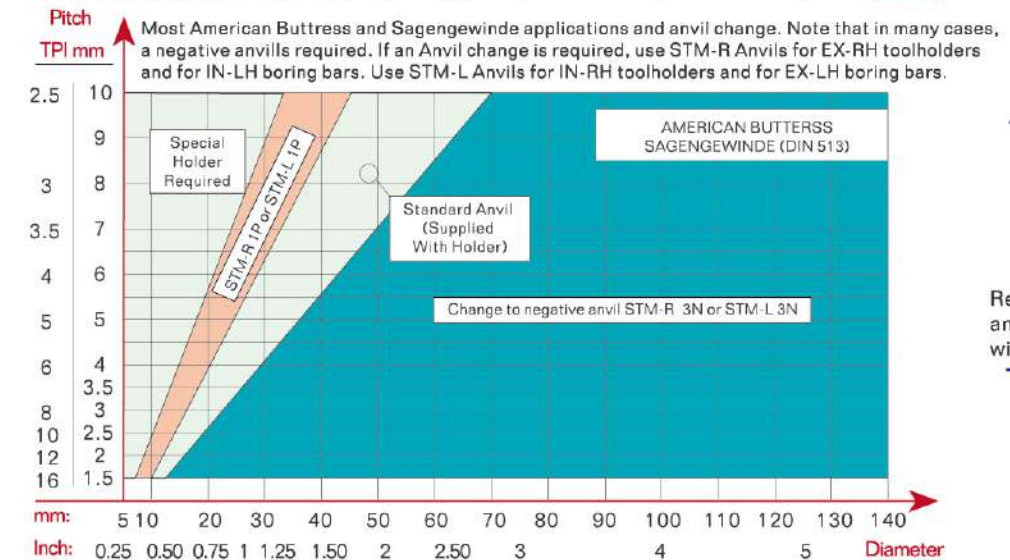
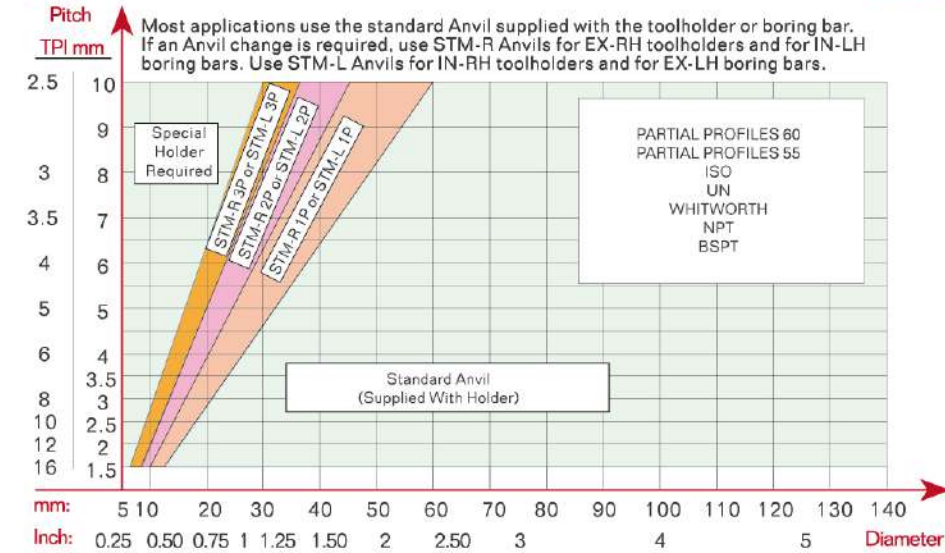
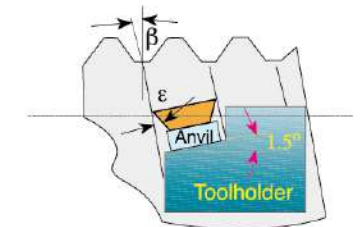
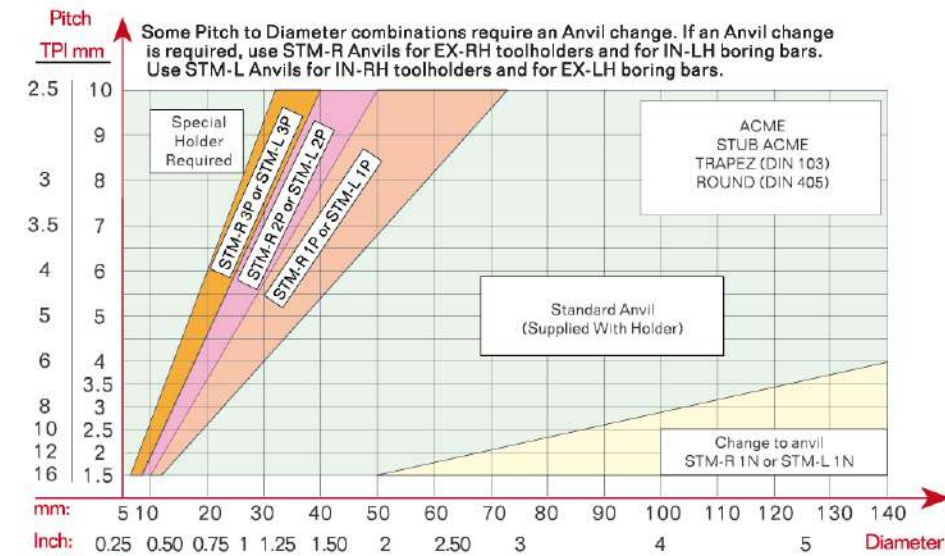
## Anvils

Resultant Helix Angle	Holder	Insert Size	4.5°	3.5°	2.5°	1.5°	0.5°	0°	-0.5°	-1.5°
			Ordering Code							
9.525	ER/NL	16	STM16R-3P	STM16R-2P	STM16R-1P	STM16R	STM16R-1N	STM16R-1.5N	STM16R-2N	STM16R-3N
			EL/NR	STM16L-3P	STM16L-2P	STM16L-1P	STM16L	STM16L-1N	STM16L-1.5N	STM16L-2N
12.7	ER/NL	22	STM22R-3P	STM22R-2P	STM22R-1P	STM22R	STM22R-1N	STM22R-1.5N	STM22R-2N	STM22R-3N
			EL/NR	STM22L-3P	STM22L-2P	STM22L-1P	STM22L	STM22L-1N	STM22L-1.5N	STM22L-2N
12.7	ER/NL	22	STM22UR-3P	STM22UR-2P	STM22UR-1P	STM22UR	STM22UR-1N	STM22UR-1.5N	STM22UR-2N	STM22UR-3N
			EL/NR	STM22UL-3P	STM22UL-2P	STM22UL-1P	STM22UL	STM22UL-1N	STM22UL-1.5N	STM22UL-2N
15.875	ER/NL	27	STM27R-3P	STM27R-2P	STM27R-1P	STM27R	STM27R-1N	STM27R-1.5N	STM27R-2N	STM27R-3N
			EL/NR	STM27L-3P	STM27L-2P	STM27L-1P	STM27L	STM27L-1N	STM27L-1.5N	STM27L-2N
15.875	ER/NL	27	STM27UR-3P	STM27UR-2P	STM27UR-1P	STM27UR	STM27UR-1N	STM27UR-1.5N	STM27UR-2N	STM27UR-3N
			EL/NR	STM27UL-3P	STM27UL-2P	STM27UL-1P	STM27UL	STM27UL-1N	STM27UL-1.5N	STM27UL-2N

Standard Shim	SMT-R	STM-L	Helix angle 1.5°	Insert Size	d	9.525	12.7	15.875
					L	16	22	27
				Holder	ER/NL	EL/NR	ER/NL	EL/NR
				Ordering Code	STM16R	STM16L	STM22L	STM22R

※Standard anvil has lead angle 1.5°

## Anvil Change Recommendation





## Grade Use

<b>TTIP30</b>	P10-P25, K10-K20	TiN coated, yellow color, the universal grade for general steel, recommended for rigid cutting condition.	
<b>TTIM45</b>	P20-P40, K20-K30	TiAlN coated, black color; Multi-Layer PVD coated for stainless steel & steel medium machining	
<b>TTIG30</b>	P20-P30, K20-K30	TiAlN coated, purple color, is a very high versatility coating with excellent toughness and chipping resistance, can play a high performance in a variety of processing.	
<b>TTIS30</b>	P10-P30, K10-K30	Sub-micro grade with AlTiN multi-layer coating, Brozen color, compatible with all series of stainless steel & steel < HRC50 high & medium machining	
<b>TPK01</b>	K10-K30	uncoated grade for non-ferrous, cast iron and titanium-alloy materials	

## Recommended cutting speed as per workpiece

Workpiece	TTIP30	TTIM45	TTIS30	TTIG30	TPK01
<b>P</b> Carbon steel, Alloy steel, Cast steel	TTIP30	TTIM45			
<b>M</b> Stainless steel, Heat resistant steel, Titanium alloy steel		TTIM45	TTIS30	TTIG30	
<b>K</b> Carbon Iron, Aluminum, Cast steel, Copper	TTIP30	TTIM45			

## Recommended Cutting Speed

Material	Hardness	Vc (m/min)				
		TTIP30	TTIM45	TTIG30	TTIS30	TPK01
<b>P</b> Steel	Low alloy steel (alloying elements <5%)	<HB180	100-180	80-130	60-140	70-140
	High alloy steel (alloying elements >5%), cast steel, and tool steel	HB180-280	50-70	60-80	60-80	50-100
<b>M</b> Stainless steel	Stainless steel & Cast steel	<HB200	60-90	90-130	40-120	90-140
<b>K</b> Cast iron	Cast iron Nodular (GGG)	HB160-260	80-110	100-130	60-120	90-120
	Grey cast iron (GG)	Tensile Strength < 350Mpa	90-100	120-130	80-120	60-130
	Malleable cast iron	HB130-230	80-100	100-130	60-120	60-140
<b>N</b> Non-ferrous alloy	Aluminum alloy	<HB100	50-350	200-500		200-400
	Copper and cooper alloy	<HB100	110-180	260-400		80-225
	Non metallic		150-210			100-200
<b>S</b> Heat resistant material	High Temperature. Alloys, Super Alloys			25-60	20-40	30-50
	Titanium Alloy			35-45	25-65	50-70
<b>H</b> Hardened material	Hardened steel	HRC45-55		35-45	20-60	40-60

## Calculation of N [RPM]

$$n = \frac{vc \times 1000}{\pi \times D} \quad vc = \frac{\pi \times D \times n}{1000}$$

$n$  - Revolution Per Minute [min-1]  
 $vc$  - Cutting Speed [m/min]  
 $D$  - Workpiece Diameter [mm]

## Number of Passes

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
	tpi	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
No. of passes		4~6	4~7	4~8	5~9	6~10	7~12	7~12	8~14	9~16	10~18	11~18	11~19	12~2	12~20	12~20	15~24

※One cutting depth is calculated by total cutting depth divided into machining times  
 ex) 16ER-1.5ISO, hmin 0.92 : If 10times machining, one cutting depth is 0.092(0.92/10)



## Partial Profile 60°

Type	Designation (Right)	Designation (Left)	Pitch		Dimensions					Picture
			mm	tpi	d	L	r	x	f	
External	<b>ER</b> 11-A60	<b>EL</b> 11-A60	0.5-1.5	48-16	6.35	11	0.05	0.8	0.9	
	16-A60	16-A60	0.5-1.5	48-16	9.525	16	0.05	0.8	0.9	
	16-G60	16-G60	1.75-3.0	14-8	9.525	16	0.27	1.2	1.7	
	16-AG60	16-AG60	0.5-3.0	48-8	9.525	16	0.08	1.2	1.7	
	22-N60	22-N60	3.5-5.0	7-5	12.7	22	0.53	1.7	2.5	
	27-Q60	27-Q60	5.5-6.0	4.5-4	15.875	27	0.64	2.1	3.1	
	27-S60	27-S60	5.5-8.0	4.5-4	15.875	27	0.39	2.5	4.0	
Internal	<b>IR</b> 06-A60	<b>IL</b> 06-A60	0.5-1.25	48-20	3.97	6	0.04	0.6	0.6	
	08-A60	08-A60	0.5-1.5	48-16	4.76	8	0.05	0.6	0.7	
	11-A60	11-A60	0.5-1.5	48-16	6.35	11	0.05	0.8	0.9	
	16-A60	16-A60	0.5-1.5	48-16	9.525	16	0.05	0.8	0.9	
	16-G60	16-G60	1.75-3.0	14-8	9.525	16	0.16	1.2	1.7	
	16-AG60	16-AG60	0.5-3.0	48-8	9.525	16	0.05	1.2	1.7	
	22-N60	22-N60	3.5-5.0	7-5	12.7	22	0.30	1.7	2.5	
	27-Q60	27-Q60	5.5-6.0	4.5-4	15.875	27	0.30	1.8	2.7	
27-S60	27-S60	5.5-8.0	4.5-4	15.875	27	0.39	2.5	4.0		

## Partial profile 60° (U Style)

Type	Designation (Right+Left)	Pitch		Dimensions					Picture
		mm	tpi	d	L	r	x	f	
External Internal	<b>UEI</b> 08-U60	1.75-2.0	14-11	4.76U	8	0.15	0.8	4.0	
	11-U60	1.5-4.0	16-6	6.35U	11	0.10	0.8	5.5	
	16-U60	2.5-6.0	10-4	9.525U	16	0.20	1.2	8.2	
	22-U60	5.5-8.0	4.5-3.25	12.7U	22	0.30	0.6	11.0	
	27-U60	6.5-9.0	4-2.75	15.875U	27	0.37	1.0	13.7	

## Partial profile 60° (V Style)

Type	Designation (Right)	Designation (Left)	Pitch		Dimensions						Picture
			mm	tpi	d	L	r	x	f	T	
External	<b>VER</b> 11-A60	<b>VEL</b> 11-A60	0.5-1.5	48-16	6.35V	11	0.05	0.69	2.3	3.2	
	16-A60	16-A60	0.5-1.5	48-16	9.525V	16	0.05	1.1	2.7	3.5	
	16-G60	16-G60	1.75-3.0	14-8	9.525V	16	0.27	1.1	1.9	3.5	
	16-AG60	16-AG60	0.5-3.0	48-8	9.525V	16	0.08	1.1	1.9	3.5	
	22-N60	22-N60	3.5-5.0	7-5	12.70V	22	0.53	1.1	2.3	4.8	
	27-V60	27-V60	6.0-10.0	4-2.5	15.875V	27	0.75	5.2	5.2	10.2	

## Partial profile 60° (M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch		Dimensions					Picture
			mm	tpi	d	L	r	x	f	
External	<b>ERM</b> 16-A60		0.5-1.5	48-16	9.525	16	0.08	0.8	0.9	
	16-G60		1.75-3.0	14-8	9.525	16	0.08	1.2	1.7	
	16-AG60		0.5-3.0	48-8	9.525	16	0.25	1.1	1.5	
	22-N60		3.5-5.0	7-5	12.7	22	0.51	1.7	2.5	
Internal	<b>IRM</b> 08-A60		0.5-1.5	48-16	4.76	8	0.08	0.6	0.7	
	11-A60		0.5-1.5	48-16	6.35	11	0.08	0.8	0.9	
	16-A60		0.5-1.5	48-16	9.525	16	0.08	0.8	0.9	
	16-G60		1.75-3.0	14-8	9.525	16	0.13	1.2	1.7	
	16-AG60		0.5-3.0	48-8	9.525	16	0.25	1.1	1.5	
	22-N60		3.5-5.0	7-5	12.7	22	0.30	1.7	2.5	

## Partial profile 55°

Type	Designation (Right)	Designation (Left)	Pitch		Dimensions					Picture
			mm	tpi	d	L	r	x	f	
External	<b>ER</b> 11-A55	<b>EL</b> 11-A55	0.5-1.5	48-16	6.35	11	0.05	0.8	0.9	
	16-A55	16-A55	0.5-1.5	48-16	9.525	16	0.05	0.8	0.9	
	16-G55	16-G55	1.75-3.0	14-8	9.525	16	0.21	1.2	1.7	
	16-AG55	16-AG55	0.5-3.0	48-8	9.525	16	0.07	1.2	1.7	
	22-N55	22-N55	3.5-5.0	7-5	12.7	22	0.43	1.7	2.5	
	27-Q55	27-Q55	5.5-6.0	4.5-4	15.875	27	0.60	2.0	2.9	
	27-S55	27-S55	5.5-8.0	4.5-4	15.875	27	0.77	2.5	4.0	
Internal	<b>IR</b> 06-A55	<b>IL</b> 06-A55	0.5-1.25	48-20	3.97	6	0.07	0.6	0.6	
	11-A55	11-A55	0.5-1.5	48-16	6.35	11	0.05	0.8	0.9	
	16-A55	16-A55	0.5-1.5	48-16	9.525	16	0.05	0.8	0.9	
	16-G55	16-G55	1.75-3.0	14-8	9.525	16	0.21	1.2	1.7	
	16-AG55	16-AG55	0.5-3.0	48-8	9.525	16	0.07	1.2	1.7	
	22-N55	22-N55	3.5-5.0	7-5	12.7	22	0.43	1.7	2.5	
	27-Q55	27-Q55	5.5-6.0	4.5-4	15.875	27	0.60	2.0	2.9	
	27-S55	27-S55	5.5-8.0	4.5-4	15.875	27	0.77	2.5	4.0	



# Thread Insert

## Partial profile 55° (M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch		Dimensions					Picture
			mm	tpi	d	L	r	x	f	
External	ERM 16-A55		0.5-1.5	48-16	9.525	16	0.08	0.8	0.9	
	16-G55		1.75-3.0	14-8	9.525	16	0.21	1.2	1.7	
	16-AG55		0.5-3.0	48-8	9.525	16	0.08	1.1	1.5	
	22-N55		3.5-5.0	7-5	12.7	22	0.43	1.7	2.5	
Internal	IRM 11-A55		0.5-1.5	48-16	6.35	11	0.08	0.8	0.9	
	16-A55		0.5-1.5	48-16	9.525	16	0.05	0.8	0.9	
	16-G55		1.75-3.0	14-8	9.525	16	0.08	1.2	1.7	
	16-AG55		0.5-3.0	48-8	9.525	16	0.08	1.1	1.5	
	22-N55		3.5-5.0	7-5	12.7	22	0.43	1.7	2.5	

## ISO Metric

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			mm	d	L	hmin	x	f	
External	ER 11-0.40ISO	EL 11-0.40ISO	0.4	6.35	11	0.25	0.7	0.4	
	11-0.45ISO	11-0.45ISO	0.45	6.35	11	0.28	0.7	0.4	
	11-0.50ISO	11-0.50ISO	0.5	6.35	11	0.31	0.6	0.4	
	11-0.60ISO	11-0.60ISO	0.6	6.35	11	0.37	0.6	0.6	
	11-0.70ISO	11-0.70ISO	0.7	6.35	11	0.43	0.6	0.6	
	11-0.75ISO	11-0.75ISO	0.75	6.35	11	0.46	0.6	0.6	
	11-0.80ISO	11-0.80ISO	0.8	6.35	11	0.49	0.6	0.6	
	11-1.00ISO	11-1.00ISO	1.0	6.35	11	0.61	0.7	0.7	
	11-1.25ISO	11-1.25ISO	1.25	6.35	11	0.77	0.8	0.9	
	11-1.50ISO	11-1.50ISO	1.5	6.35	11	0.92	0.8	1.0	
	11-1.75ISO	11-1.75ISO	1.75	6.35	11	1.07	0.8	1.1	
	11-2.00ISO	11-2.00ISO	2.0	6.35	11	1.23	0.8	1.1	
	16-0.40ISO	16-0.40ISO	0.4	9.525	16	0.25	0.7	0.4	
	16-0.45ISO	16-0.45ISO	0.45	9.525	16	0.28	0.7	0.4	
	16-0.50ISO	16-0.50ISO	0.5	9.525	16	0.31	0.6	0.4	
	16-0.60ISO	16-0.60ISO	0.6	9.525	16	0.37	0.6	0.6	
	16-0.70ISO	16-0.70ISO	0.7	9.525	16	0.43	0.6	0.6	
	16-0.75ISO	16-0.75ISO	0.75	9.525	16	0.46	0.6	0.6	
	16-0.80ISO	16-0.80ISO	0.8	9.525	16	0.49	0.6	0.6	
	16-1.00ISO	16-1.00ISO	1.0	9.525	16	0.61	0.7	0.7	
	16-1.25ISO	16-1.25ISO	1.25	9.525	16	0.77	0.8	0.9	
	16-1.50ISO	16-1.50ISO	1.5	9.525	16	0.92	0.8	1.0	
	16-1.75ISO	16-1.75ISO	1.75	9.525	16	1.07	0.9	1.2	
	16-2.00ISO	16-2.00ISO	2.0	9.525	16	1.23	1.0	1.3	
	16-2.50ISO	16-2.50ISO	2.5	9.525	16	1.53	1.1	1.5	
	16-3.00ISO	16-3.00ISO	3.0	9.525	16	1.84	1.2	1.6	
	16-3.50ISO	16-3.50ISO	3.5	9.525	16	2.15	1.6	1.9	
	22-3.50ISO	22-3.50ISO	3.5	12.70	22	2.15	1.6	2.3	
	22-4.00ISO	22-4.00ISO	4.0	12.70	22	2.45	1.6	2.3	
	22-4.50ISO	22-4.50ISO	4.5	12.70	22	2.78	1.7	2.4	
22-5.00ISO	22-5.00ISO	5.0	12.70	22	3.07	1.7	2.5		
22-5.50ISO	22-5.50ISO	5.5	12.70	22	3.37	1.9	2.7		
22-6.00ISO	22-6.00ISO	6.0	12.70	22	3.68	1.8	2.7		
27-5.50ISO	27-5.50ISO	5.5	15.875	27	3.37	1.9	2.7		
27-6.00ISO	27-6.00ISO	6.0	15.875	27	3.68	2.0	2.9		
27-7.00ISO	27-7.00ISO	7.0	15.875	27	4.30	2.4	3.3		
27-8.00ISO	27-8.00ISO	8.0	15.875	27	4.91	2.2	3.2		

## Partial profile 55° (U Style)

Type	Designation (Right+Left)	Pitch		Dimensions					Picture
		mm	tpi	d	L	r	x	f	
External	UEI 08-U55	1.75-2.0	14-11	4.76U	8	0.25	0.8	4.0	
	11-U55	1.5-4.0	16-6	6.35U	11	0.10	0.8	5.5	
Internal	16-U55	2.5-6.0	10-4	9.525U	16	0.20	1.2	8.2	
	22-U55	5.5-8.0	4.5-3.25	12.7U	22	0.60	0.9	11.0	
	27-U55	6.5-9.0	4-2.75	15.875U	27	0.80	1.2	13.7	

## Partial profile 55° (V Style)

Type	Designation (Right)	Designation (Left)	Pitch		Dimensions						Picture
			mm	tpi	d	L	r	x	f	T	
External	VER 11-A55	VEL 11-A55	0.5-1.5	48-16	6.35V	11	0.05	0.8	2.7	3.2	
	16-A55	16-A55	0.5-1.5	48-16	9.525V	16	0.05	1.0	0.9	3.6	
	16-G55	16-G55	1.75-3.0	14-8	9.525V	16	0.21	1.0	1.7	3.6	
	16-AG55	16-AG55	0.5-3.0	48-8	9.525V	16	0.07	1.0	1.8	3.6	
	22-N55	22-N55	3.5-5.0	7-5	12.70V	22	0.43	1.2	2.5	4.8	
	27-V55	27-V55	6.0-10.0	4-2.5	15.875V	27	0.70	1.8	5.2	8.7	



## Partial profile 60° (M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			mm	d	L	hmin	x	f	
External	<b>ERM</b> 16-1.00ISO		1.0	9.525	16	0.61	0.8	0.7	
	16-1.25ISO		1.25	9.525	16	0.77	0.8	0.9	
	16-1.50ISO		1.5	9.525	16	0.93	0.8	1.0	
	16-1.75ISO		1.75	9.525	16	1.09	1.2	1.2	
	16-2.00ISO		2.0	9.525	16	1.25	1.2	1.3	
	16-2.50ISO		2.5	9.525	16	1.55	1.2	1.5	
	16-3.00ISO		3.0	9.525	16	1.87	1.2	1.5	
	22-3.50ISO		3.5	12.7	22	2.15	1.6	2.3	
	22-4.00ISO		4.0	12.7	22	2.45	1.6	2.3	
	22-4.50ISO		4.5	12.7	22	2.78	1.7	2.4	
	22-5.00ISO		5.0	12.7	22	3.07	1.7	2.5	
	22-5.50ISO		5.5	12.7	22	3.37	1.9	2.7	
22-6.00ISO		6.0	12.7	22	3.68	1.9	2.7		

## ISO Metric (U Style)

Type	Designation (Right+Left)	Pitch	Dimensions					Picture
		mm	d	L	hmin	x	f	
External	<b>UE</b> 22-5.00ISO	5.0	4.76U	22	3.07	2.2	11.0	
	22-5.50ISO	5.5	6.35U	22	3.37	2.2	11.0	
	22-6.00ISO	6.0	12.70U	22	3.68	2.2	11.0	
	27-8.00ISO	8.0	15.875U	27	4.91	2.4	13.7	
	33-12.00ISO	12.0	19.05U	33	7.36	2.5	16.5	
Internal	<b>UI</b> 08-2.00ISO	2.0	4.76U	8	1.15	0.9	4.0	
	22-5.00ISO	5.0	12.7U	22	2.89	2.4	11.0	
	22-5.50ISO	5.5	12.7U	22	3.17	2.4	11.0	
	22-6.00ISO	6.0	12.7U	22	3.46	2.1	11.0	
	27-8.00ISO	8.0	15.875U	27	4.26	2.4	13.7	
33-12.00ISO	12.0	19.05U	33	7.36	3.5	16.9		

## ISO Metric (V Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions						Picture
			mm	d	L	hmin	x	f	T	
External	<b>VER</b> 11-0.75ISO	<b>VEL</b> 11-0.75ISO	0.75	6.35V	11	0.46	0.7	2.6	3.2	
	11-1.00ISO	11-1.00ISO	1.0	6.35V	11	0.61	0.7	2.5	3.2	
	11-1.25ISO	11-1.25ISO	1.5	6.35V	11	0.92	0.7	2.2	3.2	
	11-1.50ISO	11-1.50ISO	1.75	6.35V	11	1.07	0.7	2.1	3.2	
	11-1.75ISO	11-1.75ISO	2.0	6.35V	11	1.23	0.7	1.9	3.2	
	11-2.00ISO	11-2.00ISO	0.35	6.35V	16	0.20	1.1	3.25	3.6	
	16-0.40ISO	16-0.40ISO	0.4	9.525V	16	0.25	1.1	3.2	3.6	
	16-0.45ISO	16-0.45ISO	0.5	9.525V	16	0.31	1.1	3.0	3.6	
	16-0.75ISO	16-0.75ISO	0.75	9.525V	16	0.46	1.1	3.0	3.6	
	16-0.80ISO	16-0.80ISO	0.8	9.525V	16	0.49	1.1	3.0	3.6	
	16-1.00ISO	16-1.00ISO	1.0	9.525V	16	0.61	1.1	2.9	3.6	
	16-1.25ISO	16-1.25ISO	1.25	9.525V	16	0.77	1.1	2.7	3.6	
	16-1.50ISO	16-1.50ISO	1.5	9.525V	16	0.92	1.1	2.6	3.6	
	16-1.75ISO	16-1.75ISO	1.75	9.525V	16	1.07	1.1	2.45	3.6	
	16-2.00ISO	16-2.00ISO	2.0	9.525V	16	1.23	1.1	2.3	3.6	
	16-2.50ISO	16-2.50ISO	2.5	9.525V	16	1.53	1.1	2.1	3.6	
	16-3.00ISO	16-3.00ISO	3.0	9.525V	16	1.84	1.1	2.0	3.6	
	27-5.50ISO	27-5.50ISO	5.5	15.875V	27	3.37	1.0	3.3	6.35	
	27-6.00ISO	27-6.00ISO	6.0	15.875V	27	3.68	1.0	3.3	6.35	
	27-8.00ISO	27-8.00ISO	8.0	15.875V	27	4.91	1.8	5.2	8.70	
	27-10.00ISO	27-10.00ISO	10.0	15.875V	27	6.13	1.8	5.2	10.2	

## ISO Metric (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Tooth	Picture
			mm	d	L	hmin	x	f		
External	<b>ER</b> 16-1.00ISO 3M		1.0	9.525	16	0.61	1.8	2.6	3	
	16-1.50ISO 2M		1.5	9.525	16	0.92	1.6	2.4	2	
	16-2.00ISO 2M		2.0	9.525	16	1.23	2.1	3.1	2	
	22-1.50ISO 3M		1.5	12.7	22	0.92	2.5	3.8	3	
	22-2.00ISO 2M		2.0	12.7	22	1.23	2.1	3.1	2	
	22-2.00ISO 3M		2.0	12.7	22	1.23	3.2	5.1	3	
	22-2.50ISO 2M		2.5	12.7	22	1.53	2.5	3.9	2	
	27-3.00ISO 2M		3.0	15.875	27	1.84	3.0	4.7	2	



## ISO Metric

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			mm	d	L	hmin	x	f	
External	<b>IR</b> 06-0.50ISO	<b>IL</b> 06-0.50ISO	0.5	3.97	6	0.29	0.9	0.5	
	06-0.75ISO	06-0.75ISO	0.75	3.97	6	0.43	0.8	0.5	
	06-1.00ISO	06-1.00ISO	1.0	3.97	6	0.58	0.7	0.6	
	06-1.25ISO	06-1.25ISO	1.25	3.97	6	0.72	0.6	0.6	
	08-0.50ISO	08-0.50ISO	0.5	4.76	8	0.29	0.6	0.5	
	08-0.75ISO	08-0.75ISO	0.75	4.76	8	0.43	0.6	0.5	
	08-1.00ISO	08-1.00ISO	1.0	4.76	8	0.58	0.6	0.6	
	08-1.25ISO	08-1.25ISO	1.25	4.76	8	0.72	0.6	0.7	
	08-1.50ISO	08-1.50ISO	1.5	4.76	8	0.87	0.6	0.7	
	08-1.75ISO	08-1.75ISO	1.75	4.76	8	1.01	0.6	0.8	
	11-0.40ISO	11-0.40ISO	0.4	6.35	11	0.23	0.8	0.4	
	11-0.45ISO	11-0.45ISO	0.45	6.35	11	0.26	0.8	0.4	
	11-0.50ISO	11-0.50ISO	0.5	6.35	11	0.29	0.6	0.4	
	11-0.60ISO	11-0.60ISO	0.6	6.35	11	0.35	0.6	0.6	
	11-0.70ISO	11-0.70ISO	0.7	6.35	11	0.40	0.6	0.6	
	11-0.75ISO	11-0.75ISO	0.75	6.35	11	0.43	0.6	0.6	
	11-0.80ISO	11-0.80ISO	0.8	6.35	11	0.46	0.6	0.6	
	11-1.00ISO	11-1.00ISO	1.0	6.35	11	0.58	0.6	0.7	
	11-1.25ISO	11-1.25ISO	1.25	6.35	11	0.72	0.8	0.9	
	11-1.50ISO	11-1.50ISO	1.5	6.35	11	0.87	0.8	1.0	
	11-1.75ISO	11-1.75ISO	1.75	6.35	11	1.01	0.9	1.1	
	11-2.00ISO	11-2.00ISO	2.0	6.35	11	1.15	0.9	1.1	
	11-2.50ISO	11-2.50ISO	2.5	6.35	11	1.44	0.8	1.1	
	16-0.40ISO	16-0.40ISO	0.4	9.525	16	0.23	0.8	0.4	
	16-0.45ISO	16-0.45ISO	0.45	9.525	16	0.26	0.8	0.4	
	16-0.50ISO	16-0.50ISO	0.5	9.525	16	0.29	0.6	0.4	
	16-0.60ISO	16-0.60ISO	0.6	9.525	16	0.35	0.6	0.6	
	16-0.70ISO	16-0.70ISO	0.7	9.525	16	0.40	0.6	0.6	
	16-0.75ISO	16-0.75ISO	0.75	9.525	16	0.43	0.6	0.6	
	16-0.80ISO	16-0.80ISO	0.8	9.525	16	0.46	0.6	0.6	
	16-1.00ISO	16-1.00ISO	1.0	9.525	16	0.58	0.6	0.7	
	16-1.25ISO	16-1.25ISO	1.25	9.525	16	0.72	0.8	0.9	
	16-1.50ISO	16-1.50ISO	1.5	9.525	16	0.87	0.8	1.0	
	16-1.75ISO	16-1.75ISO	1.75	9.525	16	1.01	0.9	1.2	
	16-2.00ISO	16-2.00ISO	2.0	9.525	16	1.15	1.0	1.3	
	16-2.50ISO	16-2.50ISO	2.5	9.525	16	1.44	1.1	1.5	
	16-3.00ISO	16-3.00ISO	3.0	9.525	16	1.73	1.1	1.5	
	16-3.50ISO	16-3.50ISO	3.5	9.525	16	2.02	1.2	1.5	
	22-3.50ISO	22-3.50ISO	3.5	12.7	22	2.02	1.6	2.3	
	22-4.00ISO	22-4.00ISO	4.0	12.7	22	2.31	1.6	2.3	
22-4.50ISO	22-4.50ISO	4.5	12.7	22	2.60	1.6	2.4		
22-5.00ISO	22-5.00ISO	5.0	12.7	22	2.89	1.6	2.3		
22-5.50ISO	22-5.50ISO	5.5	12.7	22	3.17	1.6	2.3		
22-6.00ISO	22-6.00ISO	5.5	12.7	22	3.46	1.8	2.5		
27-4.50ISO	27-4.50ISO	4.5	15.875	27	2.60	1.6	2.4		
27-5.00ISO	27-5.00ISO	5.0	15.875	27	2.89	1.6	2.3		
27-5.50ISO	27-5.50ISO	5.5	15.875	27	3.17	1.6	2.3		
27-6.00ISO	27-6.00ISO	6.0	15.875	27	3.46	1.8	2.5		
27-7.00ISO	27-7.00ISO	7.0	15.875	27	4.05	2.0	3.0		
27-8.00ISO	27-8.00ISO	8.0	15.875	27	4.26	2.2	3.2		

## ISO Metric (M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			mm	d	L	hmin	x	f	
External	<b>IRM</b> 11-1.00ISO		1.0	6.35	11	0.58	0.8	0.7	
	11-1.25ISO		1.25	6.35	11	0.72	0.8	0.9	
	11-1.50ISO		1.5	6.35	11	0.87	0.8	1.0	
	11-1.75ISO		1.75	6.35	11	1.01	0.9	1.1	
	16-1.00ISO		1.0	9.525	16	0.58	0.8	0.7	
	16-1.25ISO		1.25	9.525	16	0.72	0.8	0.9	
	16-1.50ISO		1.5	9.525	16	0.85	0.8	1.0	
	16-1.75ISO		1.75	9.525	16	1.01	1.2	1.2	
	16-2.00ISO		2.0	9.525	16	1.12	1.2	1.3	
	16-2.50ISO		2.5	9.525	16	1.44	1.2	1.5	
	16-3.00ISO		3.0	9.525	16	1.69	1.2	1.5	
	22-3.50ISO		3.5	12.7	22	2.02	1.6	2.3	
	22-4.00ISO		4.0	12.7	22	2.31	1.6	2.3	
	22-4.50ISO		4.5	12.7	22	2.60	1.7	2.4	
	22-5.00ISO		5.0	12.7	22	2.89	1.7	2.5	
	22-5.50ISO		5.5	12.7	22	3.17	1.9	2.7	
22-6.00ISO		6.0	12.7	22	3.46	1.9	2.7		

## ISO Metric (V Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions						Picture
			mm	d	L	hmin	x	f	T	
Internal	<b>VIR</b> 27-6.00ISO	<b>VIL</b> 27-6.00ISO	6.0	15.875V	27	3.46	1.0	3.3	6.35	
	27-8.00ISO	27-8.00ISO	8.0	15.875V	27	4.62	1.8	5.2	8.70	
	27-10.00ISO	27-10.00ISO	10.0	15.875V	27	5.77	1.8	5.2	10.2	

## ISO Metric (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Tooth	Picture
			mm	d	L	hmin	x	f		
Internal	<b>ER</b> 16-1.00ISO 3M		1.0	9.525	16	0.58	1.7	2.6	3	
	16-1.50ISO 2M		1.5	9.525	16	0.87	1.6	2.4	2	
	16-2.00ISO 2M		2.0	9.525	16	1.15	2.0	3.1	2	
	22-1.50ISO 3M		1.5	12.7	22	0.87	2.5	3.8	3	
	22-2.00ISO 2M		2.0	12.7	22	1.15	2.0	3.1	2	
	22-2.00ISO 3M		2.0	12.7	22	1.15	3.2	5.1	3	
	27-3.00ISO 2M		3.0	15.875	27	1.73	3.0	4.7	2	



## American Un (UN, UNC, UNF, UNEF, UNS)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			mm	d	L	hmin	x	f	
External	<b>ER</b> 11-64UN	<b>EL</b> 11-64UN	64	6.35	11	0.24	0.8	0.4	
	11-56UN	11-56UN	56	6.35	11	0.28	0.7	0.4	
	11-48UN	11-48UN	48	6.35	11	0.32	0.6	0.6	
	11-44UN	11-44UN	44	6.35	11	0.35	0.6	0.6	
	11-40UN	11-40UN	40	6.35	11	0.39	0.6	0.6	
	11-36UN	11-36UN	36	6.35	11	0.43	0.6	0.6	
	11-32UN	11-32UN	32	6.35	11	0.49	0.6	0.6	
	11-28UN	11-28UN	28	6.35	11	0.56	0.6	0.7	
	11-27UN	11-27UN	27	6.35	11	0.58	0.7	0.8	
	11-24UN	11-24UN	24	6.35	11	0.65	0.7	0.8	
	11-20UN	11-20UN	20	6.35	11	0.78	0.8	0.9	
	11-18UN	11-18UN	18	6.35	11	0.87	0.8	1.0	
	11-16UN	11-16UN	16	6.35	11	0.97	0.9	1.1	
	11-14UN	11-14UN	14	6.35	11	1.11	0.9	1.1	
	16-64UN	16-64UN	64	9.525	16	0.24	0.8	0.4	
	16-56UN	16-56UN	56	9.525	16	0.28	0.7	0.4	
	16-48UN	16-48UN	48	9.525	16	0.32	0.6	0.6	
	16-44UN	16-44UN	44	9.525	16	0.35	0.6	0.6	
	16-40UN	16-40UN	40	9.525	16	0.39	0.6	0.6	
	16-36UN	16-36UN	36	9.525	16	0.43	0.6	0.6	
	16-32UN	16-32UN	32	9.525	16	0.49	0.6	0.6	
	16-28UN	16-28UN	28	9.525	16	0.56	0.6	0.7	
	16-27UN	16-27UN	27	9.525	16	0.58	0.7	0.8	
	16-24UN	16-24UN	24	9.525	16	0.65	0.7	0.8	
	16-20UN	16-20UN	20	9.525	16	0.78	0.8	0.9	
	16-18UN	16-18UN	18	9.525	16	0.87	0.8	1.0	
	16-16UN	16-16UN	16	9.525	16	0.97	0.9	1.1	
	16-14UN	16-14UN	14	9.525	16	1.11	1.0	1.2	
	16-13UN	16-13UN	13	9.525	16	1.20	1.0	1.3	
	16-12UN	16-12UN	12	9.525	16	1.30	1.1	1.4	
	16-11.5UN	16-11.5UN	11.5	9.525	16	1.35	1.1	1.5	
	16-11UN	16-11UN	11	9.525	16	1.42	1.1	1.5	
	16-10UN	16-10UN	10	9.525	16	1.56	1.1	1.5	
	16-9UN	16-9UN	9	9.525	16	1.73	1.2	1.7	
	16-8UN	16-8UN	8	9.525	16	1.95	1.2	1.6	
	22-7UN	22-7UN	7	12.7	22	2.22	1.6	2.3	
	22-6UN	22-6UN	6	12.7	22	2.60	1.6	2.3	
	22-5UN	22-5UN	5	12.7	22	3.12	1.7	2.5	
	27-4.5UN	27-4.5UN	4.5	15.875	27	3.46	1.9	2.7	
	27-4UN	27-4UN	4	15.875	27	3.89	2.1	3.0	

## American UN(UN,UNC,UNF,UNEF,UNS)(M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	<b>ERM</b> 16-24UN		24	9.535	16	0.78	0.8	0.8	
	16-20UN		20	9.525	16	0.78	0.8	0.9	
	16-18UN		18	9.525	16	0.87	0.8	1.0	
	16-16UN		16	9.525	16	0.97	0.9	1.1	
	16-14UN		14	9.525	16	1.11	1.2	1.5	
	16-12UN		12	9.525	16	1.30	1.2	1.5	
	16-10UN		10	9.525	16	1.56	1.2	1.5	
	16-8UN		8	9.525	16	1.95	1.3	1.7	

## American UN (U Style)

Type	Designation (Right+Left)	Pitch	Dimensions					Picture
		tpi	d	L	hmin	x	f	
External	<b>UE</b> 22-4.5UN	4.5	12.7U	22	3.46	2.2	11.0	
	22-4UN	4	12.7U	22	3.89	2.2	11.0	
	27-3UN	3	15.875U	27	5.19	2.5	13.7	
	33-2UN	2	19.05U	33	7.79	2.8	16.5	

## American UN (V Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions						Picture
			tpi	d	L	hmin	x	f	T	
External	<b>VER</b> 11-20UN	<b>VEL</b> 11-20UN	20	6.35V	11	0.78	0.69	2.3	3.20	
	11-18UN	11-18UN	18	6.35V	11	0.87	0.69	2.2	3.20	
	11-16UN	11-16UN	16	6.35V	11	0.97	0.69	2.2	3.20	
	11-14UN	11-14UN	14	6.35V	11	1.11	0.69	2.0	3.20	
	11-12UN	11-12UN	12	6.35V	11	1.30	0.69	1.8	3.20	
	16-32UN	16-32UN	32	6.35V	16	0.48	1.1	3.0	3.60	
	16-28UN	16-28UN	28	9.525V	16	0.56	1.1	3.0	3.60	
	16-24UN	16-24UN	24	9.525V	16	0.65	1.1	2.9	3.60	
	16-20UN	16-20UN	20	9.525V	16	0.78	1.1	2.7	3.60	
	16-18UN	16-18UN	18	9.525V	16	0.87	1.1	2.6	3.60	
	16-16UN	16-16UN	16	9.525V	16	0.97	1.1	2.55	3.60	
	16-14UN	16-14UN	14	9.525V	16	1.11	1.1	2.5	3.60	
	16-12UN	16-12UN	12	9.525V	16	1.30	1.1	2.2	3.60	
	16-10UN	16-10UN	10	9.525V	16	1.56	1.1	2.1	3.60	
	16-8UN	16-8UN	8	9.525V	16	1.95	1.1	2.0	3.60	
	22-7UN	22-7UN	7	12.7V	22	2.22	1.2	2.3	4.80	
	27-4UN	27-4UN	4	15.875V	27	3.89	1.0	3.3	6.35	
	27-3UN	27-3UN	3	15.875V	27	5.19	1.8	5.2	8.70	

## American UN (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Tooth	Picture
				d	L	hmin	x	f		
External	ER 16-24UN 2M		24	9.525	16	0.65	1.1	1.7	2	
	16-20UN 3M		20	9.525	16	0.78	2.2	3.3	3	
	16-18UN 2M		18	9.525	16	0.87	1.5	2.2	2	
	16-18UN 3M		18	9.525	16	0.87	2.3	2.6	3	
	16-16UN 2M		16	9.525	16	0.97	1.7	2.5	2	
	16-14UN 2M		14	9.525	16	1.11	1.9	2.8	2	
	16-12UN 2M		12	9.525	16	1.30	2.2	3.3	2	
	22-16UN 3M		16	12.7	22	0.97	2.6	4.1	3	
	22-14UN 2M		14	12.7	22	1.33	1.9	2.8	2	
	22-13UN 3M		13	12.7	22	1.20	3.0	4.9	3	
	22-12UN 2M		12	12.7	22	1.30	2.2	3.3	2	
	22-12UN 3M		12	12.7	22	1.30	3.4	5.4	3	
	22-11UN 2M		11	12.7	22	1.42	2.3	3.6	2	
	22-10UN 2M		10	12.7	22	1.56	2.5	3.9	2	
	27-8UN 2M		8	15.875	27	1.95	3.1	4.9	2	

## American UN (UN,UNC,UNF,UNEF,UNS)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
Internal	IR 06-32UN	IL 06-32UN	32	3.97	6	0.46	0.8	0.5	
	06-28UN	06-28UN	28	3.97	6	0.52	0.8	0.6	
	06-24UN	06-24UN	24	3.97	6	0.61	0.7	0.6	
	06-20UN	06-20UN	20	3.97	6	0.73	0.6	0.6	
	06-18UN	06-18UN	18	3.97	6	0.81	0.6	0.7	
	08-32UN	08-32UN	32	4.76	8	0.46	0.6	0.5	
	08-28UN	08-28UN	28	4.76	8	0.52	0.6	0.6	
	08-24UN	08-24UN	24	4.76	8	0.61	0.6	0.6	
	08-20UN	08-20UN	20	4.76	8	0.73	0.6	0.7	
	08-18UN	08-18UN	18	4.76	8	0.81	0.6	0.7	
	08-16UN	08-16UN	16	4.76	8	0.92	0.6	0.7	
	08-14UN	08-14UN	14	4.76	8	1.05	0.6	0.8	
	08-13UN	08-13UN	13	4.76	8	1.20	0.8	0.9	
	11-64UN	11-64UN	64	6.35	11	0.24	0.8	0.4	
	11-56UN	11-56UN	56	6.35	11	0.28	0.7	0.4	
	11-48UN	11-48UN	48	6.35	11	0.32	0.6	0.6	
	11-44UN	11-44UN	44	6.35	11	0.35	0.6	0.6	
	11-40UN	11-40UN	40	6.35	11	0.39	0.6	0.6	
	11-36UN	11-36UN	36	6.35	11	0.43	0.6	0.6	
	11-32UN	11-32UN	32	6.35	11	0.49	0.6	0.6	
	11-28UN	11-28UN	28	6.35	11	0.56	0.6	0.7	
	11-27UN	11-27UN	27	6.35	11	0.58	0.7	0.8	
	11-24UN	11-24UN	24	6.35	11	0.65	0.7	0.8	
	11-20UN	11-20UN	20	6.35	11	0.78	0.8	0.9	
	11-18UN	11-18UN	18	6.35	11	0.87	0.8	1.0	
11-16UN	11-16UN	16	6.35	11	0.97	0.9	1.1		
11-14UN	11-14UN	14	6.35	11	1.11	0.9	1.1		
16-64UN	16-64UN	64	9.525	16	0.24	0.8	0.4		
16-56UN	16-56UN	56	9.525	16	0.28	0.7	0.4		
16-48UN	16-48UN	48	9.525	16	0.32	0.6	0.6		
16-44UN	16-44UN	44	9.525	16	0.35	0.6	0.6		
16-40UN	16-40UN	40	9.525	16	0.39	0.6	0.6		
16-36UN	16-36UN	36	9.525	16	0.43	0.6	0.6		
16-32UN	16-32UN	32	9.525	16	0.49	0.6	0.6		
16-28UN	16-28UN	28	9.525	16	0.56	0.6	0.7		
16-27UN	16-27UN	27	9.525	16	0.58	0.7	0.8		
16-24UN	16-24UN	24	9.525	16	0.65	0.7	0.8		
16-20UN	16-20UN	20	9.525	16	0.78	0.8	0.9		
16-18UN	16-18UN	18	9.525	16	0.87	0.8	1.0		
16-16UN	16-16UN	16	9.525	16	0.97	0.9	1.1		
16-14UN	16-14UN	14	9.525	16	1.11	1.0	1.2		
16-13UN	16-13UN	13	9.525	16	1.20	1.0	1.3		
16-12UN	16-12UN	12	9.525	16	1.30	1.1	1.4		
16-11.5UN	16-11.5UN	11.5	9.525	16	1.35	1.1	1.5		
16-11UN	16-11UN	11	9.525	16	1.42	1.1	1.5		
16-10UN	16-10UN	10	9.525	16	1.56	1.1	1.5		
16-9UN	16-9UN	9	9.525	16	1.73	1.2	1.7		
16-8UN	16-8UN	8	9.525	16	1.95	1.2	1.5		
22-7UN	22-7UN	7	12.7	22	2.22	1.6	2.3		
22-6UN	22-6UN	6	12.7	22	2.60	1.6	2.3		
22-5UN	22-5UN	5	12.7	22	3.12	1.7	2.3		
27-4.5UN	27-4.5UN	4.5	15.875	27	3.46	1.9	2.4		
27-4UN	27-4UN	4	15.875	27	3.89	2.1	2.7		

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
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THREAD LINE  
TURN LINE



## American UN(UN,UNC,UNF,UNEF,UNS)(M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
Internal	<b>IRM</b> 11-20UN		20	6.35	11	0.73	0.8	0.9	
	11-18UN		18	6.35	11	0.81	0.8	1.0	
	16-24UN		24	9.525	16	0.61	0.8	0.8	
	16-20UN		20	9.525	16	0.73	0.8	0.9	
	16-18UN		18	9.525	16	0.81	0.8	1.0	
	16-16UN		16	9.525	16	0.92	0.9	1.1	
	16-14UN		14	9.525	16	1.05	1.2	1.5	
	16-12UN		12	9.525	16	1.22	1.2	1.5	
	16-10UN		10	9.525	16	1.47	1.2	1.5	
	16-8UN		8	9.525	16	1.83	1.3	1.7	

## American UN (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Tooth	Picture
				d	L	hmin	x	f		
Internal	<b>IR</b> 16-24UN 2M		24	9.525	16	0.61	1.1	1.7	2	
	16-20UN 3M		20	9.525	16	0.73	1.4	2.0	3	
	16-18UN 2M		18	9.525	16	0.81	1.5	2.2	2	
	16-16UN 2M		16	9.525	16	0.92	1.7	2.5	2	
	16-14UN 2M		14	9.525	16	1.05	1.9	2.8	2	
	16-12UN 2M		12	9.525	16	1.22	2.2	3.3	2	
	22-16UN 3M		16	12.7	22	0.92	2.6	4.1	3	
	22-14UN 2M		14	12.7	22	1.05	1.9	2.8	2	
	22-12UN 2M		12	12.7	22	1.22	2.2	3.3	2	
	22-12UN 3M		12	12.7	22	1.22	3.4	5.4	3	
	27-8UN 2M		8	15.875	27	1.83	3.1	4.9	2	

## American UN (U Style)

Type	Designation (Right+Left)	Pitch mm	Dimensions					Picture
			d	L	hmin	x	f	
Internal	<b>UI</b> 08-13UN	13	4.76U	8	1.20	1.0	4.0	
	08-12UN	12	4.76U	8	1.30	0.9	4.0	
	08-11UN	11	4.76U	8	1.42	0.9	4.0	
	11-11UN	11	6.35U	11	1.33	1.2	5.5	
	22-4.5UN	4.5	12.7U	22	3.26	2.4	11.0	
	22-4UN	4	12.7U	22	3.57	2.4	11.0	
	27-3UN	3	15.875U	27	4.89	2.7	13.7	
	33-2UN	2	19.05U	33	7.79	3.6	16.9	

## American UN (V Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture	
				d	L	hmin	x	f		T
Internal	<b>VIR</b> 27-4UN	<b>VIL</b> 27-4UN	4	15.875V	27	3.67	1.0	3.3	6.35	
	27-3UN	27-3UN	3	15.875V	27	4.89	1.8	5.2	8.70	

## Whitworth (BSW, BSF, BSP, BSB)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	<b>ER</b> 11-60W	<b>EL</b> 11-60W	60	6.35	11	0.27	0.7	0.4	
	11-56W	11-56W	56	6.35	11	0.29	0.7	0.4	
	11-48W	11-48W	48	6.35	11	0.34	0.6	0.6	
	11-40W	11-40W	40	6.35	11	0.41	0.6	0.6	
	11-36W	11-36W	36	6.35	11	0.45	0.6	0.6	
	11-32W	11-32W	32	6.35	11	0.51	0.6	0.6	
	11-28W	11-28W	28	6.35	11	0.58	0.6	0.7	
	11-26W	11-26W	26	6.35	11	0.63	0.7	0.8	
	11-24W	11-24W	24	6.35	11	0.68	0.7	0.8	
	11-22W	11-22W	22	6.35	11	0.74	0.8	0.9	
	11-20W	11-20W	20	6.35	11	0.81	0.8	0.9	
	11-19W	11-19W	19	6.35	11	0.86	0.8	1.0	
	11-18W	11-18W	18	6.35	11	0.90	0.8	1.0	
	11-16W	11-16W	16	6.35	11	1.02	0.9	1.1	
	11-14W	11-14W	14	6.35	11	1.16	1.0	1.2	
	16-60W	16-60W	60	9.525	16	0.27	0.7	0.4	
	16-56W	16-56W	56	9.525	16	0.29	0.7	0.4	
	16-48W	16-48W	48	9.525	16	0.34	0.6	0.6	
	16-40W	16-40W	40	9.525	16	0.41	0.6	0.6	
	16-36W	16-36W	36	9.525	16	0.45	0.6	0.6	
	16-32W	16-32W	32	9.525	16	0.51	0.6	0.6	
	16-30W	16-30W	30	9.525	16	0.55	0.6	0.7	
	16-28W	16-28W	28	9.525	16	0.58	0.6	0.7	
	16-26W	16-26W	26	9.525	16	0.63	0.7	0.8	
	16-24W	16-24W	24	9.525	16	0.68	0.7	0.8	
	16-22W	16-22W	22	9.525	16	0.74	0.8	0.9	
	16-20W	16-20W	20	9.525	16	0.81	0.8	0.9	
	16-19W	16-19W	19	9.525	16	0.86	0.8	1.0	
	16-18W	16-18W	18	9.525	16	0.90	0.8	1.0	
	16-16W	16-16W	16	9.525	16	1.02	0.9	1.1	
	16-14W	16-14W	14	9.525	16	1.16	1.0	1.2	
	16-12W	16-12W	12	9.525	16	1.36	1.1	1.4	
	16-11W	16-11W	11	9.525	16	1.48	1.1	1.5	
	16-10W	16-10W	10	9.525	16	1.63	1.1	1.5	
	16-9W	16-9W	9	9.525	16	1.81	1.2	1.7	
	16-8W	16-8W	8	9.525	16	2.03	1.2	1.5	
	22-7W	22-7W	7	12.7	22	3.32	1.6	2.3	
	22-6W	22-6W	6	12.7	22	2.71	1.6	2.3	
	22-5W	22-5W	5	12.7	22	3.25	1.7	2.4	
	27-4.5W	27-4.5W	4.5	15.875	27	3.61	1.8	2.6	
27-4W	27-4W	4	15.875	27	4.07	2.0	2.9		

## Whitworth (BSW, BSF, BSP, BSB)(M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	<b>ERM</b> 16-19W		19	9.525	16	0.86	0.8	1.0	
	16-18W		18	9.525	16	0.90	0.8	1.0	
	16-16W		16	9.525	16	1.02	0.9	1.1	
	16-14W		14	9.525	16	1.16	1.2	1.5	
	16-12W		12	9.525	16	1.36	1.2	1.5	
	16-11W		11	9.525	16	1.48	1.2	1.5	
	16-10W		10	9.525	16	1.63	1.1	1.5	

## Whitworth (U Style)

Type	Designation (Right+Left)	Pitch	Dimensions					Picture
		tpi	d	L	hmin	x	f	
External Internal	<b>UEI</b> 22-4.5W	4.5	12.7U	22	3.61	2.3	11.0	
	22-4W	4	12.7U	22	4.07	1.8	11.0	
	22-3.5W	3.5	12.7U	22	4.65	2.1	11.0	
	22-3.25W	3.25	12.7U	22	5.00	2.0	11.0	
	27-3.5W	3.5	15.875U	22	4.65	2.1	13.7	
	27-3.25W	3.25	15.875U	22	5.00	2.0	13.7	
	27-3W	3	15.875U	22	5.42	2.3	13.7	
	27-2.75W	2.75	15.875U	22	5.94	2.4	13.7	

## Whitworth (V Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions						Picture
			tpi	d	L	hmin	x	f	T	
External	<b>VER</b> 11-19W	<b>VEL</b> 11-19W	19	6.35V	11	0.86	0.69	2.3	3.20	
	11-14W	11-14W	14	6.35V	11	1.16	0.69	2.0	3.20	
	11-11W	11-11W	11	6.35V	11	1.48	0.69	1.7	3.20	
	16-20W	16-20W	20	9.525V	16	0.81	1.0	0.9	3.60	
	16-19W	16-19W	19	9.525V	16	0.86	1.1	2.7	3.60	
	16-18W	16-18W	18	9.525V	16	0.90	1.31	2.6	3.60	
	16-16W	16-16W	16	9.525V	16	1.02	1.1	2.6	3.60	
	16-14W	16-14W	14	9.525V	16	1.16	1.1	2.4	3.60	
	16-12W	16-12W	12	9.525V	16	1.36	1.1	2.2	3.60	
	16-11W	16-11W	11	9.525V	16	1.48	1.1	2.1	3.60	
	27-4W	27-4W	4	15.875V	27	4.07	1.0	3.3	6.35	
	27-3W	27-3W	3	15.875V	27	5.42	1.0	4.3	8.70	
	27-2.5W	27-2.5W	2.5	15.875V	27	6.51	1.0	5.2	10.2	



## Whitworth (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture	
				d	L	hmin	x	f		Tooth
External	ER 16-28W 2M		28	9.525	16	0.58	1.2	1.6	2	
	16-19W 2M		19	9.525	16	0.86	1.6	2.3	2	
	16-19W 3M		19	9.525	16	0.86	2.2	3.4	3	
	16-14W 2M		14	9.525	16	1.16	2.0	3.0	2	
	16-11W 2M		11	9.525	16	1.48	2.1	3.2	2	
	22-14W 2M		14	12.7	22	1.16	2.9	4.6	2	
	22-11W 2M		11	12.7	22	1.48	2.3	3.5	2	

## Whitworth (BSW, BSF, BSP, BSB)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
Internal	IR 06-26W	IL 06-26W	26	3.97	6	0.63	0.7	0.6	
	06-22W	06-22W	22	3.97	6	0.74	0.6	0.6	
	06-20W	06-20W	20	3.97	6	0.81	0.6	0.7	
	06-18W	06-18W	18	3.97	6	0.90	0.6	0.7	
	08-28W	08-28W	28	4.76	8	0.58	0.6	0.6	
	08-24W	08-24W	24	4.76	8	0.68	0.6	0.6	
	08-20W	08-20W	20	4.76	8	0.81	0.6	0.7	
	08-19W	08-19W	19	4.76	8	0.86	0.6	0.7	
	08-18W	08-18W	18	4.76	8	0.90	0.6	0.7	
	08-16W	08-16W	16	4.76	8	1.02	0.6	0.7	
	11-60W	11-60W	60	6.35	11	0.27	0.7	0.4	
	11-56W	11-56W	56	6.35	11	0.29	0.7	0.4	
	11-48W	11-48W	48	6.35	11	0.34	0.6	0.6	
	11-40W	11-40W	40	6.35	11	0.41	0.6	0.6	
	11-36W	11-36W	36	6.35	11	0.45	0.6	0.6	
	11-32W	11-32W	32	6.35	11	0.51	0.6	0.6	
	11-28W	11-28W	28	6.35	11	0.58	0.6	0.7	
	11-26W	11-26W	26	6.35	11	0.63	0.7	0.8	
	11-24W	11-24W	24	6.35	11	0.68	0.7	0.8	
	11-22W	11-22W	22	6.35	11	0.74	0.8	0.9	
	11-20W	11-20W	20	6.35	11	0.81	0.8	0.9	
	11-19W	11-19W	19	6.35	11	0.86	0.8	1.0	
	11-18W	11-18W	18	6.35	11	0.90	0.8	1.0	
	11-16W	11-16W	16	6.35	11	1.02	0.9	1.1	
	11-14W	11-14W	14	6.35	11	1.16	1.0	1.2	
	11-12W	11-12W	60	9.525	16	0.27	0.7	0.4	
	11-11W	11-11W	56	9.525	16	0.29	0.7	0.4	
	16-60W	16-60W	48	9.525	16	0.34	0.6	0.6	
	16-56W	16-56W	40	9.525	16	0.41	0.6	0.6	
	16-48W	16-48W	36	9.525	16	0.45	0.6	0.6	
	16-40W	16-40W	32	9.525	16	0.51	0.6	0.6	
	16-36W	16-36W	30	9.525	16	0.55	0.6	0.7	
	16-32W	16-32W	28	9.525	16	0.58	0.6	0.7	
	16-28W	16-28W	26	9.525	16	0.63	0.7	0.8	
	16-24W	16-24W	24	9.525	16	0.68	0.7	0.8	
	16-22W	16-22W	22	9.525	16	0.74	0.8	0.9	
	16-20W	16-20W	20	9.525	16	0.81	0.8	0.9	
	16-19W	16-19W	19	9.525	16	0.86	0.8	1.0	
	16-18W	16-18W	18	9.525	16	0.90	0.8	1.0	
	16-16W	16-16W	16	9.525	16	1.02	0.9	1.1	
	16-14W	16-14W	14	9.525	16	1.16	1.0	1.2	
	16-12W	16-12W	12	9.525	16	1.36	1.1	1.4	
	16-11W	16-11W	11	9.525	16	1.48	1.1	1.5	
	16-10W	16-10W	10	9.525	16	1.63	1.1	1.5	
	16-9W	16-9W	9	9.525	16	1.81	1.2	1.7	
	16-8W	16-8W	8	9.525	16	2.03	1.2	1.5	
	22-7W	22-7W	7	12.7	22	3.32	1.6	2.3	
22-6W	22-6W	6	12.7	22	2.71	1.6	2.3		
22-5W	22-5W	5	12.7	22	3.25	1.7	2.4		
27-4.5W	27-4.5W	4.5	15.875	27	3.61	1.8	2.6		
27-4W	27-4W	4	15.875	27	4.07	2.0	2.9		

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
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GROOVE LINE  
THREAD LINE  
TURN LINE

## Whitworth (M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
Internal	<b>IRM</b> 11-19W		19	6.35	11	0.86	0.9	1.1	
	11-14W		14	6.35	11	1.16	0.9	1.1	
	16-19W		19	9.525	16	0.86	0.8	1.0	
	16-18W		18	9.525	16	0.90	0.8	1.0	
	16-16W		16	9.525	16	1.02	0.9	1.1	
	16-14W		14	9.525	16	1.16	1.2	1.5	
	16-12W		12	9.525	16	1.36	1.2	1.5	
	16-11W		11	9.525	16	1.48	1.2	1.5	
	16-8W		8	9.525	16	2.03	1.2	1.5	

## Whitworth (U Style)

Type	Designation (Right+Left)	Pitch tpi	Dimensions					Picture
			d	L	hmin	x	f	
Internal	<b>UI</b> 08-14W	14	4.76U	8	1.16	1.0	4.0	
	08-12W	12	4.76U	8	1.36	0.9	4.0	
	08-11W	11	4.76U	8	1.48	0.9	4.0	

## Whitworth (V Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture	
				d	L	hmin	x	f		T
Internal	<b>VIR</b> 27-4W	<b>VIL</b> 27-4W	4	15.875V	27	4.07	1.0	3.3	6.35	
	27-3W	27-3W	3	15.875V	27	5.42	1.0	4.3	8.70	
	27-2.5W	27-2.5W	2.5	15.875V	27	6.51	1.0	5.2	10.2	

## Whitworth (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch mm	Dimensions					Picture	
				d	L	hmin	x	f		Tooth
Internal	<b>IR</b> 16-14W 2M		14	9.525	16	1.16	2.0	3.0	2	
	16-11W 2M		11	9.525	16	1.48	2.1	3.2	2	
	22-14W 3M		11	12.7	22	1.16	2.8	4.5	3	
	22-11W 2M		11	12.7	22	1.48	2.3	3.5	2	

## British Standard Pipe Thread (BSPT)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	<b>ER</b> 11-28BSPT	<b>EL</b> 11-28BSPT	28	6.35	11	0.58	0.6	0.6	
	11-19BSPT	11-19BSPT	19	6.35	11	0.86	0.8	0.9	
	11-14BSPT	11-14BSPT	14	6.35	11	1.16	0.9	1.0	
	16-28BSPT	16-28BSPT	28	9.525	16	0.58	0.6	0.6	
	16-19BSPT	16-19BSPT	19	9.525	16	0.86	0.8	0.9	
	16-14BSPT	16-14BSPT	14	9.525	16	1.16	1.0	1.2	
	16-11BSPT	16-11BSPT	11	9.525	16	1.48	1.1	1.5	
Internal	<b>IR</b> 06-28BSPT	<b>IL</b> 06-28BSPT	28	3.97	6	0.58	0.7	0.6	
	08-28BSPT	08-28BSPT	28	4.76	8	0.58	0.6	0.6	
	08-19BSPT	08-19BSPT	19	4.76	8	0.58	0.6	0.6	
	11-28BSPT	11-28BSPT	28	6.35	11	0.58	0.6	0.6	
	11-19BSPT	11-19BSPT	19	6.35	11	0.86	0.8	0.9	
	11-14BSPT	11-14BSPT	14	6.35	11	1.16	0.9	1.0	
	16-28BSPT	16-28BSPT	29	9.525	16	0.58	0.6	0.6	
	16-19BSPT	16-19BSPT	19	9.525	16	0.86	0.8	0.9	
	16-14BSPT	16-14BSPT	14	9.525	16	1.16	1.0	1.2	
	16-11BSPT	16-11BSPT	11	9.525	16	1.48	1.1	1.5	

## British Standard Pipe Thread (BSPT) (M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	<b>ERM</b> 16-28BSPT		28	9.525	16	0.58	0.7	0.8	
	16-19BSPT		19	9.525	16	0.86	0.8	1.0	
	16-14BSPT		14	9.525	16	1.16	1.2	1.5	
	16-11BSPT		11	9.525	16	1.48	1.2	1.5	
Internal	<b>IRM</b> 11-19BSPT		19	6.35	11	0.86	0.8	1.0	
	11-14BSPT		14	6.35	11	1.16	0.9	1.1	
	16-28BSPT		28	9.525	16	0.58	0.7	0.8	
	16-19BSPT		19	9.525	16	0.86	0.8	1.0	
	16-14BSPT		14	9.525	16	1.16	1.2	1.5	
	16-11BSPT		11	9.525	16	1.48	1.2	1.5	



## National Pipe Thread (NPT)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	ER 11-27NPT	EL 11-27NPT	27	6.35	11	0.66	0.7	0.8	
	11-18NPT	11-18NPT	18	6.35	11	1.01	0.8	1.0	
	11-14NPT	11-14NPT	14	6.35	11	1.33	0.8	1.0	
	16-27NPT	16-27NPT	27	9.525	16	0.66	0.7	0.8	
	16-18NPT	16-18NPT	18	9.525	16	1.01	0.8	1.0	
	16-14NPT	16-14NPT	14	9.525	16	1.33	0.9	1.2	
	16-11.5NPT	16-11.5NPT	11.5	9.525	16	1.64	1.1	1.5	
	16-8NPT	16-8NPT	8	9.525	16	2.42	1.3	1.8	
Internal	IR 06-27NPT	IL 06-27NPT	27	3.97	6	0.66	0.6	0.6	
	08-27NPT	08-27NPT	27	4.76	8	0.66	0.6	0.6	
	08-18NPT	08-18NPT	18	4.76	8	1.01	0.6	0.6	
	11-27NPT	11-27NPT	27	6.35	11	0.66	0.7	0.8	
	11-18NPT	11-18NPT	18	6.35	11	1.01	0.8	1.0	
	11-14NPT	11-14NPT	14	6.35	11	1.33	0.8	1.0	
	16-27NPT	16-27NPT	27	9.525	16	0.66	0.7	0.8	
	16-18NPT	16-18NPT	18	9.525	16	1.01	0.8	1.0	
	16-14NPT	16-14NPT	14	9.525	16	1.33	0.9	1.2	
	16-11.5NPT	16-11.5NPT	11.5	9.525	16	1.64	1.1	1.5	
16-8NPT	16-8NPT	8	9.525	16	2.42	1.3	1.8		

## National Pipe Thread (NPT) (M Chip Breaker)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	ERM 16-27NPT		27	9.525	16	0.66	0.7	0.8	
	16-18NPT		18	9.525	16	1.01	0.8	1.0	
	16-14NPT		14	9.525	16	1.33	1.2	1.5	
	16-11.5NPT		11.5	9.525	16	1.64	1.2	1.5	
	16-8NPT		8	9.525	16	2.42	1.3	1.5	
Internal	IRM 11-18NPT		18	6.35	11	1.01	0.8	1.0	
	16-27NPT		27	9.525	16	0.66	0.7	0.8	
	16-18NPT		18	9.525	16	1.01	0.8	1.0	
	16-14NPT		14	9.525	16	1.33	1.2	1.5	
	16-11.5NPT		11.5	9.525	16	1.64	1.2	1.5	
	16-8NPT		8	9.525	16	2.42	1.3	1.5	

## National Pipe Thread (V Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions						Picture
				d	L	hmin	x	f	T	
External	VER 11-27NPT	VEL 11-27NPT	27	6.35V	11	0.66	0.7	2.0	3.2	
	11-18NPT	11-18NPT	18	6.35V	11	1.01	0.7	1.8	3.2	
	11-14NPT	11-14NPT	14	6.35V	11	1.33	0.7	1.8	3.2	
	11-11.5NPT	11-11.5NPT	11.5	6.35V	11	1.64	0.7	2.1	3.2	
	16-27NPT	16-27NPT	27	9.525V	16	0.66	1.10	2.9	3.6	
	16-18NPT	16-18NPT	18	9.525V	16	1.01	1.10	2.6	3.6	
	16-14NPT	16-14NPT	14	9.525V	16	1.33	1.00	1.2	3.6	
	16-11.5NPT	16-11.5NPT	11.5	9.525V	16	1.64	1.10	2.1	3.6	

## National Pipe Thread (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions						Picture
				d	L	hmin	x	f	Tooth	
External	ER 16-18NPT 2M		18	9.525	16	1.01	1.4	2.1	2	
	16-11.5NPT 2M		11.5	9.525	16	1.64	2.0	3.2	2	
	16-14NPT 2M		14	9.525	16	1.33	2.0	3.0	2	
	22-11.5NPT 2M		11.5	12.7	22	1.64	2.2	3.4	2	
	27-11.5NPT 3M		11.5	15.875	27	1.64	3.5	5.6	3	
Internal	IR 27-8NPT 2M		8	15.875	27	2.42	3.1	4.9	2	
	16-18NPT 2M		18	9.525	16	1.01	1.4	2.1	2	
	16-11.5NPT 2M		11.5	9.525	16	1.64	2.0	3.2	2	
	16-14NPT 2M		14	9.525	16	1.33	2.0	3.0	2	
	22-11.5NPT 2M		11.5	12.7	22	1.64	2.2	3.4	2	
	27-11.5NPT 3M		11.5	15.875	27	1.64	3.5	5.6	3	
	27-8NPT 2M		8	15.875	27	2.42	3.1	4.9	2	

## Round DIN 405

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	ER 16-10RD	EL 16-10RD	10	9.525	16	1.27	1.1	1.2	
	16-8RD	16-8RD	8	9.525	16	1.59	1.4	1.3	
	16-6RD	16-6RD	6	9.525	16	2.12	1.5	1.7	
	22-6RD	22-6RD	6	12.7	22	2.12	1.5	1.7	
	22-4RD	22-4RD	4	12.7	22	3.18	2.2	2.3	
	27-4RD	27-4RD	4	15.785	27	3.18	2.2	2.3	
Internal	IR 16-10RD	IL 16-10RD	10	9.525	16	1.27	1.1	1.2	
	16-8RD	16-8RD	8	9.525	16	1.59	1.4	1.3	
	16-6RD	16-6RD	6	9.525	16	2.12	1.5	1.7	
	22-6RD	22-6RD	6	12.7	22	2.12	1.5	1.7	
	22-4RD	22-4RD	4	12.7	22	3.18	2.2	2.3	
	27-4RD	27-4RD	4	15.785	27	3.18	2.2	2.3	



# Thread Insert

## Round DIN 20400

Type	Designation (Right)	Designation (Left)	Pitch mm	Dimensions					Picture
				d	L	hmin	x	f	
External	ER 22-3.0RD 20400	EL 22-3.0RD 20400	3.0	12.7	22	1.65	1.3	1.7	
	22-4.0RD 20400	22-4.0RD 20400	4.0	12.7	22	2.20	1.6	2.2	
	22-5.0RD 20400	22-5.0RD 20400	5.0	12.7	22	2.75	1.4	1.7	
	22-6.0RD 20400	22-6.0RD 20400	6.0	12.7	22	3.30	1.7	2.1	
Internal	IR 22-3.0RD 20400	IL 22-3.0RD 20400	3.0	12.7	22	1.65	1.3	1.7	
	22-4.0RD 20400	22-4.0RD 20400	4.0	12.7	22	2.20	1.6	2.2	
	22-5.0RD 20400	22-5.0RD 20400	5.0	12.7	22	2.75	1.4	1.7	
	22-6.0RD 20400	22-6.0RD 20400	6.0	12.7	22	3.30	1.7	2.1	

## Round DIN 20400 ( U Style)

Type	Designation (Right+Left)	Pitch mm	Dimensions					Picture
			d	L	hmin	x	f	
Internal	UEI 27-8.0RD 20400	8.0	15.875U	27	4.40	3.0	13.7	
	27-10.0RD 20400	10.0	15.875U	27	5.50	3.4	13.7	

## Trapez DIN 103 (TR)

Type	Designation (Right)	Designation (Left)	Pitch mm	Dimensions					Picture
				d	L	hmin	x	f	
External	ER 11-1.5TR	EL 11-1.5TR	1.5	6.35	11	0.90	0.8	0.9	
	16-1.5TR	16-1.5TR	1.5	9.525	16	0.90	1.0	1.1	
	16-2.0TR	16-2.0TR	2.0	9.525	16	1.25	1.1	1.3	
	16-2.5TR	16-2.5TR	2.5	9.525	16	1.55	1.2	1.4	
	16-3.0TR	16-3.0TR	3.0	9.525	16	1.75	1.3	1.5	
	16-4.0TR	16-4.0TR	4.0	9.525	16	2.25	1.3	1.5	
	22-4.0TR	22-4.0TR	4.0	12.7	22	2.25	1.7	1.9	
	22-5.0TR	22-5.0TR	5.0	12.7	22	2.75	2.1	2.5	
	22-6.0TR	22-6.0TR	6.0	12.7	22	3.50	2.3	2.7	
	27-6.0TR	27-6.0TR	6.0	15.875	27	3.50	2.3	2.7	
Internal	IR 08-1.5TR	IL 08-1.5TR	1.5	4.76	8	0.85	0.6	0.6	
	11-1.5TR	11-1.5TR	1.5	6.35	11	0.90	0.8	0.9	
	16-1.5TR	16-1.5TR	1.5	9.525	16	0.90	1.0	1.1	
	16-2.0TR	16-2.0TR	2.0	9.525	16	1.25	1.1	1.3	
	16-2.5TR	16-2.5TR	2.5	9.525	16	1.53	1.2	1.4	
	16-3.0TR	16-3.0TR	3.0	9.525	16	1.75	1.3	1.5	
	16-4.0TR	16-4.0TR	4.0	9.525	16	2.25	1.5	1.5	
	22-4.0TR	22-4.0TR	4.0	12.7	22	2.25	1.7	1.9	
	22-5.0TR	22-5.0TR	5.0	12.7	22	2.75	2.1	2.5	
	22-6.0TR	22-6.0TR	6.0	12.7	22	3.50	2.3	2.7	
27-6.0TR	27-6.0TR	6.0	15.8	27	3.50	2.3	2.7		
27-7.0TR	27-7.0TR	7.0	15.875	27	4.00	2.7	3.2		

## Trapez DIN 103 (TR)

Type	Designation (Right+Left)	Pitch mm	Dimensions					Picture
			d	L	hmin	x	f	
External	UE 22-6.0TR	6.0	12.7U	22	3.5	2.0	11.0	
	22-7.0TR	7.0	12.7U	22	4.0	2.3	11.0	
	22-8.0TR	8.0	12.7U	22	4.5	2.6	11.0	
	27-8.0TR	8.0	12.7U	22	4.5	2.6	13.7	
	27-9.0TR	9.0	15.875U	27	5.0	3.0	13.7	
	27-10.0TR	10.0	15.875U	27	5.50	3.20	13.7	
Internal	UI 08-2.0TR	2.0	4.76U	8	1.25	0.9	4.0	
	16-4.0TR	4.0	9.525U	16	2.25	2.10	8.0	
	16-5.0TR	5.0	9.525U	16	2.76	1.56	8.0	
	22-6.0TR	6.0	12.7U	22	3.50	2.00	11.0	
	22-7.0TR	7.0	12.7U	22	4.00	2.30	11.0	
	22-7.0TR40	7.0	12.7U	22	4.00	2.60	11.0	
	22-8.0TR	8.0	12.7U	22	4.50	2.60	11.0	
	27-8.0TR	8.0	15.875U	27	4.50	2.60	13.7	
	27-9.0TR	9.0	15.875U	27	5.00	3.00	13.7	
	27-10.0TR	10.0	15.875U	27	5.50	3.20	13.7	
	33-12.0TR	12.0	19.05U	33	6.50	3.90	16.9	

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



## Trapez DIN 103 (V Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions						Picture
				d	L	hmin	x	f	T	
External	<b>VER</b> 22-2.0TR	<b>VEL</b> 22-2.0TR	2.0	12.7V	22	1.25	1.0	2.4	4.76	
	22-3.0TR	22-3.0TR	3.0	12.7V	22	1.75	1.0	2.4	4.76	
	22-4.0TR	22-4.0TR	4.0	12.7V	22	2.25	1.0	2.4	4.76	
	22-5.0TR	22-5.0TR	5.0	12.7V	22	2.75	1.0	2.4	4.76	
	22-6.0TR	22-6.0TR	6.0	12.7V	22	3.50	1.0	2.4	4.76	
	22-7.0TR	22-7.0TR	7.0	12.7V	22	4.00	1.0	3.3	6.00	
	27-2.0TR	27-2.0TR	2.0	15.875V	27	1.25	1.0	3.3	6.35	
	27-3.0TR	27-3.0TR	3.0	15.875V	27	1.75	1.0	3.3	6.35	
	27-4.0TR	27-4.0TR	4.0	15.875V	27	2.25	1.0	3.3	6.35	
	27-5.0TR	27-5.0TR	5.0	15.875V	27	2.75	1.0	3.3	6.35	
	27-6.0TR	27-6.0TR	6.0	15.875V	27	3.50	1.0	3.3	6.35	
	27-7.0TR	27-7.0TR	7.0	15.875V	27	4.00	1.0	3.3	6.35	
	27-8.0TR	27-8.0TR	8.0	15.875V	27	4.50	1.0	3.3	6.35	
	27-9.0TR	27-9.0TR	9.0	15.875V	27	5.00	1.0	4.3	8.70	
	27-10.0TR	27-10.0TR	10.0	15.875V	27	5.50	1.0	4.3	8.70	
	27-12.0TR	27-12.0TR	12.0	15.875V	27	6.50	1.0	4.3	8.70	
	27-14.0TR	27-14.0TR	14.0	15.875V	27	8.00	1.8	5.2	10.20	
	35-16.0TR	35-16.0TR	16.0	20.0V	35	5.38	1.0	6.0	12.00	
35-18.0TR	35-18.0TR	18.0	20.0V	35	5.38	1.0	6.5	15.00		
35-20.0TR	35-20.0TR	20.0	20.0V	35	7.38	1.0	7.5	15.00		
Internal	<b>VIR</b> 22-2.0TR	<b>VIL</b> 22-2.0TR	2.0	12.7V	22	1.25	1.0	2.4	4.76	
	22-3.0TR	22-3.0TR	3.0	12.7V	22	1.75	1.0	2.4	4.76	
	22-4.0TR	22-4.0TR	4.0	12.7V	22	2.25	1.0	2.4	4.76	
	22-5.0TR	22-5.0TR	5.0	12.7V	22	2.75	1.0	2.4	4.76	
	22-6.0TR	22-6.0TR	6.0	12.7V	22	3.50	1.0	2.4	4.76	
	22-7.0TR	22-7.0TR	7.0	12.7V	22	4.00	1.0	3.3	6.00	
	27-2.0TR	27-2.0TR	2.0	15.875V	27	1.25	1.0	3.3	6.35	
	27-3.0TR	27-3.0TR	3.0	15.875V	27	1.75	1.0	3.3	6.35	
	27-4.0TR	27-4.0TR	4.0	15.875V	27	2.25	1.0	3.3	6.35	
	27-5.0TR	27-5.0TR	5.0	15.875V	27	2.75	1.0	3.3	6.35	
	27-6.0TR	27-6.0TR	6.0	15.875V	27	3.50	1.0	3.3	6.35	
	27-7.0TR	27-7.0TR	7.0	15.875V	27	4.00	1.0	3.3	6.35	
	27-8.0TR	27-8.0TR	8.0	15.875V	27	4.50	1.0	3.3	6.35	
	27-9.0TR	27-9.0TR	9.0	15.875V	27	5.00	1.0	4.3	8.70	
	27-10.0TR	27-10.0TR	10.0	15.875V	27	5.50	1.0	4.3	8.70	
	27-12.0TR	27-12.0TR	12.0	15.875V	27	6.50	1.0	4.3	8.70	
	27-14.0TR	27-14.0TR	14.0	15.875V	27	8.00	1.8	5.2	10.20	
	35-16.0TR	35-16.0TR	16.0	20.0V	35	5.38	1.0	6.0	12.00	
35-18.0TR	35-18.0TR	18.0	20.0V	35	5.38	1.0	6.5	15.00		
35-20.0TR	35-20.0TR	20.0	20.0V	35	7.38	1.0	7.5	15.00		

## American ACME (ACME)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	<b>ER</b> 11-16ACME	<b>EL</b> 11-16ACME	16	6.35	11	0.92	1.0	1.1	
	16-16ACME	16-16ACME	16	9.525	16	0.92	1.0	1.1	
	16-14ACNE	16-14ACNE	14	9.525	16	1.03	1.0	1.2	
	16-12ACME	16-12ACME	12	9.525	16	1.19	1.1	1.2	
	16-10ACME	16-10ACME	10	9.525	16	1.52	1.3	1.4	
	16-8ACME	16-8ACME	8	9.525	16	1.84	1.4	1.5	
	16-6ACME	16-6ACME	6	9.525	16	2.37	1.7	1.9	
	22-6ACME	22-6ACME	6	12.7	22	2.37	1.8	2.1	
	22-5ACME	22-5ACME	5	12.7	22	2.79	2.0	2.3	
	22-4ACME	22-4ACME	4	12.7	27	3.43	2.1	2.2	
27-4ACME	27-4ACME	4	15.875	27	3.43	2.4	2.7		
Internal	<b>IR</b> 08-16ACME	<b>IL</b> 08-16ACME	16	4.76	8	0.92	0.6	0.6	
	11-16ACME	11-16ACME	16	6.35	11	0.92	0.9	0.9	
	16-16ACME	16-16ACME	16	9.525	16	0.92	1.0	1.1	
	16-14ACNE	16-14ACNE	14	9.525	16	1.03	1.1	1.2	
	16-12ACNE	16-12ACNE	12	9.525	16	1.19	1.2	1.3	
	16-10ACME	16-10ACME	10	9.525	16	1.52	1.2	1.3	
	16-8ACME	16-8ACME	8	9.525	16	1.84	1.4	1.5	
	16-6ACME	16-6ACME	6	9.525	16	2.37	1.7	1.9	
	22-6ACME	22-6ACME	6	12.7	22	2.37	1.8	2.1	
	22-5ACME	22-5ACME	5	12.7	22	2.79	2.0	2.3	
22-4ACME	22-4ACME	4	12.7	27	3.43	2.1	2.2		
27-4ACME	27-4ACME	4	15.875	27	3.43	2.3	2.6		

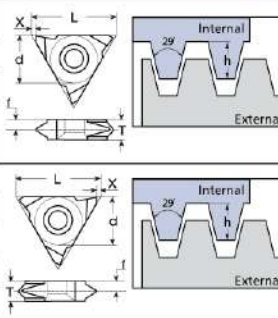
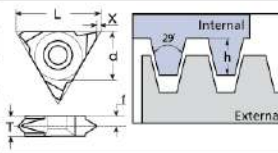
## American ACME (U Style)

Type	Designation (Right+Left)	Pitch tpi	Dimensions					Picture
			d	L	hmin	x	f	
External	<b>UE</b> 22-4ACME	4	12.7U	22	3.43	2.3	11.0	
	22-3ACME	3	12.7U	22	4.49	2.9	11.0	
	27-3ACME	3	15.875U	27	4.49	2.9	13.7	
	33-2ACME	2	19.05U	33	6.54	4.3	16.9	
Internal	<b>UI</b> 08-14ACME	14	4.76U	8	1.03	0.8	4.0	
	08-12ACME	12	4.76U	8	1.19	0.8	4.0	
	08-10ACME	10	4.76U	8	1.52	0.8	4.0	
	11-8ACME	8	6.35U	11	1.84	1.0	5.5	
	22-4ACME	4	12.7U	22	3.43	2.3	11.0	
	22-3ACME	3	12.7U	22	4.49	2.9	11.0	
	27-3ACME	3	15.875U	27	4.49	2.9	13.7	
33-2ACME	2	19.05U	33	6.54	4.3	16.9		

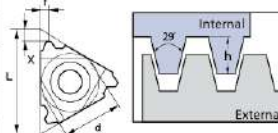
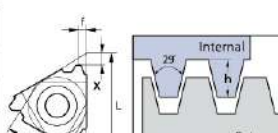


# Thread Insert

## American ACME (V Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions						Picture
				d	L	hmin	x	f	T	
External	<b>VER</b> 27-4ACME	<b>VEL</b> 27-4ACME	4.0	15.875V	27	3.43	1.0	3.3	6.35	
	27-3.5ACME	27-3.5ACME	3.5	15.875V	27	3.85	1.8	4.0	6.35	
	27-3ACME	27-3ACME	3	15.875V	27	4.49	1.8	4.6	6.35	
	27-2ACME	27-2ACME	2	15.875V	27	6.60	1.8	5.0	8.70	
Internal	<b>VIR</b> 27-4ACME	<b>VIL</b> 27-4ACME	4.0	15.875V	27	3.43	1.0	3.3	6.35	
	27-3.5ACME	27-3.5ACME	3.5	15.875V	27	3.85	1.8	4.0	6.35	
	27-3ACME	27-3ACME	3	15.875V	27	4.49	1.8	4.6	6.35	
	27-2ACME	27-2ACME	2	15.875V	27	6.60	1.8	5.0	8.70	

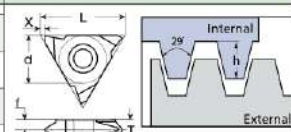
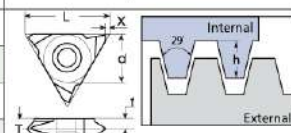
## Stub ACME (STACME)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions						Picture
				d	L	hmin	x	f	T	
External	<b>ER</b> 11-16STACME	<b>EL</b> 11-16STACME	16	6.35	11	0.60	1.0	1.0		
	16-16STACME	16-16STACME	16	9.525	16	0.60	1.0	1.0		
	16-14STACME	16-14STACME	14	9.525	16	0.67	1.1	1.1		
	16-12STACME	16-12STACME	12	9.525	16	0.76	1.2	1.2		
	16-10STACME	16-10STACME	10	9.525	16	1.02	1.2	1.3		
	16-8STACME	16-8STACME	8	9.525	16	1.21	1.4	1.5		
	16-6STACME	16-6STACME	6	9.525	16	1.52	1.7	1.8		
	22-6STACME	22-6STACME	6	12.7	22	1.52	1.7	1.8		
	22-5STACME	22-5STACME	5	12.7	22	1.78	2.1	2.3		
	22-4STACME	22-4STACME	4	12.7	22	2.16	2.3	2.3		
	27-4STACME	27-4STACME	4	15.875	27	2.16	2.3	2.4		
	27-3STACME	27-3STACME	3	15.875	27	2.79	2.9	2.9		
Internal	<b>IR</b> 08-16STACME	<b>IL</b> 08-16STACME	16	4.76	8	0.60	0.6	0.6		
	11-16STACME	11-16STACME	16	6.35	11	0.60	1.0	1.0		
	16-16STACME	16-16STACME	16	9.525	16	0.60	1.0	1.0		
	16-14STACME	16-14STACME	14	9.525	16	0.67	1.1	1.1		
	16-12STACME	16-12STACME	12	9.525	16	0.76	1.1	1.2		
	16-10STACME	16-10STACME	10	9.525	16	1.02	1.2	1.3		
	16-8STACME	16-8STACME	8	9.525	16	1.21	1.4	1.5		
	16-6STACME	16-6STACME	6	9.525	16	1.52	1.7	1.8		
	22-6STACME	22-6STACME	6	12.7	22	1.52	1.7	1.8		
	22-5STACME	22-5STACME	5	12.7	22	1.78	2.1	2.3		
	22-4STACME	22-4STACME	4	12.7	22	2.16	2.3	2.3		
	27-4STACME	27-4STACME	4	15.875	27	2.16	2.3	2.4		
27-3STACME	27-3STACME	3	15.875	27	2.79	2.9	2.9			

## Stub ACME (U Style)

Type	Designation (Right+Left)	Pitch tpi	Dimensions					Picture
			d	L	hmin	x	f	
External	<b>UE</b> 22-4STACME	4	12.7U	22	2.16	2.6	11.0	
	22-3STACME	3	12.7U	22	2.79	3.4	11.0	
	33-2STACME	2	19.05U	33	4.06	5.0	16.9	
Internal	<b>UI</b> 08-14STACME	14	4.76U	8	0.67	0.8	4.0	
	08-12STACME	12	4.76U	8	1.76	0.9	4.0	
	08-10STACME	10	4.76U	8	1.02	1.0	4.0	
	22-4STACME	4	12.7U	22	2.16	2.5	11.0	
	27-3STACME	3	12.7U	22	2.79	3.3	11.0	
	33-2SSTACME	2	19.05U	33	4.06	5.0	16.9	

## Stub ACME (V Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions						Picture
				d	L	hmin	x	f	T	
External	<b>VER</b> 27-4STACME	<b>VEL</b> 27-4STACME	4	15.875V	27	2.16	1.0	3.3	6.35	
	27-3STACME	27-3STACME	3	15.875V	27	2.79	1.8	4.6	6.35	
	27-2STACME	27-2STACME	2	15.875V	27	4.06	1.8	5.0	8.70	
Internal	<b>VIR</b> 27-4STACME	<b>VIL</b> 27-4STACME	4	15.875V	27	2.16	1.0	3.3	6.35	
	27-3STACME	27-3STACME	3	15.875V	27	2.79	1.8	4.6	6.35	
	27-2STACME	27-2STACME	2	15.875V	27	4.06	1.8	5.0	8.70	



## UNJ (Unified Constant Thread)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	ER 11-48UNJ	EL 11-48UNJ	48	6.35	11	0.31	0.6	0.5	
	11-44UNJ	11-44UNJ	44	6.35	11	0.33	0.6	0.6	
	11-40UNJ	11-40UNJ	40	6.35	11	0.37	0.6	0.6	
	11-36UNJ	11-36UNJ	36	6.35	11	0.41	0.6	0.6	
	11-32UNJ	11-32UNJ	32	6.35	11	0.46	0.6	0.7	
	11-28UNJ	11-28UNJ	28	6.35	11	0.52	0.7	0.7	
	11-24UNJ	11-24UNJ	24	6.35	11	0.61	0.7	0.8	
	11-20UNJ	11-20UNJ	20	6.35	11	0.73	0.8	0.9	
	11-18UNJ	11-18UNJ	18	6.35	11	0.81	0.8	1.0	
	11-16UNJ	11-16UNJ	16	6.35	11	0.92	0.9	1.1	
	11-14UNJ	11-14UNJ	14	6.35	11	1.05	1.0	1.2	
	16-48UNJ	16-48UNJ	48	9.525	16	0.31	0.6	0.5	
	16-44UNJ	16-44UNJ	44	9.525	16	0.33	0.6	0.6	
	16-40UNJ	16-40UNJ	40	9.525	16	0.37	0.6	0.6	
	16-36UNJ	16-36UNJ	36	9.525	16	0.41	0.6	0.6	
	16-32UNJ	16-32UNJ	32	9.525	16	0.46	0.6	0.7	
	16-28UNJ	16-28UNJ	28	9.525	16	0.52	0.7	0.7	
	16-24UNJ	16-24UNJ	24	9.525	16	0.61	0.7	0.8	
	16-20UNJ	16-20UNJ	20	9.525	16	0.73	0.8	0.9	
	16-18UNJ	16-18UNJ	18	9.525	16	0.81	0.8	1.0	
	16-16UNJ	16-16UNJ	16	9.525	16	0.92	0.9	1.1	
	16-14UNJ	16-14UNJ	14	9.525	16	1.05	1.0	1.2	
	16-13UNJ	16-13UNJ	13	9.525	16	1.13	1.0	1.3	
	16-12UNJ	16-12UNJ	12	9.525	16	1.22	1.1	1.3	
	16-11UNJ	16-11UNJ	11	9.525	16	1.33	1.2	1.5	
	16-10UNJ	16-10UNJ	10	9.525	16	1.47	1.2	1.5	
	16-9UNJ	16-9UNJ	9	9.525	16	1.63	1.3	1.7	
16-8UNJ	16-8UNJ	8	9.525	16	1.83	1.2	1.6		
22-7UNJ	22-7UNJ	7	12.7	22	2.09	1.7	2.3		
22-6UNJ	22-6UNJ	6	12.7	22	2.44	1.7	2.3		
22-5UNJ	22-5UNJ	5	12.7	22	2.93	1.8	2.5		
27-4.5UNJ	27-4.5UNJ	4.5	15.875	27	3.26	2.0	2.7		
27-4UNJ	27-4UNJ	4	15.875	27	3.67	2.2	3.0		

## UNJ (Unified Constant Thread)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
Internal	IR 11-48UNJ	IL 11-48UNJ	48	6.35	11	0.28	0.6	0.5	
	11-44UNJ	11-44UNJ	44	6.35	11	0.30	0.6	0.6	
	11-40UNJ	11-40UNJ	40	6.35	11	0.33	0.6	0.6	
	11-36UNJ	11-36UNJ	36	6.35	11	0.37	0.6	0.6	
	11-32UNJ	11-32UNJ	32	6.35	11	0.42	0.6	0.7	
	11-28UNJ	11-28UNJ	28	6.35	11	0.47	0.7	0.7	
	11-24UNJ	11-24UNJ	24	6.35	11	0.55	0.7	0.8	
	11-20UNJ	11-20UNJ	20	6.35	11	0.66	0.8	0.9	
	11-18UNJ	11-18UNJ	18	6.35	11	0.74	0.8	1.0	
	11-16UNJ	11-16UNJ	16	6.35	11	0.83	0.9	1.1	
	11-14UNJ	11-14UNJ	14	6.35	11	0.95	1.0	1.2	
	16-48UNJ	16-48UNJ	48	9.525	16	0.28	0.6	0.5	
	16-44UNJ	16-44UNJ	44	9.525	16	0.30	0.6	0.6	
	16-40UNJ	16-40UNJ	40	9.525	16	0.33	0.6	0.6	
	16-36UNJ	16-36UNJ	36	9.525	16	0.37	0.6	0.6	
	16-32UNJ	16-32UNJ	32	9.525	16	0.42	0.6	0.7	
	16-28UNJ	16-28UNJ	28	9.525	16	0.47	0.7	0.7	
	16-24UNJ	16-24UNJ	24	9.525	16	0.55	0.7	0.8	
	16-20UNJ	16-20UNJ	20	9.525	16	0.66	0.8	0.9	
	16-18UNJ	16-18UNJ	18	9.525	16	0.74	0.8	1.0	
	16-16UNJ	16-16UNJ	16	9.525	16	0.83	0.9	1.1	
	16-14UNJ	16-14UNJ	14	9.525	16	0.95	1.0	1.2	
	16-13UNJ	16-13UNJ	13	9.525	16	1.02	1.0	1.3	
	16-12UNJ	16-12UNJ	12	9.525	16	1.11	1.1	1.3	
	16-11UNJ	16-11UNJ	11	9.525	16	1.21	1.2	1.5	
	16-10UNJ	16-10UNJ	10	9.525	16	1.33	1.2	1.5	
	16-9UNJ	16-9UNJ	9	9.525	16	1.48	1.3	1.7	
16-8UNJ	16-8UNJ	8	9.525	16	1.66	1.2	1.6		
22-7UNJ	22-7UNJ	7	12.7	22	1.90	1.7	2.3		
22-6UNJ	22-6UNJ	6	12.7	22	2.21	1.7	2.3		
22-5UNJ	22-5UNJ	5	12.7	22	2.66	1.8	2.5		
27-4.5UNJ	27-4.5UNJ	4.5	15.875	27	2.95	2.0	2.7		
27-4UNJ	27-4UNJ	4	15.875	27	3.32	2.2	3.0		

## UNJ (M+ Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Tooth	Picture
			tpi	d	L	hmin	x	f		
External	ER 16-16UNJ 2M		16	9.525	16	0.92	1.6	2.4	2	
	22-16UNJ 2M		16	12.7	16	0.92	2.3	3.8	2	

## UNJ (U Style)

Type	Designation (Right+Left)	Pitch	Dimensions					Picture
		tpi	d	L	hmin	x	f	
External	UE 22-4.5UNJ	4.5	12.7U	22	3.26	2.1	11.0	
	22-4UNJ	4	12.7U	22	3.67	2.1	11.0	
Internal	UI 22-4.5UNJ	4.5	12.7U	22	3.26	2.1	11.0	
	22-4UNJ	4	12.7U	22	3.67	2.1	11.0	

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



# Thread Insert

## MJ

Type	Designation (Right)	Designation (Left)	Pitch mm	Dimensions					Picture
				d	L	hmin	x	f	
External	ER 11-1.00MJ	EL 11-1.00MJ	1.0	6.35	11	0.58	0.7	0.7	
	11-1.25MJ	11-1.25MJ	1.25	6.35	11	0.72	0.8	0.9	
	11-1.50MJ	11-1.50MJ	1.5	6.35	11	0.87	0.8	1.0	
	16-0.70MJ	16-0.70MJ	0.7	9.525	16	0.40	0.6	0.6	
	16-0.80MJ	16-0.80MJ	0.8	9.525	16	0.45	0.7	0.7	
	16-1.00MJ	16-1.00MJ	1.0	9.525	16	0.58	0.7	0.7	
	16-1.25MJ	16-1.25MJ	1.25	9.525	16	0.72	0.8	0.9	
	16-1.50MJ	16-1.50MJ	1.5	9.525	16	0.87	0.8	1.0	
	16-2.00MJ	16-2.00MJ	2.0	9.525	16	1.15	1.0	1.3	
	16-2.50MJ	16-2.50MJ	2.5	9.525	16	1.49	1.1	1.5	
16-3.00MJ	16-3.00MJ	3.0	9.525	16	1.73	1.2	1.6		
Internal	IR 11-1.00MJ	IL 11-1.00MJ	1.0	6.35	11	0.49	0.6	0.7	
	11-1.25MJ	11-1.25MJ	1.25	6.35	11	0.61	0.8	0.9	
	11-1.50MJ	11-1.50MJ	1.5	6.35	11	0.73	0.8	1.0	
	11-2.00MJ	11-2.00MJ	2.0	6.35	11	0.97	0.8	1.0	
	16-0.75MJ	16-0.75MJ	0.75	9.525	16	0.37	0.6	0.6	
	16-0.80MJ	16-0.80MJ	0.8	9.525	16	0.44	0.7	0.7	
	16-1.00MJ	16-1.00MJ	1.0	9.525	16	0.49	0.6	0.7	
	16-1.25MJ	16-1.25MJ	1.25	9.525	16	0.61	0.8	0.9	
	16-1.50MJ	16-1.50MJ	1.5	9.525	16	0.73	0.8	1.0	
	16-2.00MJ	16-2.00MJ	2.0	9.525	16	0.97	0.8	1.3	
16-2.50MJ	16-2.50MJ	2.5	9.525	16	1.23	1.1	1.5		
16-3.00MJ	16-3.00MJ	3.0	9.525	16	1.46	1.2	1.6		

## American Buttress (U Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	UER 22-4ABUT	UEL 22-4ABUT	4	12.7U	22	4.21	2.4	9.8	
	22-3ABUT	22-3ABUT	3	12.7U	22	5.61	3.1	12.1	
Internal	UIR 22-4ABUT	UIL 22-4ABUT	4	12.7U	22	4.21	2.4	9.8	
	22-3ABUT	22-3ABUT	3	12.7U	22	5.61	3.1	12.1	

## American Buttress (V Style)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions						Picture
				d	L	hmin	x	f	T	
External	VER 4ABUT	VEL 4ABUT	4	12.7V	22	4.21	0.6	1.8	6.35	
	3ABUT	3ABUT	3	12.7V	22	5.61	0.6	2.2	6.35	
	2.5ABUT	2.5ABUT	2.5	12.7V	22	6.73	0.6	2.7	8.70	
Internal	VIR 4ABUT	VIL 4ABUT	4	12.7V	22	4.21	0.6	1.8	6.35	
	3ABUT	3ABUT	3	12.7V	22	5.61	0.6	2.2	6.35	
	2.5ABUT	2.5ABUT	2.5	12.7V	22	6.73	0.6	2.7	8.70	

## American Buttress (ABUT)

Type	Designation (Right)	Designation (Left)	Pitch tpi	Dimensions					Picture
				d	L	hmin	x	f	
External	ER 11-20ABUT	EL 11-20ABUT	20	6.35	11	0.84	1.0	1.4	
	11-16ABUT	11-16ABUT	16	6.35	11	1.05	1.3	1.9	
	16-20ABUT	16-20ABUT	20	9.525	16	0.84	1.0	1.4	
	16-16ABUT	16-16ABUT	16	9.525	16	1.05	1.3	1.9	
	16-12ABUT	16-12ABUT	12	9.525	16	1.40	1.4	2.0	
	16-10ABUT	16-10ABUT	10	9.525	16	1.68	1.5	2.3	
	22-8ABUT	22-8ABUT	8	12.7	22	2.10	2.0	3.2	
	22-6ABUT	22-6ABUT	6	12.7	22	2.80	2.2	3.5	
Internal	IR 11-20ABUT	IL 11-20ABUT	20	6.35	11	0.84	1.0	1.4	
	11-16ABUT	11-16ABUT	16	6.35	11	1.05	1.3	1.9	
	16-20ABUT	16-20ABUT	20	9.525	16	0.84	1.0	1.4	
	16-16ABUT	16-16ABUT	16	9.525	16	1.05	1.3	1.9	
	16-12ABUT	16-12ABUT	12	9.525	16	1.40	1.4	2.0	
	16-10ABUT	16-10ABUT	10	9.525	16	1.68	1.5	2.3	
	22-8ABUT	22-8ABUT	8	12.7	22	2.10	2.0	3.2	
	22-6ABUT	22-6ABUT	6	12.7	22	2.80	2.2	3.5	



# Thread Insert

## British Buttress (BBUT)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			mm	d	L	hmin	x	f	
External	ER 16-16BBUT	EL 16-16BBUT	16	9.525	16	0.80	1.1	1.6	
	16-12BBUT	16-12BBUT	12	9.525	16	1.07	1.4	2.1	
	16-10BBUT	16-10BBUT	10	9.525	16	1.28	1.4	2.2	
	16-8BBUT	16-8BBUT	8	9.525	16	1.61	1.6	2.5	
	22-6BBUT	22-6BBUT	8	12.7	22	1.61	1.6	2.5	
Internal	IR 16-16BBUT	IL 16-16BBUT	16	9.525	16	0.80	1.1	1.6	
	16-12BBUT	16-12BBUT	12	9.525	16	1.07	1.4	2.1	
	16-10BBUT	16-10BBUT	10	9.525	16	1.28	1.4	2.2	
	16-8BBUT	16-8BBUT	8	9.525	16	1.61	1.6	2.5	
	22-6BBUT	22-6BBUT	8	12.7	22	1.61	1.6	2.5	

## Metric Buttress (SAGE)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			mm	d	L	hmin	x	f	
External	ER 16-2.0SAGE	EL 16-2.0SAGE	2.0	9.525	16	1.74	1.47	2.08	
	22-2.0SAGE	22-2.0SAGE	2.0	12.7	22	1.74	1.47	2.08	
	22-3.0SAGE	22-3.0SAGE	3.0	12.7	22	1.79	1.79	2.60	
	22-4.0SAGE	22-4.0SAGE	4.0	12.7	22	3.55	1.75	3.10	
	27-4.0SAGE	27-4.0SAGE	4.0	15.875	27	3.55	1.93	3.20	
Internal	IR 16-2.0SAGE	IL 16-2.0SAGE	2.0	9.525	16	1.50	1.52	2.2	
	22-3.0SAGE	22-3.0SAGE	3.0	12.7	22	2.25	1.66	2.9	
	22-4.0SAGE	22-4.0SAGE	4.0	12.7	22	3.09	2.03	3.25	
	27-4.0SAGE	27-4.0SAGE	4.0	5/8	27	3.09	2.12	3.2	

## Metric Buttress (U Style)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	UER 22-5.0SAGE	UEL 22-5.0SAGE	5.0	12.7U	22	4.41	1.27	10.35	
	22-6.0SAGE	22-6.0SAGE	6.0	12.7U	22	5.29	1.25	10.28	
Internal	UIR 22-5.0SAGE	UIL 22-5.0SAGE	5.0	12.7U	22	4.41	1.27	10.35	
	22-6.0SAGE	22-6.0SAGE	6.0	12.7U	22	5.29	1.25	10.28	

## API V-0.038R (full form) API spec 7-2

Type	Designation	size	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	ER 22-4API382	NC23-NC50	4	12.7	22	3.09	2.1	2.8	
	22-4API383	NC56-NC77	4	12.7	22	3.08	2.1	2.8	
	27-4API382	NC23-NC50	4	15.875	27	3.09	2.1	2.8	
	27-4API383	NC56-NC77	4	15.875	27	3.08	2.1	2.8	
Internal	IR 22-4API382	NC23-NC50	4	12.7	22	3.09	2.1	2.8	
	22-4API383	NC56-NC77	4	12.7	22	3.08	2.1	2.8	
	27-4API382	NC23-NC50	4	15.875	27	3.09	2.1	2.8	
	27-4API383	NC56-NC77	4	15.875	27	3.08	2.1	2.8	

## API V-0.040

Type	Designation	size	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	ER 22-5API403	2 3/8"-4 1/2"REG	5	12.7	22	2.99	1.8	2.6	
	27-5API403	2 3/8"-4 1/2"REG	5	15.875	27	2.99	1.9	2.7	
Internal	IR 22-5API403	2 3/8"-4 1/2"REG	5	12.7	22	2.99	1.8	2.6	
	27-5API403	2 3/8"-4 1/2"REG	5	15.875	27	2.99	1.9	2.7	

## API V-0.050

Type	Designation	size	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	ER 22-4API502	6 5/8"REG	4	12.7	22	3.75	2.0	2.9	
	22-4API503	5 1/2", 7 5/8" 8 5/8"REG	4	12.7	22	3.74	2.0	2.9	
	27-4API502	6 5/8"REG	4	15.875	27	3.75	2.1	3.1	
	27-4API503	5 1/2", 7 5/8" 8 5/8"REG	4	15.875	27	3.74	2.1	3.1	
Internal	IR 22-4API502	6 5/8"REG	4	12.7	22	3.75	2.1	3.1	
	22-4API503	5 1/2", 7 5/8" 8 5/8"REG	4	12.7	22	3.74	2.0	2.9	
	27-4API502	6 5/8"REG	4	15.875	27	3.75	2.1	3.1	
	27-4API503	5 1/2", 7 5/8" 8 5/8"REG	4	15.875	27	3.74	2.1	3.1	

# Thread Insert

## API V-0.055

Type	Designation	size	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	ER 22-6API551.5	NC10-NC16	6	12.7	22	1.41	2.6	2.0	
Internal	IR 16-6API551.5	NC10-NC13	6	9.525	16	1.41	2.0	1.7	
		22-6API551.5	NC10-NC16	6	12.7	22	1.41	2.6	

## API V-0.065

Type	Designation	size	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	ER 27-4API652	2 3/8"IF - 5 1/2"IF	4	15.875	27	2.81	2.3	2.8	
Internal	IR 27-4API652	2 3/8"IF - 5 1/2"IF	4	15.875	27	2.81	2.3	2.8	

## API Buttress Casing (BUT)

Type	Designation	size	Pitch	IPF	Dimensions					Picture
			tpi		d	L	hmin	x	f	
External	ER 22-5BUT75	22-5BUT75	5	0.75	12.7	22	1.55	3.1	1.9	
		22-5BUT1	5	1	12.7	22	1.55	3.1	1.9	
Internal	IR 22-5BUT75	22-5BUT75	5	0.75	12.7	22	1.55	3.1	1.9	
		22-5BUT1	5	1	12.7	22	1.55	3.1	1.9	

## API Round Casing & Tubing (APIRD)

Type	Designation (Right)	Designation (Left)	Pitch	Dimensions					Picture
			tpi	d	L	hmin	x	f	
External	ER 16-10APIRD		10	9.525	16	1.41	1.2	1.4	
	16-8APIRD		8	9.525	16	1.81	1.3	1.5	
	22-10APIRD		10	12.7	22	1.47	1.45	1.8	
	22-8APIRD		8	12.7	22	1.88	1.85	2.0	
Internal	IR 16-10APIRD		10	9.525	16	1.41	1.2	1.4	
	16-8APIRD		8	9.525	16	1.81	1.3	1.5	
	22-10APIRD		10	12.7	22	1.47	1.45	1.8	
	22-8APIRD		8	12.7	22	1.88	1.85	2.0	

## API Round Casing & Tubing (M+ Style)

Type	Designation (Right+Left)	Pitch	Dimensions					Picture
		tpi	d	L	hmin	x	f	
External	ER 22-10APIRD 2M	10	12.7	22	1.41	2.3	3.8	
	27-10APIRD 3M	10	15.875	27	1.41	2.3	3.8	
	27-8APIRD 2M	8	15.875	27	1.81	2.9	4.5	
Internal	IR 22-10APIRD 2M	10	12.7	22	1.41	2.3	3.7	
	27-10APIRD 3M	10	15.875	27	1.41	2.3	3.7	
	27-8APIRD 2M	8	15.875	27	1.81	2.9	4.5	

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



## Extreme Line Casing (EL)

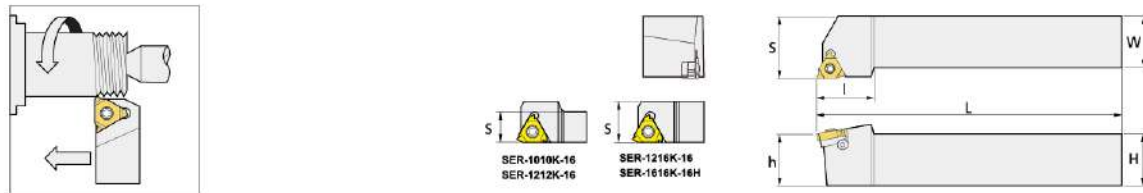
Type	Designation (Right)	Designation (Left)	TAPER	Dimensions					Picture	
			IPF	d	d	L	hmin	x		f
External	ER 22-6EL15		6	1.5	12.7	22	1.21	1.9	1.9	
	22-5EL125		5	1.25	12.7	22	1.71	2.3	2.4	
Internal	IR 22-6EL15		6	1.5	12.7	22	1.21	1.8	1.9	
	22-5EL125		5	1.25	12.7	22	1.71	2.2	2.4	

## PG

Type	Designation (Right)	Designation (Left)	Pitch	Thread	Dimensions					Picture
			tpi		d	L	hmin	x	f	
External	ER 11-20Pg	EL 11-20Pg	20	Pg7	6.35	11	0.61	0.8	0.9	
	11-18Pg	11-18Pg	18	Pg9/11/13.5/16	6.35	11	0.67	0.8	1.0	
	11-16Pg	11-16Pg	16	Pg21/29/36/42/48	6.35	11	0.76	0.9	1.1	
	16-20Pg	16-20Pg	20	Pg7	9.525	16	0.61	0.8	0.9	
	16-18Pg	16-18Pg	18	Pg9/11/13.5/16	9.525	16	0.67	0.8	1.0	
Internal	IR 11-20Pg	IL 11-20Pg	20	Pg7	6.35	11	0.61	0.8	0.9	
	11-18Pg	11-18Pg	18	Pg9/11/13.5/16	6.35	11	0.67	0.8	1.0	
	11-16Pg	11-16Pg	16	Pg21/29/36/42/48	6.35	11	0.76	0.9	1.1	
	16-20Pg	16-20Pg	20	Pg7	9.525	16	0.61	0.8	0.9	
	16-18Pg	16-18Pg	18	Pg9/11/13.5/16	9.525	16	0.67	0.8	1.0	
	16-20Pg	16-20Pg	16	Pg21/29/36/42/48	9.525	16	0.76	0.9	1.1	

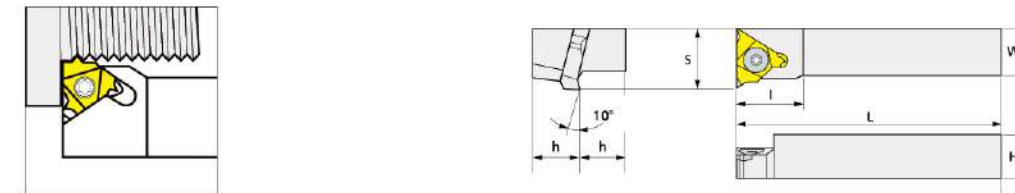
# External Holder

## SER/L



Designation	Stock		Dimensions(mm)						Application Insert	Spare parts			
	R	L	H	W	L	S	h	l		Shim	Screw	shim screw	Wrench
SER/L 0808-H11			8	8	100	11	8	17.5	11ER/L	X	M2.5X8	X	T-8
1010-F11	●	●	10	10	80	11	10	17.5					
1212-F11	●	●	12	12	80	12	12	17.5					
1212-F16	●	●	12	12	80	16	12	22					
1616-H16	●	●	16	16	100	20	16	20.5	16ER/L	STM16R STM16L	M3.5X12	M3X6N	T-15
2020-K16	●	●	20	20	125	25	20	30					
2525-M16	●	●	25	25	150	32	25	30					
3232-P16	●	●	32	32	170	40	32	30					
2525-M22	●	●	25	25	150	32	25	36	22ER/L	STM22R STM22L	M4.5x11.5	M4X6N	T-20
3232-P22	●	●	32	32	170	40	32	36					
4040-R22	●	●	40	40	200	50	40	36					
2525-M27	●	●	25	25	150	32	25	35					
3232-P27	●	●	32	32	170	40	32	40	27ER/L	STM27	M5X20	M4X6N	T-20
4040-R27			40	40	200	50	40	40					
5050-T27			50	50	300	60	50	40					

## SER/L-G



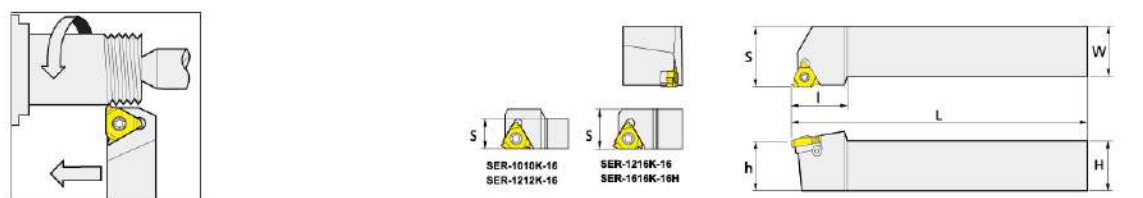
Designation	Stock		Dimensions(mm)						Application Insert	Spare parts			
	R	L	H	W	L	S	h	l		Shim	Screw	shim screw	Wrench
SER/L 0808-H11G			8	8	16	100	12	8	11ER/L	X	M2.5X8	X	T-8
1010-H11G			10	10	16	100	16	10					
1010-H16G	●	○	10	10	16	100	16	12					
1212-H16G	●	○	12	12	17.8	100	17.2	12					
1414-H16G			14	14	17.8	100	17.2	14	16ER/L	STM16R STM16L	M3.5X12	M3X6N	T-15
1616-H16G	●	○	16	16	23	100	20	16					
2020-K16G	●	○	20	20	23	100	25	20					

## CER/L-V



Designation	Stock		Dimensions(mm)					Application Insert	Spare parts			
	R	L	H	W	L	S	h		Clamp	Clamp Screw	Screw	Wrench
CER/L 1212-H16V	●	○	12	12	100	17	12	16VER/L	JTY16	JTS06	M3.5X9	T-15 HW30L
1616-H16V	●	○	16	16	100	20	16					
2020-K16V	●	○	20	20	125	25	20					
2525-M16V	●	○	25	25	150	30	25					
3232-P16V	●	○	32	32	170	40	32	22VER/L	JTY16	JTS06	M4.5x11.5	T-20 HW40L
2020-K22V	●	○	20	20	125	25	20					
2525-M22V	●	○	25	25	150	30	25					
3232-P22V	●	○	32	32	170	40	32					

## SER/L



Designation	Stock		Dimensions(mm)						Application Insert	Spare parts	
	R	L	H	W	L	S	h	l		Insert screw	Wrench
SER/L 1216-K16			12	16	125	16	12	-	16ER/EL	M3.5x9	T-15
1010-K16H			10	10	125	10	10	-			
1212-K16H			12	12	125	12	12	-			
1616-K16H			16	16	125	16	16	-			

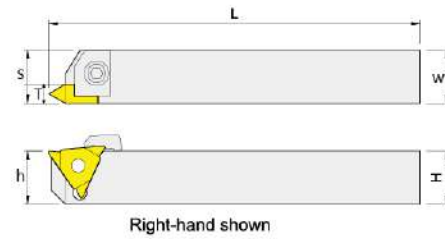
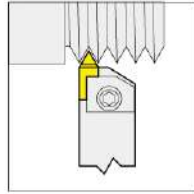
TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



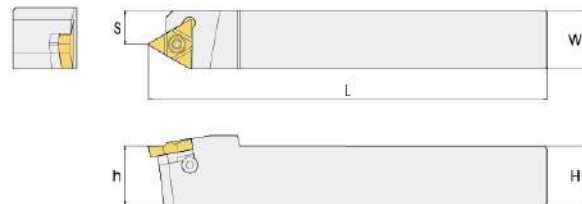
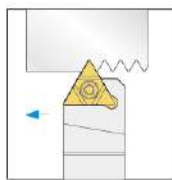
# External Holder

## MTR/L(CVER/L)



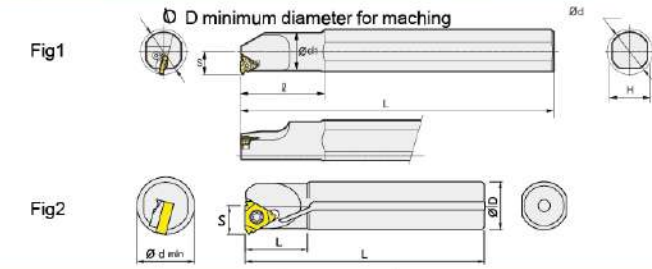
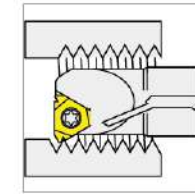
Designation	Stock		Dimensions(mm)						Application Insert	Spare parts				
	R	L	H	W	T	L	S	h		Clamp Bridge	Clamp screw	Spring	Wrench	Insert screw
MTR/L 2525-M22-6	●	○	25	25	6.35	150	32	25	22VER/VIR	YBG22	DSPM6	GTS06	HW40L T-20	M5.0x12
3232-P22-6	●	○	32	32	6.35	170	40	32						
2525-M27-6	●	○	25	25	6.35	150	32	25						
2525-M27-8	●	○	25	25	8.70	150	32	25						
3232-P27-6	●	○	32	32	6.35	170	40	32						
3232-P27-8	●	○	32	32	8.70	170	40	32						
2532-P27-10	●	○	25	32	10.20	170	40	25						
3232-P27-10	●	○	32	32	10.20	170	40	32						
4040-R27-6	●	○	40	40	6.35	200	50	40						
4040-R27-8	●	○	40	40	8.70	200	50	40						
4040-R27-10	●	○	40	40	10.20	200	50	40						
3232-R35-12	●	○	32	32	12.00	200	40	32	27VER/VIR	YBG22	DSPM6	GTS06	HW40L T-20	M6.0x18
3232-P27-10	●	○	32	32	10.20	170	40	32						
4040-R27-6	●	○	40	40	6.35	200	50	40						
4040-R27-8	●	○	40	40	8.70	200	50	40						
3232-R35-15	●	○	32	32	15.00	200	40	32	35VER/VIR	YBG22	DSPM6	GTS06	HW40L T-20	M6.0x18
4040-S35-12	●	○	40	40	12.00	250	50	40						
4040-S35-15	●	○	40	40	15.00	250	50	40						

## SER/L-U



Designation	Stock		Dimensions(mm)						Application Insert	Spare parts	
	R	L	H	W	I	L	S	h		Screw	Wrench
SER/L 2525-M22U	●		25	25	38	150	14	25	22UEI	M4.5x11.5	T-20
3232-P22U	●		32	32	38	170	21.5	32			
4040-R22U	●		40	40	38	200	29	40			
2525-M27U	●		25	25	40	150	14	25	27UEI	M5.0x12	T-20
3232-P27U	●		32	32	40	170	21.5	32			
4040-R27U	●		40	40	40	200	29	40			
5050-T27U	●		50	50	40	300	39	50			

## SNR/L

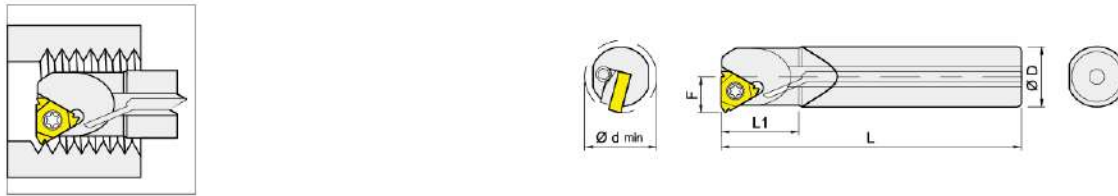


Designation	Stock		Dimensions(mm)						Application Insert	Spare parts				Flg.					
	R	L	dmin	d	d1	H	L	s		l	Shim	Screw	shim screw		Wrench				
SNR/L 0616-K06			8	16	6.0	15	125	4.0	18	06IR/L		M2.0x6		T-6					
0712-K08			10	12	7.0	11	125	4.0	18	08IR/L	X	M2.2x5	X	T-6					
0716-K08			10	16	7.0	15	125	5.0	18										
0008-K08	●	●	11	8	8.0	7	125	5.0	21										
0810-K08	●	●	11	10	8.0	9	125	5.0	24	11IR/L	X	M2.5x8	X	T-8					
0816-K11	●	●	13	16	8.0	15	125	5.0	24										
1016-K11	●	●	13	16	10.0	15	125	7.3	30										
0010-K11	●	●	13	10	10.0	9	125	7.3	30										
0012-K11	●	●	15	12	12.0	11	125	8.4	28	16IR/L	X	M3.5x9	X	T-15					
1216-K11	●	●	15	16	12.0	15	125	8.4	36										
0013-M16	●	●	17	16	12.7	15	150	10.3	32										
0016-Q16	●	●	20	16	16.0	15	180	11.5	40										
0020-Q16	●	●	24	20	20.0	18	180	13.4	40										
0025-R16	●	●	29	25	24.5	23	200	16.3	45										
0032-S16	●	●	36	32	32.0	29	250	19.6	50										
0040-T16	●	●	44	40	40.0	36	300	23.8	55										
0050-U16	●	●	56	50	50.0	48	350	28.7	60										
0020-Q22	●	●	27	20	20.0	18	180	14.9	40						16IR/L	STM16R STM16L	M3.5x12	M3x6N	T-15
0025-R22	●	●	32	25	24.6	23	200	18.1	45										
0032-S22	●	●	39	32	32.0	29	250	21.5	50										
0040-T22	●	●	47	40	40.0	36	300	25.8	55										
0050-U22	●	●	57	50	50.0	48	350	30.6	70										
0032-S27	●	●	40	32	32.0	29	250	22.4	60										
0040-T27	●	●	48	40	40.0	36	300	26.4	60										
0050-U27	●	●	58	50	50.0	45	350	31.4	75										
0020-Q22	●	●	27	20	20.0	18	180	14.9	40	22IR/L	STM22R STM22L	M4.5x16	M4x6N	T-20					
0025-R22	●	●	32	25	24.6	23	200	18.1	45										
0032-S22	●	●	39	32	32.0	29	250	21.5	50	27IR/L	STM27R STM27L	M5x20	M5x8N	T-20					
0040-T22	●	●	47	40	40.0	36	300	25.8	55										
0050-U22	●	●	57	50	50.0	48	350	30.6	70										

## Standard With Coolant Hole

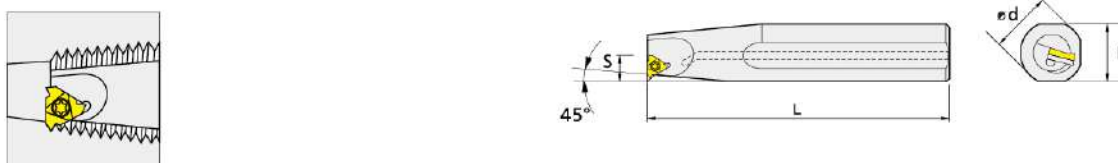
Designation	Stock		Dimensions(mm)						Application Insert	Spare parts				Flg.
	R	L	dmin	d	d1	H	L	s		l	Shim	Screw	shim screw	
SNR/L 0010-K11B			13	10	10.0	9	125	7.3	25	11IR/L	X	M2.5x8	X	T-8
0012-K11B			15	12	12.0	11	125	8.4	28					
0013-M16B			17	16	12.7	15	150	10.3	32					
0016-Q16B			20	16	16.0	15	180	11.5	40	16IR/L	X	M3.5x9	X	T-15
0020-Q16B			24	20	20.0	18	180	13.4	40					
0025-R16B			29	25	24.5	23	200	16.3	45					
0020-Q22B			27	20	20.0	18	180	14.9	40					
0025-R22B			32	25	24.6	23	200	18.1	45	22IR/L	STM22R STM22L	M4.5x11.5	M4.5x16	T-20

## SNR/L-C With Carbide Shank



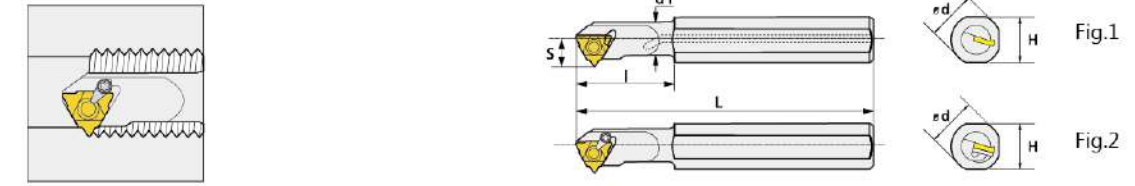
Designation	Stock		Dimensions(mm)							Application Insert	Spare parts			
	R	L	dmin	d	d1	H	L	s	I		Shim	Screw	shim screw	Wrench
SNR/L 0005-H06C			7	5	5	4.7	100	3.6	12	06IR/L	X	M2.0X5	X	T-6
0006-K06C			8	6	6	5.7	125	4.1	15					
0006-K08C			8	6	6	5.7	125	4.1	15	08IR/L	X	M2.2X5	X	T-6
0007-K08C			9	7	7	6.7	125	4.5	18					
0008-K08C			11	8	8	7.4	125	5.5	20	11IR/L	X	M2.5X8	X	T-8
0010-P11C			13	10	10	9.4	170	6.5	22					
0012-Q11C			16	12	12	11.4	180	8.0	26	16IR/L	X	M3.5X9	X	T-15
0014-Q16C			17	14	14	13.2	180	9.0	28					
0016-R16C			19	16	16	15.0	200	10.0	36	STM16R STM16L	M3.5X12	M3X6N	T-15	
0020-S16C			24	20	20	19.0	250	12.0	40					
0025-T16C			29	25	25	24.0	300	14.5	45					
0032-T16C			36	32	32	29.0	300	18.5	50					

## SNR/L for Oil & Gas



Designation	Stock		Thread form	Connection No or size	Dimensions(mm)				Helix Angle Deg.	Spare parts	
	R	L			d	H	L	S		Insert screw	Wrench
SNR/L 0025-S16-APIRD			8APIRD, 10APIRD	2.375"-20"; 1.315"-3.5"	25	29	250	14.5	1.0	M3.5x9	T-15
0032-S16-APIRD				2.375"-20"; 1.66"-3.5"	32	29	250	19.6	1.0		
0040-T16-APIRD				2.375"-20"; 1.9"-3.5"	40	36	300	22.0	1.0		
0040-T22-API			5BUT, V.038R, V.050, V.040, V.055	4-1/2"-20" NC10-NC77 all sizes	40	36	300	24.2	0.0	M4.5x11.5	T-20
0050-T27-V38			V.038R	NC23-NC38	50	45	300	22.6	1.5	M5.0x12	T-20
0080-V27-V50			V.050R	NC40-NC77	80	72	400	39.7	1.5		

## SNR/L-UB



Designation	Stock		Dimensions(mm)							Application Insert	Spare parts		Fig.
	R	L	dmin	d	d1	H	L	S	I		Insert screw	Wrench	
SNR/L 1020-K08UB			13	20	8.0	18	125	5.86	20	08UEI	M2.2X5	T-6	1
1020-K11UB			13	20	10.0	18	125	7.40	25	11UEI	M2.5X8	T-15	
1220-K11UB			15	20	12.0	18	125	7.40	30	22UI	M4.5x11.5	T-20	
0020-Q22UB			27	20	19.2	18	180	13.68	40				
0025-R22UB			32	25	24.6	23	200	17.63	45	27UI	M5X12	T-20	
0032-S22UB			39	32	29.7	29	250	18.76	50				
0032-S27UB			39	32	31.6	29	250	20.96	60				

## CNR/L-U

Designation	Stock		Dimensions(mm)							Application Insert	Spare parts					Fig.
	R	L	dmin	d	d1	H	L	s	I		Shim	Clamp	Screw	shim screw	Wrench	
CNR/L 0032-S22U			39	32	32.0	29	250	25.5	60	22UI	STM22UL STM22UR	CH6R3	CHX0621	CTS-6	HW30L	2
0040-T22U			47	40	40.0	36	300	29.5	60							
0040-T27U			48	40	40.0	36	300	29.4	60							
0050-U27U			58	50	50.0	45	350	34.4	75	27UI	STM27UL STM27UR	CH8R3	CHX0822	CTS-8	HW40L	
0060-V27U			69	60	60.0	54	400	39.3	75							

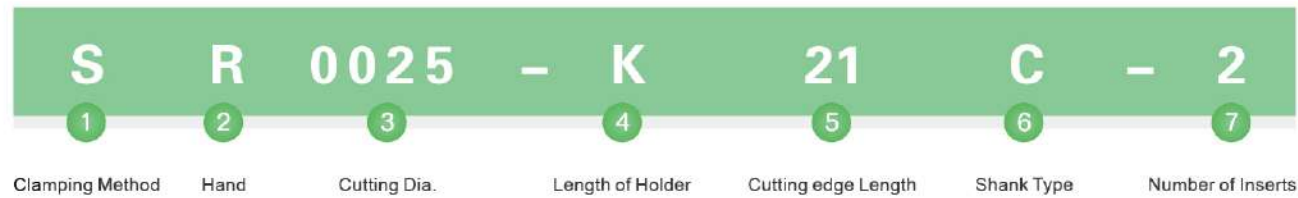


## CNR/L-V(CVNR/L)



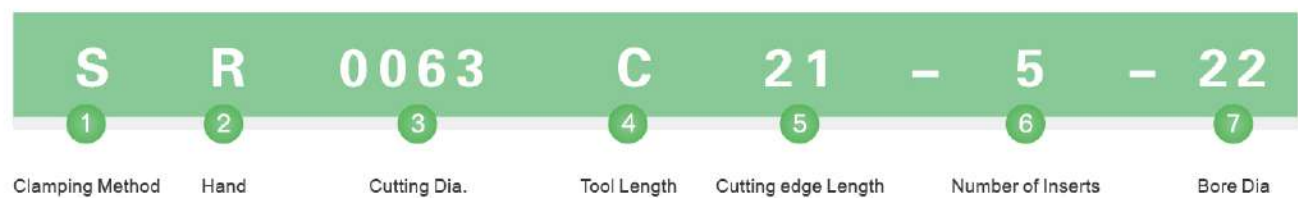
Designation	Stock		Dimensions(mm)							Application Insert	Spare parts			
	R	L	dmin	d	H	lmax	L	s	T		Clamp	Clamp Screw	screw	Wrench
CNR/L 0025-R22-6V	●	○	35	25	23	100	200	17.5	6.35	22VNR/L	JTY16	JTS06	M5.0x12	HW40L T-20
0032-S22-6V	●	○	41	32	29	128	250	22.5	6.35					
0032-S27-6V	●	○	41	32	29	128	250	22.5	6.35					
0032-S27-8V	●	○	41	32	29	128	250	22.5	8.70					
0032-S27-10V	●	○	41	32	29	128	250	22.5	6.35					
0040-T27-6V	●	○	50	40	36	160	300	28.4	8.70					
0040-T27-8V	●	○	50	40	36	160	300	28.4	10.20					
0040-T27-10V	●	○	50	40	36	160	300	28.4	10.20					
0050-U27-6V	●	○	60	50	48	200	350	33.4	6.35					
0050-U27-8V			60	50	48	200	350	33.4	8.70					
0050-U27-10V			60	50	48	200	350	33.4	10.20					
0040-U35-12V			50	40	36	160	350	28.4	12.00	35VER/VNR	JTY16	JTS06	M6.0x18	HW40L T-20
0040-U35-15V			50	40	36	160	350	28.4	15.00					
0050-U35-12V			60	50	48	200	350	33.4	12.00					
0050-U35-15V			60	50	48	200	350	33.4	15.00					

## Thread Milling Holders Code System



<b>1</b> Clamping Method <b>S R 0025 - K 21 C - 2</b> S: Screw only	<b>2</b> Hand <b>S R 0025 - K 21 C - 2</b> R: right hand L: left hand	<b>3</b> Cutting Diameter <b>S R 0025 - K 21 C - 2</b> 0025=25mm
<b>4</b> Length of Holder <b>S R 0025 - K 21 C - 2</b> F H J K M S R	<b>5</b> Cutting edge Length <b>S R 0025 - K 21 C - 2</b> 12 12.0mm 14 14.0mm 21 21.0mm 30 30.0mm 40 40.0mm	<b>6</b> Shank Type <b>S R 0025 - K 21 C - 2</b> Non: steel shank C: carbide shank
<b>7</b> Number of Insert <b>S R 0025 - K 21 C - 2</b> Non: 1 insert 2: 2 inserts		

## Thread Milling Cutters Code System



<b>1</b> Clamping Method <b>S R 0063 C 21 - 5 - 22</b> S: Screw only	<b>2</b> Hand <b>S R 0063 C 21 - 5 - 22</b> R: right hand L: left hand	<b>3</b> Cutting Diameter <b>S R 0063 C 21 - 5 - 22</b> 0063=63mm
<b>4</b> Tool Length <b>S R 0063 C 21 - 5 - 22</b> C D E	<b>5</b> Cutting edge Length <b>S R 0063 C 21 - 5 - 22</b> 12 12.0mm 14 14.0mm 21 21.0mm 30 30.0mm 40 40.0mm	<b>6</b> Number of Insert <b>S R 0063 C 21 - 5 - 22</b> 3: 3 Inserts 4: 4 Inserts 5: 5 Inserts
<b>7</b> Bore Diameter <b>S R 0063 C 21 - 5 - 22</b> 22=22.0mm 27=27.0mm 32=32.0mm		

## Thread Milling Inserts Code System



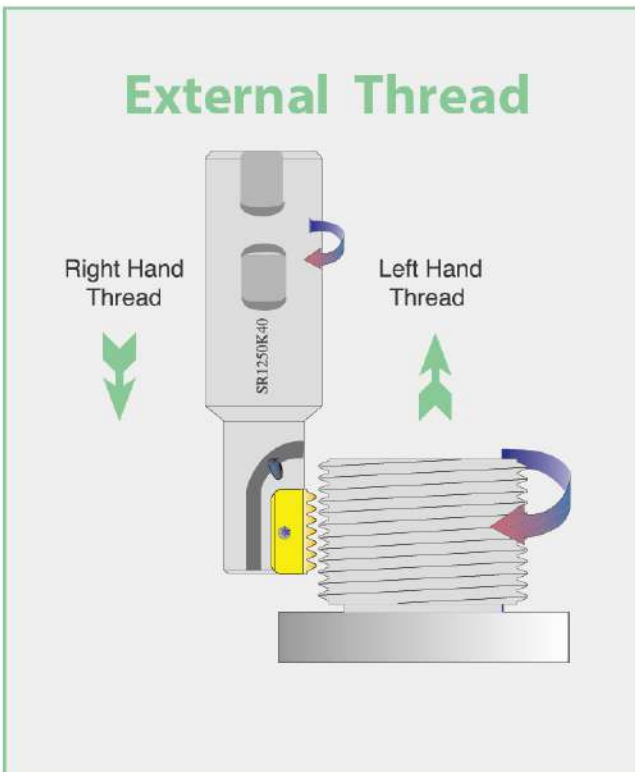
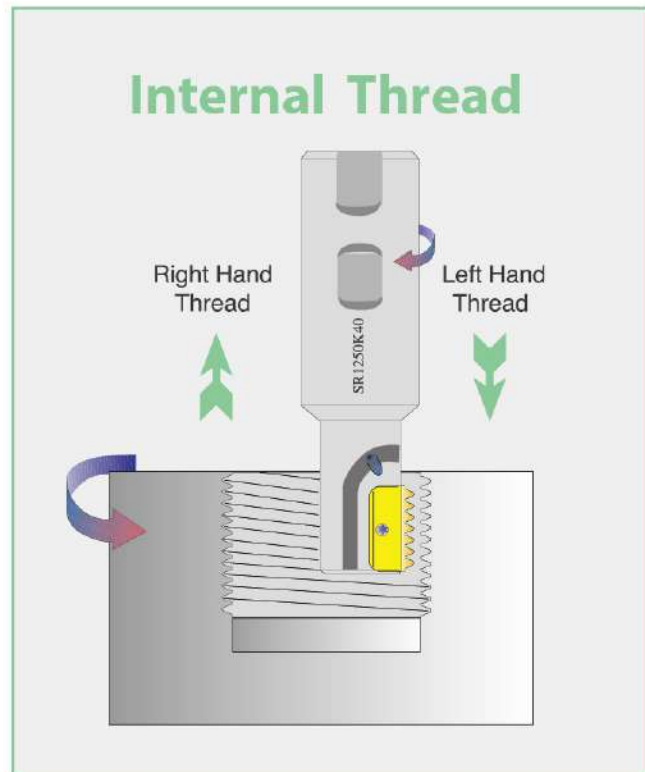
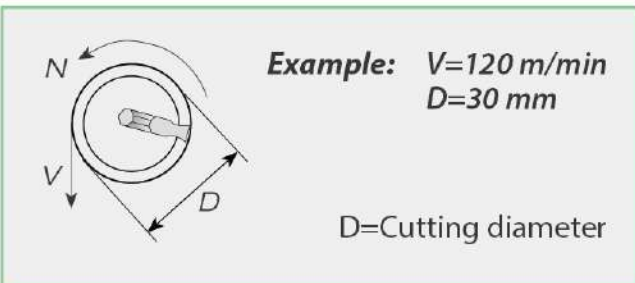
<b>1</b> Cutting edge Length <b>30 E 1.50 ISO TTIM45</b> 12 12.0mm 14 14.0mm 21 21.0mm 30 30.0mm 40 40.0mm	<b>2</b> Type of Insert <b>30 E 1.50 ISO TTIM45</b> E: External N: Internal EI: External & Interna	<b>3</b> Pitch <b>30 E 1.50 ISO TTIM45</b> mm: 0.5-6.0 TPI 48-6
<b>4</b> Standard <b>30 E 1.50 ISO TTIM45</b> ISO - ISO Metric UN - American UN (UNC, UNF, UNEF, UNS) W - Whit Worth (BSW, BSF, BSP, BSB) NPT - National Pipe Thread NPTF - National Pipe Thread BSPT - British Standard Pipe Thread (BSPT)	<b>5</b> Carbide Grades <b>30 E 1.50 ISO TTIM45</b> TTIM45B	



# Conversion of Cutting Speed to Rotational Speed

Conversion of selected cutting speed to rotational speed is calculated by the following formula:

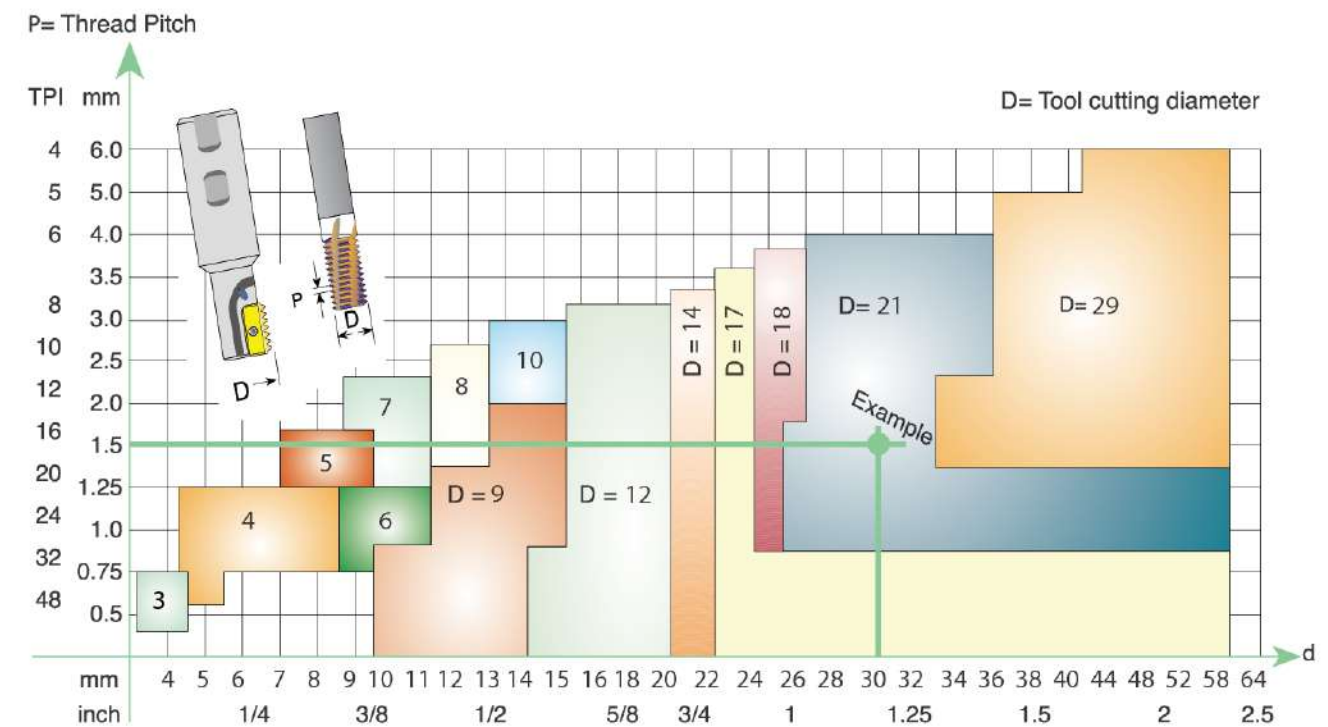
$$N = \frac{V \times 1000}{\pi \times D} = \frac{120 \times 1000}{3.14 \times 30} = 1274 \text{ RPM}$$



# Tool Selection

For indexable and solid carbide Mill Threads

The following chart provides a fairly accurate visual selection tool for Internal Threading. The chart is suitable for the following thread forms: ISO, UN, WHIT, NPT, NPTF, BSPT and PG.

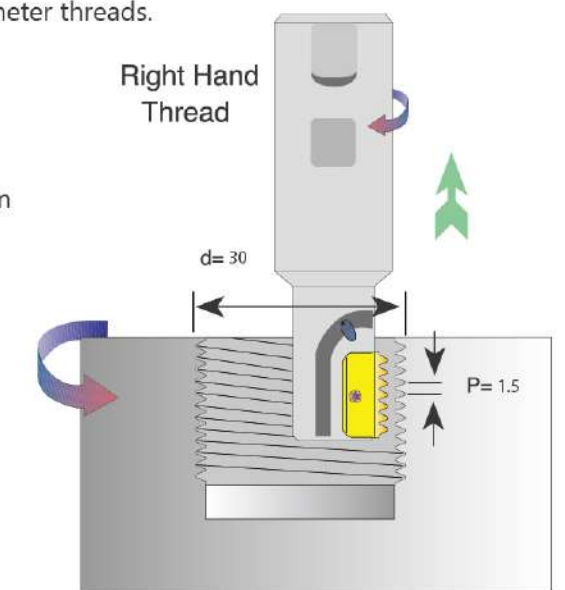


Any tool with a small cutting diameter can produce larger diameter threads.

**Example:** Internal thread M30 x 1.5:  
Find a Milling Tool to produce d=30 Internal right hand ISO thread with a thread pitch P=1.5 mm.  
As can be seen from the chart above, the two red lines intersect at a selected tool with a cutting diameter of D=21 mm

**Chosen toolholder:** SR0021 H21  
**Insert:** 21 N 1.5 ISO

If you need assistance, please call your local distributor and ask for help in selecting the appropriate tool as well as for a CNC program to suit your CNC milling machine.



## Recommended Select for Thread Milling

### TTIM45B

Sub-Micron Grade with Titanium Aluminum Nitride multi-layer coating (ISO P20-P30, K10 - K20). This is a general purpose grade, which can be used with all materials; it should be run at medium to high cutting speeds.

## Mill-Thread Insert Speed and Feed Selection

	Material	Hardness	Vc (m/min)	Feed Rate (mm)
<b>P</b> Steel	Low alloy steel (alloying elements < 5%)	< HB180	80-160	0.05-0.15
	High alloy steel (alloying elements > 5%), cast steel, and tool steel	HB180-280	60-100	
<b>M</b> Stainless steel	Stainless steel & Cast steel	< HB200	130-190	
<b>K</b> Cast iron	Cast iron Nodular (GGG)	HB160-260	80-100	
	Grey cast iron (GG)	Tensile Strength < 350Mpa	80-100	
	Malleable cast iron	HB130-230	100-120	
<b>N</b> Non-ferrous alloy	Aluminum alloy	< HB100	180-340	
	Copper and cooper alloy	< HB100	100-200	
	Non metallic	-	115-460	
<b>S</b> Heat resistant material	High Temperature. Alloys, Super Alloys	-	20-40	
	Titanium Alloy	-	25-90	
<b>H</b> Hardened material	Hardened steel	HRC45-55	20-45	

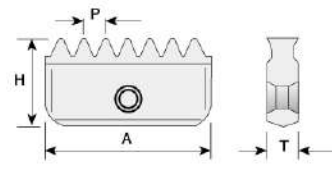
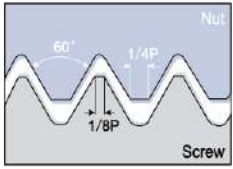
## Long Mill-Thread Insert Speed and Feed Selection

	Material	Hardness	Vc (m/min)	Feed Rate (mm)
<b>P</b> Steel	Low alloy steel (alloying elements < 5%)	< HB180	100-200	0.10-0.30
	High alloy steel (alloying elements > 5%), cast steel, and tool steel	HB180-280	70-170	0.10-0.30
<b>M</b> Stainless steel	Stainless steel & Cast steel	< HB200	90-140	0.10-0.30
<b>K</b> Cast iron	Cast iron Nodular (GGG)	HB160-260	100-120	0.05-0.30
	Grey cast iron (GG)	Tensile Strength < 350Mpa	80-100	0.05-0.30
	Malleable cast iron	HB130-230	80-100	0.05-0.30
<b>N</b> Non-ferrous alloy	Aluminum alloy	< HB100	80-400	0.10-0.40
	Copper and cooper alloy	< HB100	100-200	0.10-0.40
	Non metallic	-	100-250	0.10-0.40
<b>S</b> Heat resistant material	High Temperature. Alloys, Super Alloys	-	10-30	0.04-0.10
	Titanium Alloy	-	20-90	0.04-0.10
<b>H</b> Hardened material	Hardened steel	HRC45-55	15-40	0.06-0.12

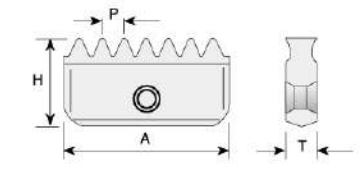
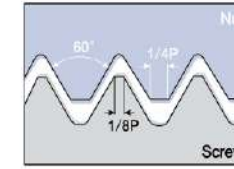


# Mill-Thread Insert

## ISO Metric



## American UN (UN, UNC, UNF, UNEF, UNS)



Pitch (mm)		Insert size = A				
		12	14	21	30	40
0.5	Ext.					
0.5	Int.	* 12N 0.50 ISO	14N 0.50 ISO			
0.75	Ext.		14E 0.75 ISO			
0.75	Int.	* 12N 0.75 ISO	14N 0.75 ISO			
1.0	Ext.		14E 1.00 ISO	21E 1.00 ISO		
1.0	Int.	* 12N 1.00 ISO	14N 1.00 ISO	21N 1.00 ISO		
1.25	Ext.		14E 1.25 ISO			
1.25	Int.	* 12N 1.25 ISO	14N 1.25 ISO	21N 1.25 ISO		
1.5	Ext.		14N 1.50 ISO	21E 1.50 ISO	30E 1.50 ISO	40E 1.50 ISO
1.5	Int.	* 12N 1.50ISO	14N 1.50 ISO	21N 1.50 ISO	30N 1.50 ISO	40N 1.50 ISO
1.75	Ext.		14E 1.75 ISO			
1.75	Int.		14N 1.75 ISO	21N 1.75 ISO		
2.0	Ext.		14E 2.00ISO	21E 2.00 ISO	30E 2.00 ISO	40E 2.00 ISO
2.0	Int.		14N 2.00ISO	21N 2.00 ISO	30N 2.00 ISO	40N 2.00 ISO
2.5	Ext.		14N 2.50 ISO	21E 2.50 ISO		
2.5	Int.		14N 2.50 ISO	21N 2.50 ISO		
3.0	Ext.			21E 3.00 ISO	30E 3.00 ISO	40E 3.00 ISO
3.0	Int.			21N 3.00 ISO	30N 3.00 ISO	40N 3.00 ISO
3.5	Ext.				30E 3.50 ISO	
3.5	Int.			21N 3.50 ISO	30N 3.50 ISO	40N 3.50 ISO
4.0	Ext.				30E 4.00 ISO	40E 4.00 ISO
4.0	Int.				30N 4.00 ISO	40N 4.00 ISO
4.5	Ext.					
4.5	Int.				30N 4.50 ISO	40N 4.50 ISO
5.0	Ext.					40E 5.00 ISO
5.0	Int.				30N 5.00 ISO	40N 5.00 ISO
5.5	Ext.					
5.5	Int.				30N 5.50 ISO	40N 5.50 ISO
6.0	Ext.					40E 6.00 ISO
6.0	Int.					40N 6.00 ISO
H		6.3	7.5	12.0	16.0	20.0
T		2.9	3.1	4.7	5.5	6.3

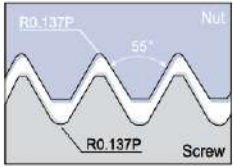
\* One cutting edge

Pitch (mm)		Insert size = A				
		12	14	21	30	40
32	Ext.		14E 32 UN			
32	Int.	* 12N 32 UN	14N 32 UN			
28	Ext.		14E 28 UN			
28	Int.	* 12N 28 UN	14N 28 UN			
27	Ext.					
27	Int.		14N 27 UN			
24	Ext.		14E 24 UN	21E 24 UN		
24	Int.	* 12N 24 UN	14N 24 UN	21N 24 UN		
20	Ext.		14E 20 UN	21E 20 UN	30E 20 UN	
20	Int.	* 12N 20 UN	14N 20 UN	21N 20 UN	30E 20 UN	
18	Ext.		14E 18 UN	21E 18 UN	30E 18 UN	
18	Int.	* 12N 18 UN	14N 18 UN	21N 18 UN	30N 18 UN	
16	Ext.		14E 16 UN	21E 16 UN	30E 16 UN	40E 16 UN
16	Int.	* 12N 16 UN	14N 16 UN	21N 16 UN	30N 16 UN	40N 16 UN
14	Ext.		14E 14 UN	21E 14 UN	30E 14 UN	40E 14 UN
14	Int.		14N 14 UN	21N 14 UN	30N 14 UN	40N 14 UN
13	Ext.		14E 13 UN			
13	Int.					
12	Ext.		14E 12 UN	21E 12 UN	30E 12 UN	40E 12 UN
12	Int.		14N 12 UN	21N 12 UN	30N 12 UN	40N 12 UN
11	Ext.		14E 11 UN	21E 11 UN		
11	Int.		14N 11 UN			
10	Ext.		* 14E 10 UN	21E 10 UN	30E 10 UN	40E 10 UN
10	Int.		14N 10 UN	21N 10 UN	30N 10 UN	40N 10 UN
9	Ext.					
9	Int.		** 14N 9 UN			
8	Ext.				30E 8 UN	40E 8 UN
8	Int.			21N 8 UN	30N 8 UN	40N 8 UN
7	Ext.					
7	Int.			21N 7 UN		
6	Ext.				30E 6 UN	40E 6 UN
6	Int.				30N 6 UN	40N 6 UN
5	Ext.					
5	Int.				30N 5 UN	
4.5	Ext.					
4.5	Int.					40N 4.5 UN
4	Ext.					
4	Int.					40N 4 UN
H		6.3	7.5	12.0	16.0	20.0
T		2.9	3.1	4.7	5.5	6.3

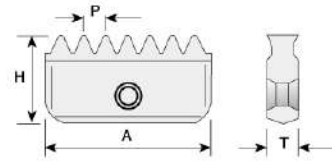
\* One cutting edge \*\* Cannot be used with carbide shank Toolholders.

# Mill-Thread Insert

## Whitworth (BSW, BSF, BSP, BSB)



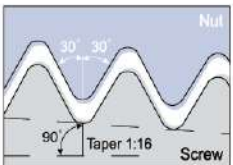
Same Insert for External and Internal thread.



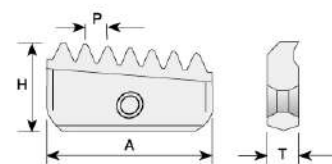
Pitch (TPI)	Insert size = A				
	12	14	21	30	40
24		14EI 24W			
20		14EI 20W	21EI 20W		
19	* 12EI 19 W	14EI 19W	21EI 19W		
18		14EI 18W			
16		14EI 16W	21EI 16W	30EI 16W	
14		14EI 14W	21EI 14W	30EI 14W	
12		14EI 12W			
11		* 14EI 11W	21EI 11W	30EI 11W	40EI 11W
10			21EI 10W		
8					40EI 8W
H	6.3	7.5	12.0	16.0	20.0
T	2.9	3.1	4.7	5.5	6.3

\* One cutting edge

## British Standard Pipe Thread (BSPT)

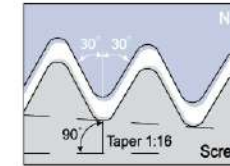


Conical pipe thread inserts are one-sided and may be used for both External and Internal threading.

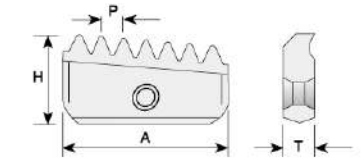


Pitch (TPI)	Insert size = A				
	12	14	21	30	40
19	12EI 19 BSPT	14EI 19 BSPT			
14		14EI 14 BSPT	21EI 14 BSPT		
11			21EI 11 BSPT	30EI 11 BSPT	40EI 11 BSPT
H	6.3	7.5	12.0	16.0	20.0
T	2.9	3.1	4.7	5.5	6.3

## National Pipe Thread (NPT)

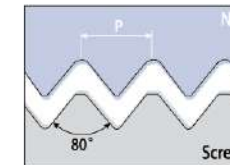


Conical pipe thread inserts are one-sided and may be used for both External and Internal threading.

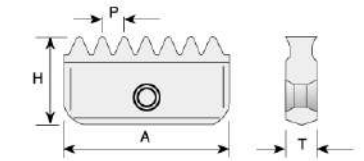


Pitch (TPI)	Insert size = A				
	12	14	21	30	40
18	12EI 18 NPT	14EI 18 NPT			
14		14EI 14 NPT	21EI 14 NPT		
11.5			21EI 11.5 NPT	30EI 11.5 NPT	40EI 11.5 NPT
8				30EI 8 NPT	40EI 8 NPT
H	6.3	7.5	12.0	16.0	20.0
T	2.9	3.1	4.7	5.5	6.3

## PG - DIN 40430



Conical pipe thread inserts are one-sided and may be used for both External and Internal threading.

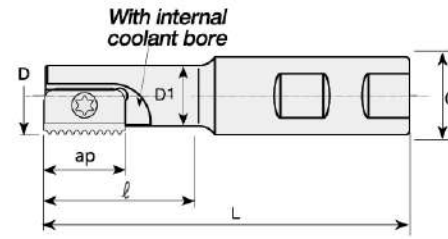


Pitch (TPI)	Insert size = A				
	12	14	21	30	40
18		14EI 18 PG (PG9, 11, 13.5, 16)	21EI 18 PG(PG16)		
16			21EI 16 PG (PG21, 29, 36, 42, 48)	30EI 16 PG(PG36, 42, 48)	
H	6.3	7.5	12.0	16.0	20.0
T	2.9	3.1	4.7	5.5	6.3



# Mill-Thread Holder

## Single Insert Toolholder

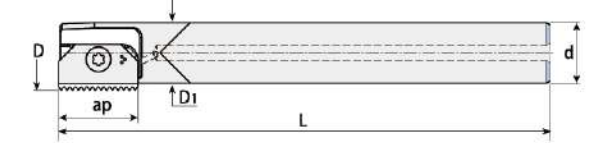


Designation	Stock		Dimensions(mm)						Application Insert	Spare parts	
	R	L	D	d	D1	L	l	ap		screw	Wrench
SR 0009-H12 <sup>(1)</sup>	●		9.5	20	7.5	85	14	12	12E/N	Y50-SSTX3-4.0P	TPF-08
0010-H12	●		9.9	20	7.6	85	16	12			
0012-F14	●		12.0	20	8.9	75	20	14			
0012-H14	●		12.0	20	8.9	100	30	14	14E/N	Y50-SSTX3-4.0P	TPF-10
0014-H14	●		14.5	20	11.2	85	25	14			
0017-H14	●		17.0	20	13.4	85	30	14			
0017-K14	●		17.0	20	13.4	120	40	14			
0018-H21(2)	●		18.0	20	14.4	85	30	21			
0018-K21(2)	●		18.0	20	14.4	120	45	21	21E/N	Y60-SSTX4-5.7P	TPF-15
0021-H21	●		21.0	20	16.5	94	40	21			
0029-J30	●		29.0	25	23.0	110	50	30	30E/N	Y50-SSTX5-7.0P	TPF-20
0048-M40	●		48.0	40	35.0	153	78	40	40E/N	Y50-SSTX5-7.0P	TPF-20

(1) Not for conical inserts: 12-18 NPT, 12-18 NPTF, 12-19 BSPT

(2) Cannot be used with the following inserts: 21 I 3.5 ISO, 21 I 8 UN, 21 I 7 UN, 21-11 BSPT, 21-11.5 NPT, 21-11.5 NPTF

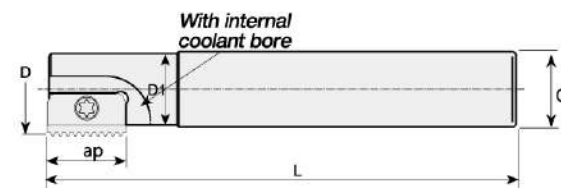
## Long Carbide Shank Toolholder



Designation	Stock		Dimensions(mm)						Application Insert	Spare parts	
	R	L	D	d	D1	L	l	ap		screw	Wrench
SR 0010-K12C	●		9.9	8	8.0	125	-	12	12E/N	Y50-SSTX3-4.0P	TPF-08
0013-H14C	●		13.2	10	10.0	110	-	14			
0013-J14C	●		13.2	10	10.0	155	-	14	14E/N	Y50-SSTX3-4.0P	TPF-08
0015-K14C	●		15.2	12	12.0	175	-	14			
0021-K21C	●		21.0	16	16.0	130	-	21			
0021-M21C	●		21.0	16	16.0	200	-	21	21E/N	Y60-SSTX4-5.7P	TPF-15
0027-S30C	●		27.0	20	20.0	250	-	30			
									30E/N	Y50-STX5-7.0P	TPF-20

For holders with long overhang reduce the cutting speed and feed rate between 20% to 40% (depends on workpiece material, pitch and overhang)

## Single Insert Toolholder

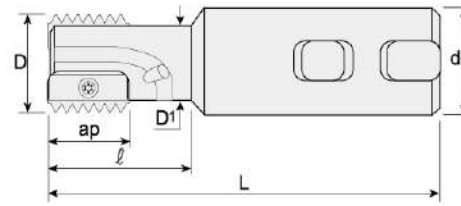


Designation	Stock		Dimensions(mm)						Application Insert	Spare parts	
	R	L	D	d	D1	L	l	ap		screw	Wrench
SR 0025-K21	●		25	20	20.7	125	-	21	21E/N	Y60-SSTX4-5.7P	TPF-15
0031-M30	●		31	25	24.5	150	-	30			
0031-Q30	●		31	25	24.5	180	-	30	30E/N	Y50-SSTX5-7.0P	TPF-20
0038-M30	●		38	32	31.5	150	-	30			
0038-Q40	●		38	32	31.5	180	-	40	40E/N	Y50-SSTX5-7.0P	TPF-20
0048-R40	●		48	40	36	210	-	40			

For holders with long overhang reduce the cutting speed and feed rate between 20% to 40% (depends on workpiece material, pitch and overhang)

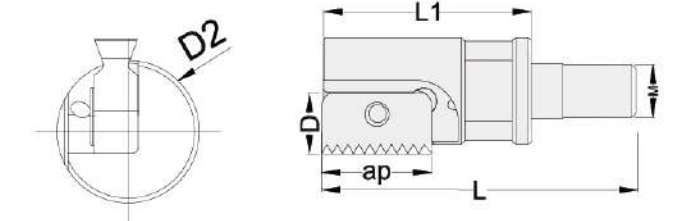
# Mill-Thread Holder

## Twin Insert Toolholder



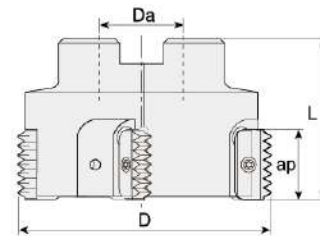
Designation	Stock		No. of Inserts	Dimensions(mm)					Application Insert	Spare parts		
	R	L		D	d	D1	L	l		ap	screw	Wrench
SR SR0020G14-2			2	20	20	16.0	93	37	14	14E/N	Y50-SSTX3-4.0P	TPF-8
SR0020J14-2			2	20	20	16.0	113	57	14			
SR0030J21-2			2	30	25	24.0	113	52	21	21E/N	Y60-SSTX4-5.7P	TPF-15
SR0030L21-2			2	30	25	24.0	140	80	21			
SR0040L30-2			2	40	32	30.0	135	70	30	30E/N	Y50-SSTX5-7.0P	TPF-20
SR0040P30-2			2	40	32	30.0	170	103	30			
SR0050M40-2			2	50	40	38.0	153	80	40	40E/N	Y50-SSTX5-7.0P	TPF-20

## Thread Milling Modular



Designation	Stock		No. of Inserts	Dimensions(mm)					Application Insert	Spare parts		
	R	L		D	D2	L1	L	ap		M	screw	Wrench
SR 0013D14-M06-1T			1	13.7	9.6	17	23.3	14	M6	14E/N	Y50-SSTX3-4.0P	TPF-08
0015D14-M08-1T			1	15.8	11.7	17	24.5	14	M8			
0020D14-M10-2T			2	20.0	15.3	18	29.3	14	M10			
0020D14-M10-3T			3	20.0	15.3	24	35.3	14	M10	21E/N	Y60-SSTX4-5.7P	TPF-15
0021D21-M10-1T			1	21.0	15.3	25	36.3	21	M10			
0025D21-M10-1T			1	25.0	19.7	40	60.0	21	M10			
0030D21-M16-2T			2	30.4	23.9	25	42.0	21	M16	30E/N	Y50-SSTX5-7.0P	TPF-20
0030D21-M16-3T			3	30.4	23.9	34	51.0	21	M16			
0027D30-M12-1T			1	27.0	18.3	38.2	52.0	30	M12			

## Multi Inserts Thread Milling Cutter



Designation	Stock		No. of Inserts	Dimensions(mm)				Arbor	Application Insert	Spare parts	
	R	L		D	d	H	ap			screw	Wrench
SR 0050C21-4-22	●		4	50	22	50	21	A	21E/N	Y60-SSTX4-5.7P	TPF-15
0063C21-5-22	●		5	63	22	50	21	A			
0063C30-4-22	●		4	63	22	50	30	A	30E/N	Y50-SSTX5-7.0P	TPF-20
0080D30-4-27	●		4	80	27	55	30	A			
0100D30-4-32	●		4	100	32	60	30	B			
0100D30-8-32	●		8	100	32	60	30	B	40E/N	Y50-SSTX5-7.0P	TPF-20
0080D40-4-27	●		4	80	27	65	40	A			
0100E40-4-32	●		4	100	32	70	40	B			
0100E40-6-32	●		6	100	32	70	40	B			



# Super Fast Mill-Thread Insert

## ISO Metric

Designation(External)	Designation(Internal)	Pitch(mm)	Dimensions(mm)		Teeth Zt	Picture
			L	Le		
<b>H25E</b> 1.00ISO SM	<b>H25N</b> 1.00ISO SM	1.0	25	24.00	24	
1.25ISO SM	1.25ISO SM	1.25	25	23.75	19	
1.50ISO SM	1.50ISO SM	1.5	25	24.00	16	
2.00ISO SM	2.00ISO SM	2.0	25	24.00	12	
2.50ISO SM	2.50ISO SM	2.5	25	25.00	10	
3.00ISO SM	3.00ISO SM	3.0	25	24.00	8	

## National Pipe Thread (NPT)

Designation(External+Internal)	Pitch(TPI)	Dimensions(mm)		Teeth Zt	Picture
		L	Le		
<b>H25EI</b> 14 NPT SM	14	25	23.58	13	
11.5NPT SM	11.5	25	24.30	11	
8 NPT SM	8	25	22.22	7	

## American UN (UN, UN, UNF, UNEF, UNS)

Designation(External)	Designation(Internal)	Pitch(TPI)	Dimensions(mm)		Teeth Zt	Picture
			L	Le		
<b>H25E</b> 20UN SM	<b>H25N</b> 20UN SM	20	25	24.13	19	
18UN SM	18UN SM	18	25	23.99	17	
16UN SM	16UN SM	16	25	23.81	15	
14UN SM	14UN SM	14	25	23.58	13	
12UN SM	12UN SM	12	25	23.28	11	
10UN SM	10UN SM	10	25	22.86	9	
9 UN SM	9 UN SM	9	25	22.58	8	
8 UN SM	8 UN SM	8	25	22.22	7	

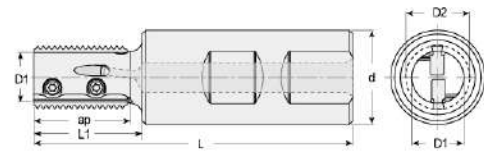
## British Standard Pipe Thread (BSPT)

Designation(External+Internal)	Pitch(TPI)	Dimensions(mm)		Teeth Zt	Picture
		L	Le		
<b>H25EI</b> 14BSPT SM	14	25	24.06	13	
11BSPT SM	11	25	23.09	10	

## Whitworth (BSW, BSF, BSP, BSB)

Designation(External+Internal)	Pitch(TPI)	Dimensions(mm)		Teeth Zt	Picture
		L	Le		
<b>H25EI</b> 16W SM	16	25	23.81	15	
14W SM	14	25	23.58	13	
12W SM	12	25	23.28	11	
11W SM	11	25	23.09	10	

## SM Standard Toolholder

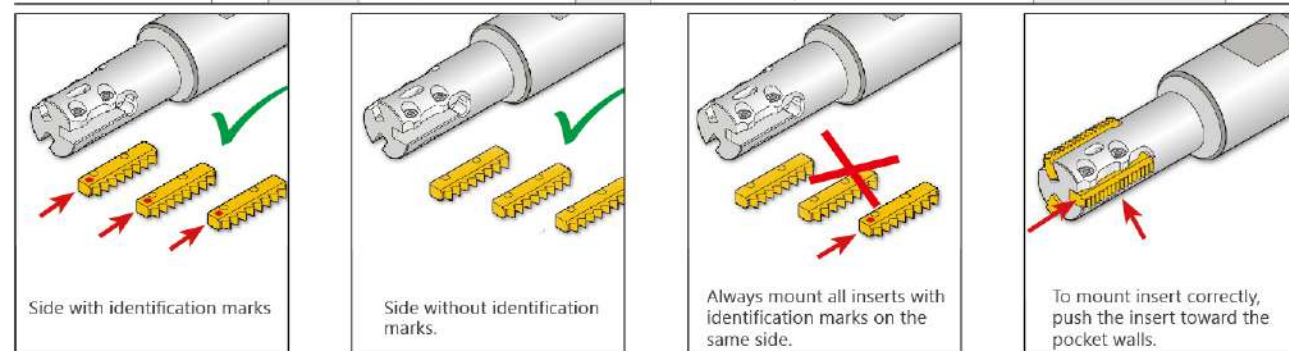


Designation	Stock		No. of Inserts	Dimensions(mm)						Spare parts	
	R	L		D1	D2	d	L1	L	ap	screw	Wrench
<b>HSMC25</b> 17-A25-26T2 <sup>(1)</sup> 17-A25-36T2 <sup>(1)</sup> 19-A25-32T2 19-A25-44T2 21-A25-37T3 21-A25-44T3 22-A25-43T3 22-A25-55T3 30-A25-55T5 30-A25-80T4			2	14.0	17.0	25	26	85	25	SSTM4-3.6P	TT-08P
			2	14.0	17.0	25	36	95	25		
			2	15.0	19.0	25	32	92	25		
			2	15.0	19.0	25	44	104	25		
			3	16.5	20.5	25	37	96	25		
			3	16.5	20.5	25	44	103	25		
			3	18.0	22.0	25	43	102	25		
			3	18.0	22.0	25	55	114	25		
			5	26.0	30.0	25	55	115	25		
			4	26.0	30.0	25	80	140	25		

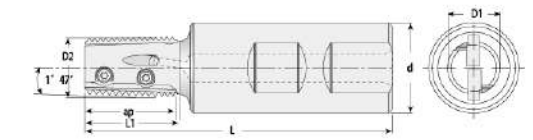
(1) Inserts with a thread pitch of  $\geq 3$  mm or  $\geq 8$  TPI are not mountable

## Standard Thread Application by Toolholder

Toolholder	Min.Thread Dia.						
	D2 (mm)	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
<b>HSMC25</b> 17-A25-26T2 17-A25-36T2	17.0	M20x2.5	"M19x1; M19x1.5; M20x2"	-	7/8 -10UNS; 13/16 -12UN; 7/8 -14UNF; 3/4 -16UNF; 3/4 -18UNS; 3/4 -20UNEF	"7/8 -11; 7/8 -12; 7/8 -14; 7/8 -16"	1/2 -14
19-A25-32T2 19-A25-44T2	19.0	M22x2.5 M24x3	"M21x1; M21x1.5; M22x2"	"7/8 -9; 1-8"	"7/8 -20UNEF; 7/8 -18UNS; 7/8 -16UN; 7/8 -14UNF; 7/8 -12UN; 7/8 -10UNS"	"7/8 -16; 7/8 -14; 15/16 -12; 15/16 -11"	5/8 -14
21-A25-37T3 21-A25-44T3	20.5	M24x3	"M22x1; M23x1.5; M23x2; M23.5x2.5"	1-8	"15/16 -9UN; 1-10UNS; 15/16 -12UN; 1-14UNS; 15/16 -16UN; 7/8 -18UNS; 7/8 -20UNEF"	"1-11; 1-12; 1-14; 1-16"	5/8 -14
22-A25-43T3 22-A25-55T3	22.0	M27x3	"M24x1; M24x1.5; M25x2; M25x2.5"	-	"1 11/16 -8UN; 1-9UN; 1-10UNS; 1-12UNF; 1-14UNS; 1-16UN; 1-18UN; 15/16 -20UNEF"	"1-11; 1-12; 1-14; 1-16"	3/4 -14
30-A25-55T5 30-A25-80T4	30.0	-	"M32x1; M32x1.5; M33x2; M33x2.5; M34x3"	-	"1 3/8 -8UN; 1 3/8 -9UN; 1 3/8 -10UN; 1 5/16 -12UN; 1 3/8 -14UNS; 1 5/16 -16UN; 1 5/16 -18UNEF; 1 5/16 -20UN"	"1 3/8 -11; 1 3/8 -12; 1 3/8 -14; 1 3/8 -16"	1-11



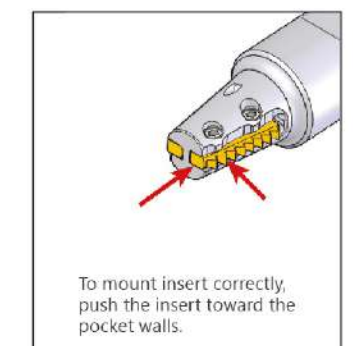
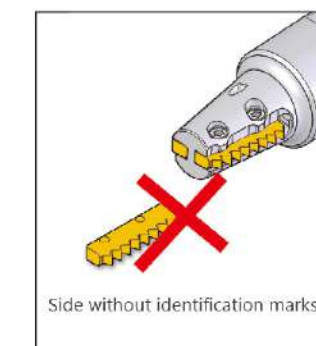
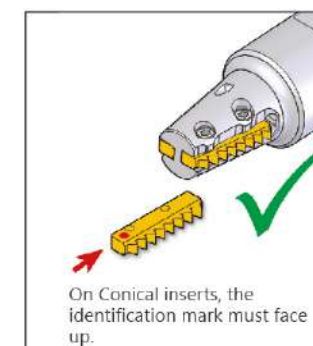
## SM Conical Toolholder



Designation	Stock		No. of Inserts	Dimensions(mm)						Spare parts	
	R	L		D1	D2	d	L1	L	ap	screw	Wrench
<b>HSMC25</b> 17-A25-26T2-PT 22-A25-43T3-PT 28-A25-43T4-PT			2	14.0	17.2	25	26	85	25	SSTM4-3.6P	TT-08P
			3	18.0	22.2	25	43	102	25		
			3	25.0	28.4	25	43	103	25		

## Conical Thread Application by Toolholder

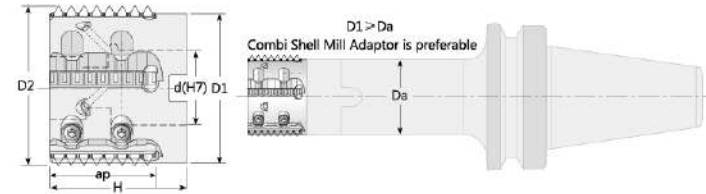
Toolholder	D2 (mm)	Min.Thread Dia.		
		NPT	NPTF	BSPT
<b>HSMC25</b> 17-A25-26T2-PT	17.2	1/2 -14; 3/4 -14; 1-11.5; 1 1/4 -11.5; 1 1/2 -11.5; 2-11.5	1/2 -14; 3/4 -14; 1-11.5; 1 1/4 -11.5; 1 1/2 -11.5; 2-11.5	1/2 -14; 3/4 -14
22-A25-43T3-PT	22.2	3/4 -14; 1-11.5; 1 1/4 -11.5; 1 1/2 -11.5; 2-11.5	3/4 -14; 1-11.5; 1 1/4 -11.5; 1 1/2 -11.5; 2-11.5	3/4 -14; 1-11; 1 1/4 -11; 1 1/2 -11; 2-11; 2 1/2 -11; 3-11; 4-11; 5-11; 6-11
28-A25-43T4-PT	28.4	1-11.5; 1 1/4 -11.5; 1 1/2 -11.5; 2-11.5	1-11.5; 1 1/4 -11.5; 1 1/2 -11.5; 2-11.5	1-11; 1 1/4 -11; 1 1/2 -11; 2-11; 2 1/2 -11; 3-11; 4-11; 5-11; 6-11





# Super Fast Mill-Thread Cutter

## SM Conical Toolholder



**Coolant-Thru is recommended, especially when  $D2 > 0.7 \times$  nominal thread diameter**

Designation	Stock		No. of Inserts	Dimensions(mm)						Spare parts	
	R	L		D1	D2	d	Da	H	ap	screw	Wrench
<b>HSMC25</b> 036-16-05T			5	32	36.0	16	38	33.5	25	SSTM4-3.6P	TT-08P
044-22-06T			6	40	44.0	22	48	38.0	25		
052-27-08T			8	48	52.0	27	60	40.0	25		
036-16-05T-PT			5	32	35.9*	16	38	33.5	25		

\* For inserts 8NPT and 8NPTF use for CNC program 36.4mm.

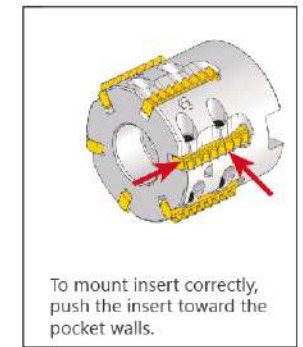
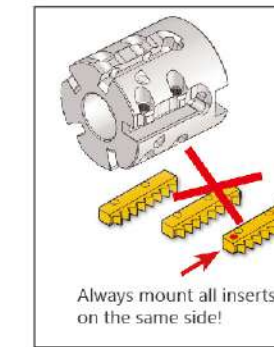
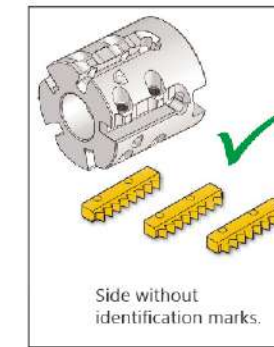
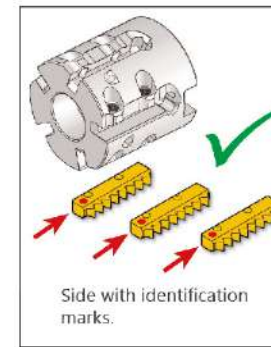
## Standard Thread Application by Toolholder

Toolholder	D2 (mm)	Min.Thread Dia.			
		ISO(fine)	UN/UNF/UNEF/UNS	BSF	BSP(G)
<b>HSMC25</b> 036-16-05T	36.0	M38x1; M39x1.5; M39x2; M40x3	1 9/16 -12UN; 1 5/8 -14UNS; 1 9/16 -16UN; 1 1/2 -18UNEF; 1 1/2 -20UN	"1 3/4 -16 1 3/4 -12"	1 1/4 -11
044-22-06T	44.0	M48x1; M48x1.5; M48x2; M48x3	1 7/8 -12UN; 1 13/16 -16UN; 1 13/16 -20UN; 1 15/16 -8UN; 1 7/8 -10UNS; 1 7/8 -14UNS	"2-16 2-12"	1 1/2 -11
052-27-08T	19.0	M55x1; M55x1.5; M55x2; M56x3	2 1/4 -8UN; 2 1/4 -10UN; 2 1/4 -12UN; 2 1/4 -14UN; 2 1/4 -16UN; 2 1/4 -18UN; 2 1/4 -20UN; 7/8 -14UNF; 7/8 -12UN; 7/8 -10UNS	"2 1/4 -16 2 1/4 -12"	2-11

## Conical Thread Application by Toolholder

Toolholder	D2 (mm)	Min.Thread Dia.		
		NPT	NPTF	BSPT
<b>HSMC25</b> 0036-16-05T-PT	35.9*	1 1/4 -11.5; 1 1/2 -11.5; 2-11.5; 2 1/2 -8 (and up)	1 1/4 -11.5; 1 1/2 -11.5; 2-11.5; 2 1/2 -8; 3-8	1 1/2 -6x11

\* For inserts 8NPT and 8NPTF use for CNC program 36.4mm.



# Thread Milling for Deep Holes

## D-Tread Code System

**S R 0015 - 11 U 0 A16 - 95**

① ② ③ ④ ⑤ ⑥ ⑦

① S R 0015 - 11 U - A16 95

S: Screw on system

② S R 0015 - 11 U - A16 95

R: Interanal right hand

③ S R 0015 - 11 U - A16 95

Cutting diameter  
0015 = 15mm

④ S R 0015 - 11 U - A16 95

Insert size  
11 = 6.35    16 = 9.525  
22 = 12.7    27 = 15.875

⑤ S R 0015 - 11 U - A16 95

Insert style



⑥ S R 0015 - 11 U - A16 95

16 = Shank diameter 16mm  
A: Weldon C: Cylindrical E: Carbide shank  
shank Shank Shank

⑦ S R 0015 - 11 U - A16 95

Length of holder

**11 U I 1.50 ISO D TTIM45**

① ② ③ ④ ⑤ ⑥ ⑦

① 11 U I 1.50 ISO D TTIM45

Insert size  
11 = 6.35    16 = 9.525  
22 = 12.7    27 = 15.875

② 11 U I 1.50 ISO D TTIM45

Insert style  
U: A:

③ 11 U I 1.50 ISO D TTIM45

Insert style  
I: Internal EI: External+Internal

④ 11 U I 1.50 ISO D TTIM45

Pitch

Full profile		Partial profile	
mm	TPI	mm	TPI
1.0-8.0	18-2.5	2.5-4.0	10-6
		1.5-2.5	18-10
		1.5-4.0	16-6
		2.5-6.0	10-4
		4.0-6.0	6-4
		6.0-8.0	4-3

⑤ 11 U I 1.50 ISO D TTIM45

Standard  
60 - Partial Profile 60° ISO - ISO Metric  
55 - Partial Profile 55° UN - American UN  
TR - Trapez DIN 103 NPT - NPT

⑦ 11 U I 1.50 ISO D TTIM45

Carbide grade  
TTIM45 TTIS30 TTIG30

⑥ 11 U I 1.50 ISO D TTIM45

Deep hole thread



# D-Thread Insert

## Partial Profile 60°

Designation	Pitch		Dimensions			Picture
	mm	TPI	d	L	r*	
UI 11-60D	11-60D	1.5-4.0	16-6	6.35U	11	
	11-60D 48-16	0.5-1.5	48-16	6.35U	11	
	11-60D 16-12	1.5-2.0	16-12	6.35U	11	
	11-60D 9-12	2.0-2.5	9-12	6.35U	11	
	11-60D 10-6	2.5-4.0	10-6	6.35U	11	
	16-60D	2.5-6.0	10-4	9.525U	16	
	16-60D 16-12	1.5-2.0	16-12	9.525U	16	
	16-60D 10-7	2.5-3.5	10-7	9.525U	16	
	16-60D 6-4	4.0-6.0	6-4	9.525U	16	
	22-60D	6.0-8.0	4-3	12.7U	22	

## Partial Profile 55°

Designation	Pitch		Dimensions			Picture
	TPI	d	L	r*		
UI 11-55D	11-55D	11-7	6.35U	11	0.24	
	11-55D 48-16	48-16	6.35U	11	0.11	
	11-55D 16-12	16-12	6.35U	11	0.08	
	16-55D	11-7	9.525U	16	0.24	
	16-55D 16-12	16-12	9.525U	16	0.08	
	16-55D 6-4	6-4	9.525U	16	0.27	
	22-55D	4-3	12.7U	22	0.50	

## ISO Metric

Designation	Pitch		Dimensions		Toolholder Cutting Diameter D2(mm)		Picture
	TPI	d	L	d	L	* D2 Adjustment	
UI 11-1.50ISOD	1.5	6.35U	11			For 1.5ISO change D2 to D2-1.0	
	2.0	6.35U	11			For 2.0ISO change D2 to D2-1.15	

## American UN - UNC; UNF; UNEF; UNS

Designation	Pitch		Dimensions		Toolholder Cutting Diameter D2(mm)		Picture
	TPI	d	L	d	L	* D2 Adjustment	
UI 11-14UND	14	6.35U	11			For 14UN change D2 to D2-1.06	
	12	6.35U	11			For 12UN change D2 to D2-1.15	

## National Pipe Thread (NPT)

Designation	Pitch		Dimensions		Picture
	TPI	d	L	L	
UI 11-14 NPTD	14	6.35U	11		
	11.5	6.35U	11		
16-11.5NPTD	11.5	9.525U	16		
16-8 NPTD	8	9.525U	16		
22-8 NPTD	8	12.7U	22		

## Trapez

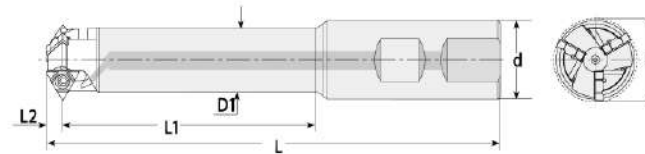
Designation	Pitch		Dimensions		Application	Picture
	TPI	d	L	L		
UI 11-3.0TRD	3.0	6.35U	11		(TR22-TR30)x3	
	4.0	6.35U	11		(TR20-TR28)x4	
	5.0	6.35U	11		TR22x5; TR28x5	

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

# D-Thread Holder

## Standard Toolholders - Weldon Shank (U Style)



Designation	Stock		No. of Inserts	Dimensions(mm)						Insert Size		Spare parts	
	R	L		D	D1	d	L1	L2	L	L	d	screw	Wrench
SR 0015-11U-A16-95	●		1	14.75	11.0	16	40	5.4	95	11U	6.35U	Y55-SSTX2.5-3.6P	TPF-08
0021-11U-A25-125	●		2	20.65	16.0	25	60	5.4	125				
0023-11U-A25-135	●		3	23.00	17.7	25	70	5.4	135				
0026-11U-A25-150	●		3	26.00	20.4	25	80	5.4	150				
0031-11U-A32-170	●		4	31.00	25.7	32	95	5.4	170	16U	9.525U	Y60-SSTX3.5-5.3P	TPF-15
0036-16U-A32-170	●		3	36.50	29.0	32	95	8.0	170				
0036-16U-A32-225	●		3	36.50	28.0	32	145	8.0	225				
0042-16U-A40-200	●		4	42.00	34.2	40	120	8.0	200				
0050-22U-A40-300			4	50.00	39.0	40	190	11.0	300	22U	12.7U	Y55-SSTX4.5-6.8P	TPF-20

## Weldon Shank (U Style) Applications

### Thread Applications for Partial Profile Inserts

Tool holder	Designation	D	Min. Thread Dia.						
			ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP(G)	Partial 55°	Trapez
SR0015-11U-A16-95		14.75	M18x2.5 M24x3.0	M16x0.5, M16x0.75, 16x1.0, M17x1.25, M17x1.5, 17x2.0	3/4-10	5/8-32UN, 5/8-28UN, 5/8-27UN, 11/16-24UN, 11/16-20UN, 11/16-16UN, 5/8-14UNS, 3/4-12UN	3/8-19, 1/2-14, 1-11	1 1/16-14; 3/4-12, 7/8-11; 3/4-10, 7/8-9; 1-8, 1 1/8-7	TR22x3, TR24x3
SR0021-11U-A25-125		20.65	M24x3.0 M30x3.5	M22x0.5, M22x0.75, 22x1.0, M23x1.25, M23x1.5, 23x2.0	1-8, 1 1/8-7, 1 3/8-6	7/8-32UN, 7/8-28UN, 7/8-27UN, 1 1/8-24UNS, 7/8-20UNEF, 1-18UNS, 15/16-16UN, 1-14UNS, 15/16-12UN, 1-10UNS	3/4-14, 1-11	1-26, 1-20, 1-16, 1-12, 1-10, 1 1/8-9, 1-8, 1 1/8-7	TR26- TR60x3
SR0023-11U-A25-135		23.00	M27x3.0 M30x3.5 M36x4.0	M24x0.5, M24x0.75, M25x1.0, M25x1.25, M26x1.5, 26x2.0, M27x2.5	1 1/8-7	1-32UN, 1-28UN, 1-27UN, 1-24UNS, 1-20UNEF, 1-18UNS, 1-16UN, 1-14UNS, 1-12UNF, 1 1/8-10UNS, 1 1/8-8UN	3/4-14, 1-11	1-26, 1-20, 1-16, 1 1/8-12, 1 1/8-9, 1 1/8-7	-
SR0026-11U-A25-150		26.00	M30x3.5 M36x4.0	M27x0.5, 27x0.75, M28x1.0, M28x1.25, M28x1.5, 29x2.0, M30x2.5, M30x3.0	1 1/4-7, 1 3/8-6	1 1/8-28UN, 1 1/8-24UNS, 1 1/8-20UN, 1 1/8-18UNEF, 1 1/8-16UN, 1 1/8-14UNS, 1 1/8-12UNF, 1 1/4-10UNS, 1 1/8-8UN	7/8-14, 1-11	1 1/8-26, 1 1/8-20, 1 3/8-16, 1 1/8-12, 1 3/8-8, 1 1/4-7	-
SR0031-11U-A32-170		31.00	M36x4.0	M32x0.5, M32x0.75, 33x1.0, M33x1.25, 33x1.5, M34x2.0, M34x2.5, M35x3.0, M36x3.5	1 1/2-6	1 5/16-28UN, 1 3/8-24UNS, 1 5/16-20UN, 1 3/8-18UNEF, 1 5/16-16UN, 1 3/8-14UNS, 1 3/8-12UNF, 1 3/8-10UNS, 1 1/8-8UN	1 1/8-11	1 3/8-26, 1 3/8-20, 1 3/8-16, 1 3/8-12, 1 1/8-8	-
SR0036-16U-A32-170 SR0036-16U-A32-225		36.50	M42x4.5 M48x5.0 M56x5.5 M64x6.0	M39x1.5, M39x2.0, M40x2.5, M41x3.0, M42x3.5, M42x4.0	1 3/4-5, 2-4.5, 2 1/2-4	1 3/8-16UN, 1 3/8-14UNS, 1 3/8-12UN, 1 3/8-10UNS, 1 3/8-8UN, 1 3/8-6UN	1 1/4-11	1 5/8-16, 1 5/8-12, 1 5/8-8, 1 7/8-6, 1 3/4-5	-
SR0042-16U-A40-200		42.00	M48x5.0 M56x5.5 M64x6.0	M45x1.5, M45x2.0, M46x2.5, M48x3.0, M48x3.5, M48x4.0	2-4.5, 2 1/2-4	1 3/8-16UN, 1 3/8-14UNS, 1 13/16-12UN, 1 13/16-8UN, 1 15/16-6UN	1 1/2-11	1 7/8-16, 1 7/8-12, 1 7/8-8, 2 1/4-6, 2-4.5	-

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



## Thread Applications for Full Profile Inserts (ISO & UN)

Tool holder	Pitch		Toolholder cutting diameter D (mm)	Min. Thread Dia	
	mm	TPI		ISO Fine	UN/UNF/UNEF/UNS
SR0021-11U-A25-125	1.5	-	22.00	M26x1.5	--
	2.0	-	21.85	M26x2.0	--
	-	14	21.94	--	1-14UNS
SR0023-11U-A25-135	1.5	-	25.00	M28x1.5	--
	2.0	-	24.85	M29x2.0	--
	-	14	24.94	--	1 1/8-14UNS
SR0026-11U-A25-150	1.5	-	30.00	M33x1.5	--
	2.0	-	29.85	M34x2.0	--
	-	12	24.85	--	1 1/8-12UNF
SR0026-11U-A25-150	1.5	-	30.00	M33x1.5	--
	2.0	-	29.85	M34x2.0	--
	-	14	29.94	-	1 3/8-14UNS
	-	12	29.85	-	1 3/8-12UNF

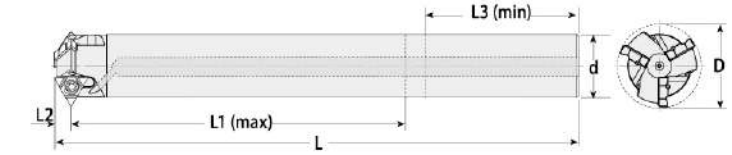
## Thread Applications for Full Profile Inserts (NPT)

Tool holder	Pitch	Toolholder cutting diameter D2 (mm)	Cylindrical or Conical pre-drilled hole	Cylindrical pre-drilled hole
Designation	TPI	D Adjustment	NPT Threading by 1 Radial Pass	NPT Threading by 2 Radial Passes (50% / 50%)
SR0015-11U-A16-95	14	14.59	1/2-14NPT; 3/4-14NPT	-
SR0021-11U-A25-125	14	20.49	3/4-14NPT	-
SR0023-11U-A25-135	11.5	22.63	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0026-11U-A25-150	11.5	25.63	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0031-11U-A32-170	11.5	30.63	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0036-16U-A32-170	11.5	35.65	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0036-16U-A32-225				
SR0036-16U-A32-170	8	35.65	-	2 1/2...10-8NPT
SR0036-16U-A32-225				
SR0042-16U-A40-200	11.5	41.15	1 1/2-11.5NPT; 2-11.5NPT	-
SR0042-16U-A40-200	8	41.15	-	2 1/2...10-8NPT

\* Correct the toolholder cutting diameter D according to adjustment, as indicated in the above table.

\*\* Note: When the pre-drilled hole for 8 NPT is conical, the thread can be machined in one pass.

## Standard Toolholders - Steel Cylindrical Shank (U Style)



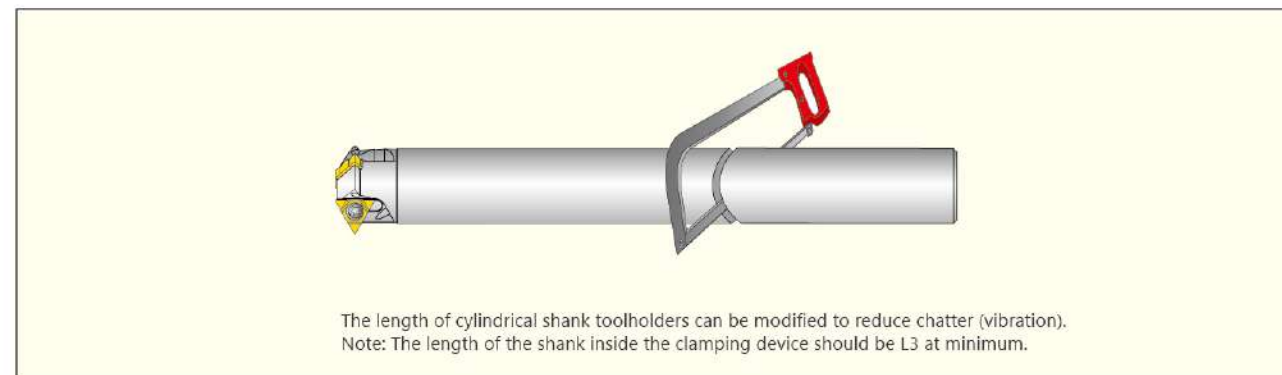
Coolant-Thru is recommended, especially when  $D > 0.7 \times$  nominal thread diameter

Designation	Stock		No. of Inserts	Dimensions(mm)						Insert Size		Spare parts	
	R	L		D	d	L1 (max)	L2	L3 (min)	L	L	d	screw	Wrench
SR 0023-11U-C18-170			2	23.30	18	90	5.4	40	170	11U	6.35U	Y55-SSTX2.5-3.6P	TPF-08
0026-11U-C20-180			3	26.00	20	100	5.4	40	180				
0031-11U-C25-200			4	31.00	25	120	5.4	46	200				
0036-16U-C25-200			3	36.50	25	130	8.0	46	200	16U	9.525U	Y60-SSTX3.5-5.3P	TPF-15
0036-16U-C28-225			3	36.50	28	150	8.0	60	225				

## Steel Cylindrical Shank (U Style) Applications

### Thread Applications for Partial Profile Inserts

Tool holder		Min. Thread Dia.					
Designation	D	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP(G)	Partial 55°
SR0023-11U-C18-170	23.30	M27x3.0 M30x3.5 M36x4.0	M24x0.5; M25x0.75; M25x1.0; M25x1.25; M26x1.5; M26x2.0; M27x2.5	1 1/8-7	1-32UN; 1-28UN; 1-27UN; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 1 1/16-12UN; 1 1/8-10UNS; 1 1/8-8UN	3/4-14 1-11	1-26; 1-20; 1 1/8-16; 1 1/8-12; 1 1/8-9; 1 1/8-7
SR0026-11U-C20-180	26.00	M30x3.5 M36x4.0	M27x0.5; M27x0.75; M28x1.0; M28x1.25; M28x1.5; M29x2.0; M30x2.5; M30x3.0	1 1/4-7, 1 3/8-6	1 1/8-28UN; 1 1/8-24UNS; 1 1/8-20UN; 1 1/8-18UNEF; 1 1/8-16UN; 1 1/8-14UNS; 1 1/8-12UNF; 1 1/8-10UNS; 1 7/16-8UN	7/8-14 1-11	1 1/8-26; 1 1/8-20; 1 3/16-16; 1 3/16-12; 1 3/16-8; 1 1/4-7
SR0031-11U-C25-200	31.00	M36x4.0	M32x0.5; M32x0.75; M33x1.0; M33x1.25; M33x1.5; M34x2.0; M34x2.5; M35x3.0; M36x3.5	1 1/2-6	1 3/16-28UN; 1 1/2-24UNS; 1 1/2-20UN; 1 1/2-18UNEF; 1 3/8-16UN; 1 3/8-14UNS; 1 3/8-12UNF; 1 3/8-10UNS; 1 7/8-8UN	1 1/8-11	1 5/16-26; 1 5/16-20; 1 3/8-16; 1 3/8-12; 1 1/16-8
SR0036-16U-C25-200 SR0036-16U-C28-225	36.50	M42.5x4.5 M48x5.0 M56x5.5 M64x6.0	M39x1.5; M40x2.5; M41x3.0; M42x3.5; M42x4.0	1 3/4-5 2-4.5 2 1/2-4	1 5/16-16UN; 1 5/8-14UNS; 1 5/16-12UN; 1 5/8-10UNS; 1 5/8-8UN; 1 5/8-6UN	1 1/4-11	1 5/8-16; 1 5/8-12; 1 5/8-8; 1 7/8-6; 1 3/4-5



### Thread Applications for Full Profile Inserts (ISO & UN)

Tool holder	Pitch		Toolholder cutting diameter D (mm)	Min. Thread Dia	
	mm	TPI		ISO Fine	UN/UNF/UNEF/UNS
SR0023-11U-C18-170	1.5	-	22.00	M26x1.5	-
	2.0	-	21.85	M26x2.0	-
	-	14	21.94	-	1-14UNS
	-	12	21.85	-	1-12UNF
SR0026-11U-C20-180	1.5	-	25.00	M28x1.5	-
	2.0	-	24.85	M29x2.0	-
	-	14	24.94	-	1 1/8-14UNS
	-	12	24.85	-	1 1/8-12UNF
SR0031-11U-C25-200	1.5	-	30.00	M33x1.5	-
	2.0	-	29.85	M34x2.0	-
	-	14	29.94	-	1 3/8-14UNS
	-	12	29.85	-	1 3/8-12UNF

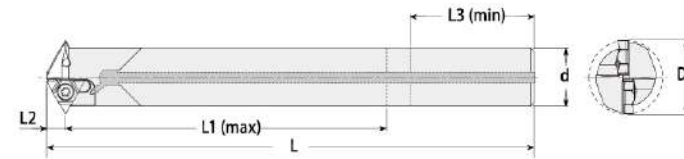
### Thread Applications for Full Profile Inserts (NPT)

Tool holder	Pitch	Toolholder cutting diameter D2 (mm)	Cylindrical or Conical pre-drilled hole	Cylindrical pre-drilled hole
			NPT Threading by 1 Radial Pass	NPT Threading by 2 Radial Passes (50% / 50%)
SR0023-11U-C18-170	11.5	22.63	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0026-11U-C20-180	11.5	25.63	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0031-11U-C25-200	11.5	30.63	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0036-16U-C25-200 SR0036-16U-C28-225	11.5	35.65	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0036-16U-C25-200 SR0036-16U-C28-225	8	35.65	-	2 1/2...10-8NPT

Correct the toolholder cutting diameter D according to adjustment, as indicated in the above table.  
Note: When the pre-drilled hole for 8 NPT is conical, the thread can be machined in one pass.



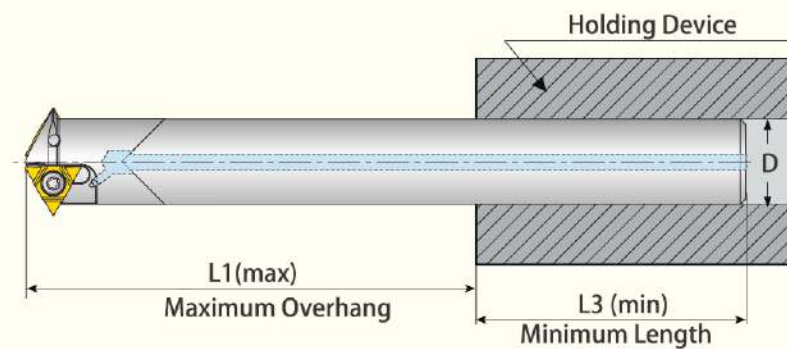
## Standard Toolholders - Carbide Cylindrical Shank (U Style)



Coolant-Thru is recommended, especially when  $D > 0.7 \times$  nominal thread diameter

Designation	Stock		No. of Inserts	Dimensions(mm)						Insert Size		Spare parts	
	R	L		D	d	L1 (max)	L2	L3 (min)	L	L	d	screw	Wrench
SR 0021-11U-E16-135			2	20.65*	16	80	5.4	34	135	11U	6.35U	Y55-SSTX2.5-3.6P	TPF-08
0026-11U-E20-175			3	26.00	20	120	5.4	40	175				
0031-11U-E25-190			4	31.00	25	140	5.4	46	190				

For TR inserts use the CNC program (D+0.25mm).



The overhang-to-bar diameter ratio should be as small as possible to eliminate the chance of chatter (vibration).  
The minimum length inside a holding device should be 2 times the diameter of the bar shank.

## Carbide Cylindrical Shank (U Style) Applications

### Thread Applications for Partial Profile Inserts

Tool holder	Designation	D	Min. Thread Dia.						
			ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP(G)	Partial 55°	Trapez
SR0021-11U-E16-135		20.65	M24x3.0 M30x3.5	M22x0.5; M22x0.75 M22x1.0; M23x1.25 M23x1.5; M23x2.0	1-8 1 1/8-7 1 3/8-6	7/8-32UN; 7/8-28UN; 7/8-27UNS; 7/8-24UNS; 7/8-20UNEF; 1-18UNS; 1 1/8-16UN; 1-14UNS; 1 3/8-12UN; 1-10UNS	3/4-14 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1 1/8-9 1-8; 1 1/8-7	(TR26-TR60)x3
SR0026-11U-E20-175		26.00	M30x3.5 M36x4.0	M27x0.5; M27x0.75 M28x1.0; M28x1.25 M28x1.5; M29x2.0 M30x2.5; M30x3.0	1 1/4-7 1 3/8-6	1 1/8-28UN; 1 1/8-24UNS; 1 1/8-20UN; 1 1/8-18UNEF; 1 1/8-16UN; 1 1/8-14UNS; 1 1/8-12UNF; 1 3/8-10UNS; 1 7/8-8UN	7/8-14 1-11	1 1/8-26; 1 1/8-20; 1 3/8-16; 1 3/8-12; 1 3/8-8; 1 3/8-7	(TR40-TR60)x3 (TR65-TR110)x4
SR0031-11U-E25-190		31.00	M36x4.0	M32x0.5; M32x0.75 M33x1.0; M33x1.25 M33x1.5; M34x2.0 M34x2.5; M35x3.0 M36x3.5	1 1/2-6	1 5/8-28UN; 1 1/2-24UNS; 1 1/2-20UN; 1 1/2-18UNEF; 1 1/2-16UN; 1 1/2-14UNS; 1 1/2-12UNF; 1 3/8-10UNS; 1 7/8-8UN	1 1/8-11	1 5/8-26; 1 1/2-20; 1 3/8-16; 1 3/8-12; 1 7/8-8	(TR50-TR60)x3 (TR65-TR110)x4

For TR inserts use the CNC program (D+0.25mm).

### Thread Applications for Full Profile Inserts (ISO & UN)

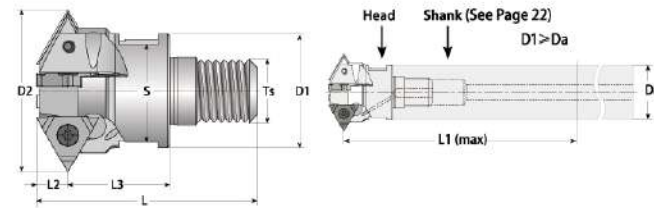
Tool holder	Pitch		Toolholder cutting diameter D (mm)	Min. Thread Dia	
	mm	TPI		ISO Fine	UN/UNF/UNEF/UNS
SR0026-11U-E20-175	1.5	-	25.00	M28x1.5	--
	2.0	-	24.85	M29x2.0	--
	-	14	24.94	--	1 1/8-14UNS
SR0031-11U-E25-190	1.5	-	30.00	M33x1.5	--
	2.0	-	29.85	M34x2.0	--
	-	14	29.94	--	1 3/8-14UNS
	-	12	29.85	--	1 3/8-12UNF

### Thread Applications for Full Profile Inserts (NPT)

Tool holder	Pitch	Toolholder cutting diameter D2 (mm)	Cylindrical or Conical pre-drilled hole	
			NPT Threading by 1 Radial Pass	Cylindrical pre-drilled hole
SR0021-11U-E16-135	14	20.49	3/4-14NPT	-
SR0026-11U-E20-175	11.5	25.63	1-11.5NPT; 1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-
SR0031-11U-E25-190	11.5	30.63	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-

Correct the toolholder cutting diameter D according to adjustment, as indicated in the above table.

## Standard Toolholders – Modular (U Style)



Coolant-Thru is recommended, especially when  $D > 0.7 \times$  nominal thread diameter

Designation	Stock		No. of Inserts	Dimensions(mm)								Insert Size		Spare parts	
	R	L		D	D2	L1	L2	L3	L	M	S	L	d	screw	Wrench
SR 0015-11U-M06			1	14.75	10.6	57.5	5.4	15	33	M6	9	11U	6.35	Y55-SSTX2.5-3.6P	TPF-08
0017-11U-M08			1	16.75	13.0	72.0	5.4	17	37	M8	11				
0021-11U-M08			2	20.65	14.1	86.0	5.4	14	34	M8	12				
0023-11U-M10			2	22.65	18.0	103.0	5.4	14	38	M10	16				
0027-11U-M12			3	26.60	21.0	125.0	5.4	20	48	M12	18	16U	9.525	Y60-SSTX3.5-5.3P	TPF-15
0031-11U-M12			4	31.00	25.0	138.0	5.4	23	51	M12	22				
0036-16U-M16			3	36.50	29.0	150.0	8.0	25	55	M16	25				
0042-16U-M16			4	42.00	29.0	172.0	8.0	26	55	M16	25				

## SR Modular Head (U Style) Applications

### Thread Applications for Partial Profile Inserts

Tool holder	Designation	D	Min. Thread Dia.						
			ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP(G)	Partial 55°	Trapez
SR0015-11U-M06		14.75	M18x2.5; M24x3.0	M16x0.5; M16x0.75; M16x1.0; M17x1.25; M17x1.5; M17x2.0	3/4-10; 1/2-9; 1-8	3/8-32UN; 3/8-28UN; 3/8-27UN; 3/8-24UN; 13/16-20UN; 13/16-16UN; 3/4-14UNS; 3/4-12UN	3/8-19; 1/2-14; 1-11	1 1/16-14; 3/4-12; 1/4-11; 3/4-10; 7/8-9; 1-8; 1 1/2-7	TR22x3; TR24x3
SR0017-11U-M08		16.75	M20x2.5	M18x0.5; M18x0.75; M18x1.0; M19x1.25; M19x1.5; M19x2.0	-	3/8-32UN; 3/8-28UN; 1/2-27UN; 1/2-24UN; 3/8-20UN; 3/8-16UNF; 3/8-14UNS; 13/16-12UN; 7/8-10UN	1/2-14; 1-11	1 1/16-12; 3/4-11; 1-10; 7/8-9	-
SR0021-11U-M08		20.65	M24x3.0; M30x3.5; M36x4.0	M22x0.5; M22x0.75; M22x1.0; M23x1.25; M23x1.5; M23x2.0	1-8; 1 1/2-7; 1 3/8-6	7/8-32UN; 7/8-28UN; 1/2-27UN; 1/2-24UN; 7/8-20UNEF; 1-18UNS; 13/16-16UN; 1-14UNS; 13/16-12UN; 1-10UNS	3/4-14; 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1 1/2-9; 1-8; 1 1/2-7	(TR26-TR60) x3; TR28x4; (TR60-TR110) x4; TR28x5
SR0023-11U-M10		22.65	M27x3.0; M30x3.5; M36x4.0	M24x0.5; M24x0.75; M25x1.0; M25x1.25; M26x1.5; M26x2.0; M27x2.5	1 1/8-7	1-32UN; 1-28UN; 1-27UNS; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 1-12UNF; 1 1/2-10UNS; 1 1/2-8UN	3/4-14; 1-11	1-26; 1-20; 1-16; 1 1/2-12; 1 1/2-9; 1 1/2-7	-
SR0027-11U-M12		26.60	M33x3.5; M36x4.0	M28x0.5; M28x0.75; M28x1.0; M28x1.25; M29x1.5; M29x2.0; M30x2.5; M33x3.0	1 1/4-7; 1 3/8-6	1 1/2-28UN; 1 1/2-24UNS; 1 1/2-20UN; 1 1/2-18UNEF; 1 1/2-16UN; 1 1/2-14UNS; 1 1/2-12UN; 1 1/2-10UNS; 1 1/2-8UN	7/8-14; 1-11	1 1/2-26; 1 1/2-20; 1 1/2-16; 1 1/2-12; 1 1/2-8; 1 1/2-7	-
SR0031-11U-M12		31.00	M36x4.0	M32x0.5; M32x0.75; M33x1.0; M33x1.25; M33x1.5; M34x2.0; M34x2.5; M35x3.0; M36x3.5	1 1/2-6	1 1/2-28UN; 1 1/2-24UNS; 1 1/2-20UN; 1 1/2-18UNEF; 1 1/2-16UN; 1 1/2-14UNS; 1 1/2-12UNF; 1 1/2-10UNS; 1 1/2-8UN	1 1/2-11	1 1/2-26; 1 1/2-20; 1 1/2-16; 1 1/2-12; 1 1/2-8	-
SR0036-16U-M16		36.50	M42x4.5; M48x5.0; M56x5.5	M39x1.5; M39x2.0; M40x2.5; M41x3.0; M42x3.5; M42x4.0	1 3/4-5 2-4.5	1 1/2-16UN; 1 1/2-14UNS; 1 1/2-12UN; 1 1/2-10UNS; 1 1/2-8UN; 1 1/2-6UN	1 1/4-11	1 1/2-16; 1 1/2-12; 1 1/2-8; 1 1/2-6	-
SR0042-16U-M16		42.00	M48x5.0; M56x5.5; M64x6.0	M45x1.5; M45x2.0; M46x2.5; M48x3.0; M48x3.5; M48x4.0	2-4.5; 2 1/2-4	1 1/2-16UN; 1 1/2-14UNS; 1 1/2-12UN; 1 1/2-8UN; 1 1/2-6UN	1 1/2-11	1 1/2-16; 1 1/2-12; 1 1/2-8; 2 1/4-6; 2-4.5	-



## SR Modular Head (U Style) Applications

Thread Application for Full Profile Inserts (ISO, UN, NPT & API Round)

Tool holder	Toolholder Cutting Diameter D2(mm)	Pitch		Min.Thread Dia.		Cylindrical or Conical Pre-Drilled hole	Cylindrical Pre-Drilled hole	PI Round, Cylindrical or Conical Pre-Drilled Hole (for cylindrical 2 radial passes 50%/50%; for conical one radial pass)	API Round, Conical Pre-Drilled Hole only (one pass)
		mm	TPI	ISO Coarse	UN/UNF/UNEF/UNS				
SR0015-11U-M06	13.80	1.5		M16x1.5	-	-	-	-	-
	13.60	2.0		M16x2.0	-	-	-	-	-
	13.70	-	14	-	3/8-14UNS	-	-	-	-
	13.60	-	12	-	1 1/16-12UN	-	-	-	-
	14.59	-	14	-	-	1/2-14NPT; 3/4-14NPT	-	-	-
SR0017-11U-M08	15.79	1.5		M18x1.5	-	-	-	-	-
	15.60	2.0		M18x2.0	-	-	-	-	-
	15.69	-	14	-	3/4-14UNS	-	-	-	-
	15.60	-	12	-	3/4-12UN	-	-	-	-
SR0021-11U-M08	19.69	1.5		M22x1.5	-	-	-	-	-
	19.50	2.0		M22x2.0	-	-	-	-	-
	19.60	-	14	-	7/8-14UNF	-	-	-	-
	19.50	-	12	-	7/8-12UN	-	-	-	-
	20.50	-	14	-	-	3/4-14NPT	-	-	-
SR0023-11U-M10	21.65	1.5		M24x1.5	-	-	-	-	-
	21.50	2.0		M24x2.0	-	-	-	-	-
	21.49	-	14	-	1-14UNS	-	-	-	-
	21.50	-	12	-	1-12UNF	-	-	-	-
	22.63	-	11.5	-	-	1-11.5NPT; 1 1/2-11.5NPT; 1 1/2-11.5NPT; 2-11NPT	-	-	-
SR0027-11U-M12	25.64	1.5		M28x1.5	-	-	-	-	-
	25.45	2.0		M30x2.0	-	-	-	-	-
SR0031-11U-M12	25.54	-	14	-	1 1/8-14UNS	-	-	-	-
	25.45	-	12	-	1 1/8-12UNF	-	-	-	-
	26.23	-	11.5	-	-	1-11.5NPT; 1 1/2-11.5NPT; 1 1/2-11.5NPT; 2-11NPT	-	-	-
	24.94	-	10	-	-	-	1.05x10APIRD (for UPTBG; UP TBG Long); 1.315...2.375x 10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-	-
	24.94	-	10	-	-	-	1.315...2.375x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-	-

\* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.  
\*\* When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

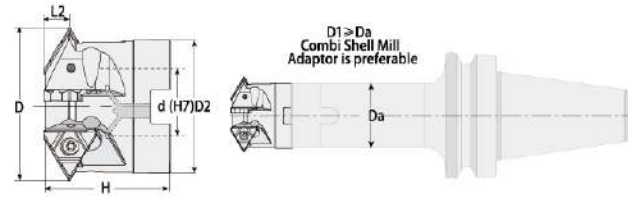
## SR Modular Head (U Style) Applications

Thread Application for Full Profile Inserts (ISO, UN, NPT & API Round)

Tool holder	Toolholder Cutting Diameter D2(mm)	Pitch		Min.Thread Dia.		Cylindrical or Conical Pre-Drilled hole	Cylindrical Pre-Drilled hole	PI Round, Cylindrical or Conical Pre-Drilled Hole (for cylindrical 2 radial passes 50%/50%; for conical one radial pass)	API Round, Conical Pre-Drilled Hole only (one pass)
		mm	TPI	ISO Coarse	UN/UNF/UNEF/UNS				
SR0031-11U-M12	30.00	1.5		M33x1.5	-	-	-	-	-
	29.85	2.0		M34x2.0	-	-	-	-	-
	29.94	-	14	-	1 3/8-14UNS	-	-	-	-
	29.85	-	12	-	1 3/8-12UN	-	-	-	-
	30.63	-	11.5	-	-	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11NPT	-	-	-
SR0031-11U-M12	29.44	-	10	-	-	-	-	1.66...3.5x10APIRD (for TBG; UP TBG; UP TBG Long; Integral-Joint TBG)	-
	35.65	-	11.5	-	-	1 1/4-11.5NPT; 1 1/2-11.5NPT; 2-11.5NPT	-	-	-
	35.65	-	8	-	-	-	2 1/2-10-8NPT	-	-
SR0031-11U-M12	34.70	-	8	-	-	-	-	2.375...13.375x8APIRD (for CSG; TBG; UP TBG; UP TBG Long); 4.5...5.5x8APIRD (for LCSG)	8.625...20x8APIRD (for LCSG)
	41.15	-	11.5	-	-	1 1/2-11.5NPT;	-	-	-
	41.15	-	8	-	-	2-11.5NPT	2 1/2-10-8NPT	-	-
SR0031-11U-M12	40.20	-	8	-	-	-	-	2.875...20x8APIRD (for CSG; TGB; UP TBG; UP TBG Long); 4.5...7.625x8APIRD (for LCSG)	8.625x8APIRD (for LCSG)

\* Correct the toolholder cutting diameter D2 according to adjustment, as indicated in the above table.  
\*\* When the pre-drilled hole for 8NPT is conical, the thread can be machined in one pass.

## Standard Toolholders – Shell Mill (U Style)



Coolant-Thru is recommended, especially when  $D > 0.7 \times$  nominal thread diameter

Designation	Stock		No. of Inserts	Dimensions(mm)						Insert Size		Spare parts	
	R	L		D	D2	d	L2	H	Da	L	d	screw	Wrench
SR 0042B16U-16-04T			4	42.00	34	16	8	40	38	16U	9.525U	Y60-SSTX3.5-5.3P	TPF-15
0048B16U-22-05T			5	48.00	40	22	8	40	48				
0056B16U-22-06T			6	56.00	48	22	8	40	48				
0088B22U-27-06T			6	88.00	76	27	10.8	50	60	22U	12.7U	Y55-SSTX4.5-6.8P	TPF-20
0098B22U-32-07T			7	98.00	85	32	10.8	55	78				



## Shell Mill (U Style) Applications

### Thread Applications for Partial Profile Inserts

Tool holder		Min. Thread Dia.					
Designation	D	ISO Coarse	ISO Fine	UNC	UN/UNF/UNEF/UNS	BSP(G)	Partial 55°
SR0042B16U-16-04T	42.00	M48x5.0 M56x5.5 M64x6.0	M45x1.5; M45x2.0 M46x2.5; M48x3.0 M48x3.5; M48x4.0	2-4.5; 2½-4	1½-16UN; 1½-14UNS 1½-12UN; 1½-8UN 1½-6UN	1½-11	1½-16; 1½-12; 1½-8; 1½-6; 2-4.5
SR0048B16U-22-05T	48.00	M56x5.5 M64x6.0	M52x1.5; M52x2.0 M52x2.5; M52x3.0 M55x4.0	2½-4.5; 2½-4	2-16UN; 2-14UN; 2-12UN; 2½-10UNS; 2½-8UN; 2½-6UN	1½-11	2-16; 2½-12; 2½-8; 2½-6; 3-5; 3½-4.5; 2½-4
SR0056B16U-22-06T	56.00	M64x6.0	M60x1.5; M60x2.0 M60x2.5; M60x3.0 M64x4.0	2½-4	2½-16UN; 2½-14UN; 2½-12UN; 2½-10UNS; 2½-8UN; 2½-6UN	2-11	2½-16; 2½-12; 2½-8; 2 3/4 -6; 3-5; 3½-4.5; 4½-4
SR0088B22U-27-06T	88.00	-	M95x6.0; M125x8.0	4-4	4¼-4UN	-	4-3; 4½-4
SR0098B22U-32-07T	98.00	-	M105x6.0; M125x8.0	-	4¼-4UN	-	4¼-4

### Thread Applications for Full Profile Inserts (NPT)

Tool holder	Pitch	Toolholder cutting diameter D2 (mm)	Cylindrical or Conical pre-drilled hole	Cylindrical pre-drilled hole
Designation	TPI	D Adjustment	NPT Threading by 1 Radial Pass	NPT Threading by 2 Radial Passes (50% / 50%)
SR0042B16U-16-04T	11.5	41.15	1 ½-11.5NPT; 2-11.5NPT	-
SR0042B16U-16-04T	8	41.15	-	2 ½-10-8NPT
SR0048B16U-22-05T	11.5	47.15	2-11.5NPT	-
SR0048B16U-22-05T	8	47.15	-	2 ½-10-8NPT
SR0056B16U-22-06T	8	55.15	-	2 ½-10-8NPT
SR0088B22U-27-06T	8	88.06	3 ½-160D-8NPT	160D...240D-8NPT
SR0098B22U32-07T	8	98.06	4-160D-8NPT	160D...240D-8NPT

\* Correct the toolholder cutting diameter D according to adjustment, as indicated in the above table.

\*\* Note: When the pre-drilled hole for 8 NPT is conical, the thread can be machined in one pass.

## Standard Toolholders - Weldon Shank (A Style)



Assemble internal thread turning inserts, can be used for milling internal threads and external threads

Designation	Stock		No. of Inserts	Dimensions(mm)				Available Insert	Spare parts	
	R	L		Dmin	d	L1	L		screw	Wrench
SR 0009-08A-A12-80	○		1	8.20	12	12	80	08IR	Y50-SSTX2-2.8P	TPF-06
0012-11A-A12-80	○		1	12.00	12	25	80	11IR	Y55-SSTX2.5-3.6P	TPF-08
0014-16A-A16-100	○		1	14.00	16	35	100	16IR	Y60-SSTX3.5-5.3P	TPF-15
0016-16A-A16-100	○		1	16.00	16	40	100			
0018-16A-A20-125	○		1	18.00	20	35	125			
0020-16A-A20-125	○		1	20.00	20	50	125			
0025-16A-A25-150	○		1	25.00	25	65	150	22IR	Y55-SSTX4.5-6.8P	TPF-20
0025-22A-A25-150	○		1	25.00	25	65	150			
0032-22A-A32-200	○		1	32.00	32	100	200			
0035-22A-A32-250	○		1	35.00	32	110	250			

## Recommended Grades, Cutting Speeds Vc [m/min] and Feed f [mm/tooth]

Material Group	Material	Hardness Brinell HB	Vc [m/min]			Feed* f [mm/tooth] by Cutting Dia. (D2)		
<b>P</b> Steel	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	100-210	90-180	0.20-0.32	0.30-0.50	0.30-0.75
		Medium Carbon (C=0.25-0.55%)	150	100-180	90-170	0.20-0.32	0.30-0.50	0.30-0.75
		High Carbon (C=0.55-0.85%)	170	100-170	90-160	0.15-0.23	0.25-0.35	0.25-0.52
	Low Alloy Steel (alloying elements <5%)	Non Hardened	180	60-90	90-155	0.17-0.28	0.28-0.45	0.28-0.67
		Hardened	275	80-150	80-160	0.15-0.28	0.25-0.45	0.25-0.67
		Hardened	350	70-140	70-150	0.15-0.25	0.25-0.40	0.25-0.60
	High Alloy Steel (alloying elements >5%)	Annealed	200	60-130	70-115	0.15-0.22	0.20-0.30	0.20-0.45
		Hardened	325	70-110	60-100	0.13-0.21	0.18-0.30	0.18-0.45
	Cast Steel	Low Alloy (alloying elements <5%)	200	100-170	100-170	0.15-0.22	0.20-0.30	0.20-0.45
		High Alloy (alloying elements >5%)	225	70-120	70-130	0.12-0.22	0.17-0.30	0.17-0.45
<b>M</b> Stainless steel	Stainless Steel Ferritic	Non Hardened	200	100-170	120-180	0.15-0.22	0.22-0.34	0.22-0.50
		Hardened	330	100-170	120-180	0.16-0.23	0.21-0.32	0.21-0.48
	Stainless Steel Austenitic	Austenitic	180	70-140	100-140	0.15-0.25	0.25-0.40	0.25-0.60
		Super Austenitic	200	70-140	100-140	0.12-0.20	0.17-0.26	0.17-0.39
	Stainless Steel Cast Ferritic	Non Hardened	200	70-140	100-140	0.16-0.24	0.25-0.37	0.25-0.55
		Hardened	330	70-140	100-140	0.12-0.20	0.17-0.26	0.17-0.39
Stainless Steel Cast Austenitic	Austenitic	200	70-120	100-120	0.15-0.22	0.20-0.30	0.20-0.45	
	Hardened	330	70-120	100-120	0.12-0.20	0.17-0.26	0.17-0.39	
<b>K</b> Cast iron	Malleable Cast Iron	Ferritic (short chips)	130	60-130	100-120	0.16-0.24	0.25-0.37	0.25-0.55
		Pearlitic (long chips)	230	60-120	80-100	0.15-0.22	0.20-0.30	0.20-0.45
	Grey Cast Iron	Low Tensile Strength	180	60-130	80-100	0.15-0.22	0.22-0.34	0.22-0.50
		High Tensile Strength	260	60-100	80-100	0.15-0.22	0.20-0.30	0.20-0.45
Nodular Sg Iron	Ferritic	160	60-125	80-100	0.10-0.20	0.15-0.25	0.15-0.37	
	Pearlitic	260	50-90	60-90	0.15-0.22	0.20-0.30	0.20-0.45	
<b>M (K)</b> Non-Ferrous material	Aluminum Alloys Wrought	Non Aging	60	100-250		0.30-0.50	0.60-1.00	0.60-1.50
		Aged	100	100-180		0.28-0.50	0.50-0.90	0.50-1.20
	Aluminum Alloys Cast	Cast	75	150-400		0.28-0.50	0.50-0.90	0.50-1.20
		Cast & Aged	90	150-280		0.25-0.40	0.40-0.60	0.40-0.90
	Aluminum Alloys Cast Si 13-22%	130	80-150		0.28-0.50	0.50-0.90	0.50-1.20	
	Copper and Copper Alloys	Brass	90	120-210	100-200	0.30-0.50	0.60-1.00	0.60-1.50
Bronze and Non Leaded Copper		100	120-210	100-200	0.28-0.50	0.50-0.90	0.50-1.20	
<b>S (M)</b> Heat Resistant material	High Temperature Alloys	Annealed (iron based)	200	20-45	20-40	0.09-0.15	0.12-0.22	0.12-0.33
		Aged (iron based)	280	20-30	20-30	0.07-0.13	0.10-0.20	0.10-0.30
		Annealed (nickel or cobalt based)	250	15-20	15-20	0.08-0.15	0.08-0.20	0.08-0.30
		Aged (nickel or cobalt based)	350	10-15	10-15	0.08-0.15	0.08-0.20	0.08-0.30
	Titanium Alloys	Pure 99.5 Ti	400Rm	70-140	70-120	0.07-0.13	0.10-0.20	0.10-0.30
		α + β alloys	1050Rm	20-50	20-50	0.07-0.13	0.10-0.20	0.10-0.30



## Thread Milling Solid Endmill Code System

**E SMT B 06 040 C 14 1.00 ISO TTIM45**

1 External 2 End Mill Type 3 Shank Dia 4 Cutting Dia 5 No. of Flute 6 No. of Flutes 7 The Approximate Cutting Length 8 Thread Pitch 9 Thread Profile 10 Carbide Grade

<p><b>1</b> External</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>Non: For Internal E: For External D: Deep Thread</p>	<p><b>2</b> Type</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>S=Solid M=Mill T=Thread</p>	<p><b>3</b> End Mill Type</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>Non=Without coolant hole B=With coolant hole Z=With coolant hole in the flutes Q=Tools for threading deep holes</p>
<p><b>4</b> Shank Diameter</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>06=6mm 8=8mm 10=10mm 12=12mm 14=14mm 16=16mm 20=20mm 25=25mm</p>	<p><b>5</b> Cutting Diameter</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>031=3.1mm 040= 4.0mm</p>	<p><b>6</b> No. of Flutes</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>C=3 D=4 E=5 F=6</p>
<p><b>7</b> The Approximate Cutting Length</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p>	<p><b>8</b> Thread Pitch</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>0.25-4.0 mm 72-7 TPI</p>	<p><b>9</b> Thread Profile</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>ISO - ISO Metric UN - American UN (UNC, UNF, UNEF, UNS) W - Whit Worth (BSW, BSF, BSP, BSB) NPT - National Pipe Thread NPTF - National Pipe Thread BSPT - British Standard Pipe Thread (BSPT)</p>
<p><b>10</b> Carbide Grade</p> <p>E SMT B 06 040 C 14 1.00 ISO TTIM45</p> <p>TTIM45 TTIS30</p>		

## Mini Thread Milling Solid Endmill Code System

**MSMT 06 031 C 12 0.7 ISO TTIM45**

1 Type 2 Shank Dia 3 Cutting Dia 4 No. of Flute 5 The Approximate Cutting Length 6 Thread Pitch 7 Thread Profile 8 Carbide Grade

<p><b>1</b> Type</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p> <p>M=Mini S=Solid M=Mill T=Thread</p>	<p><b>2</b> Shank Diameter</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p> <p>06=6mm 08=8mm 10=10mm 12=12mm 14=14mm 16=16mm</p>	<p><b>3</b> Cutting Diameter</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p> <p>031=3.1mm 040=4.0mm</p>
<p><b>4</b> No. of Flutes</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p> <p>C=3 D=4 E=5</p>	<p><b>5</b> The Approximate Cutting Length</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p>	<p><b>6</b> Thread Pitch</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p> <p>0.25-4.0 mm 72-7 TPI</p>
<p><b>7</b> Thread Profile</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p> <p>ISO - ISO Metric UN - American UN (UNC, UNF, UNEF, UNS) W - Whit Worth (BSW, BSF, BSP, BSB) NPT - National Pipe Thread NPTF - National Pipe Thread BSPT - British Standard Pipe Thread (BSPT) UNJ - Unified Constant Thread MJ - ISO 5855</p>	<p><b>8</b> Carbide Grade</p> <p>MSMT 06 031 C 12 07 ISO TTIM45</p> <p>TTIM45 TTIS30</p>	



## Mill-Thread Solid Carbide Grades, Speed and Feed Section

**TTIM45** Sub-Micron grade with Titanium Aluminum Nitride multi-layer coating (ISO K10 - K20). This is a general purpose grade, which can be used with all materials; it should be run at medium to high cutting speeds.

**TTIS30** Sub-Micro grade with high hardness and toughness provides an excellent solution for machining steels, stainless steels, and super alloys Ni or Ti base. With a universal PVD multi-layer coating, provides high heat and wear resistance

## SMT Type

ISO	Material	Cutting Speed m/min	Feed mm/tooth Cutting Diameter=D										
			φ2	φ3	φ4	φ6	φ8	φ10	φ12	φ14	φ16	φ20	φ25
<b>P</b>	Low and Medium Carbon Steels <0.55%C	90-200	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	High Carbon Steels ≥0.55%C	100-145	0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.15
	Alloy Steels, Treated Steels												
<b>M</b>	Stainless Steels - Free Cutting	55-130	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.11
	Stainless Steels - Austenitic	55-100	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
	Cast Steels	120-135	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
<b>K</b>	Cast Iron	65-120	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
<b>N</b>	Aluminum ≤12%Si, Copper	135-280	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	Aluminum >12% Si	90-200	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
	Synthetics, Duroplastics, Thermoplastics	90-320	0.05	0.06	0.07	0.08	0.1	0.11	0.12	0.14	0.15	0.18	0.22
<b>S</b>	Nickel Alloys, Titanium Alloys												

Note: For cutters with long cutting length reduce feed rate by 40%

## SMTB, SMTZ, ESMT Type

ISO	Material	Cutting Speed m/min	Feed mm/tooth Cutting Diameter=D										
			φ2	φ3	φ4	φ6	φ8	φ10	φ12	φ14	φ16	φ20	φ25
<b>P</b>	Low and Medium Carbon Steels <0.55%C	100-250	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	High Carbon Steels ≥0.55%C	110-180	0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.15
	Alloy Steels, Treated Steels	90-160	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
<b>M</b>	Stainless Steels - Free Cutting	60-160	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.11
	Stainless Steels - Austenitic	60-120	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
	Cast Steels	130-170	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
<b>K</b>	Cast Iron	70-150	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
<b>N</b>	Aluminum ≤12%Si, Copper	150-350	0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18
	Aluminum >12% Si	100-250	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10
	Synthetics, Duroplastics, Thermoplastics	100-400	0.05	0.06	0.07	0.08	0.1	0.11	0.12	0.14	0.15	0.18	0.22
<b>S</b>	Nickel Alloys, Titanium Alloys	20-80	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05

Note: For cutters with long cutting length reduce feed rate by 40%

## Mini Mill-Thread MSMT Type

ISO	Material	Cutting Speed m/min	Feed mm/tooth Cutting Diameter=D													
			φ1	φ1.5	φ2	φ3	φ4	φ5	φ6	φ7	φ8	φ9	φ10	φ12	φ14	φ16
<b>P</b>	Low and Medium Carbon Steels <0.55%C	60-120	0.04	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
	High Carbon Steels ≥0.55%C	60-90	0.03	0.04	0.05	0.05	0.08	0.09	0.10	0.12	0.13	0.14	0.14	0.16	0.17	0.18
	Alloy Steels, Treated Steels	50-80	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.10	0.12	0.13	0.14
<b>M</b>	Stainless Steels - Free Cutting	70-100	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
	Stainless Steels - Austenitic	60-90	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
	Cast Steels	70-90	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.10	0.12	0.13	0.14
<b>K</b>	Cast Iron	40-80	0.04	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
<b>N</b>	Aluminum ≤12%Si, Copper	100-200	0.04	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.15	0.16	0.17	0.18	0.18
	Aluminum >12% Si	60-140	0.03	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.13	0.14
	Synthetics, Duroplastics, Thermoplastics	50-200	0.09	0.10	0.11	0.12	0.14	0.16	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.20
<b>S</b>	Nickel Alloys, Titanium Alloys	20-40	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08

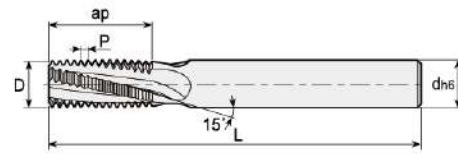
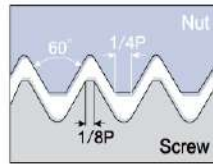
Note: For cutters with long cutting length reduce feed rate by 40%

## Mini Mill-Thread VS Taps

Feature	Mini Mill-Thread	Taps
Thread surface quality	High	Medium
Thread geometry	Very accurate	Medium
Thread tolerances	4H, 5H, 6H with std cutter	6H with standard tap, 4H with specific tap
Machining time	Same as tap or shorter	Short
Tool breakage	Almost not possible	Could happen often
Machining load	Very low	High
Range of thread diameters	Wide range of diameters	Specific tap for each diameter
Right/Left hand threading	Same cutter	Specific tap for each
Geometric shape	Full profile	Partial profile

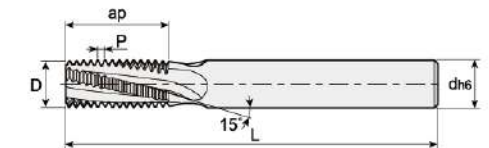
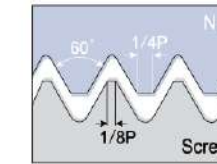


## ISO 60°METRIC



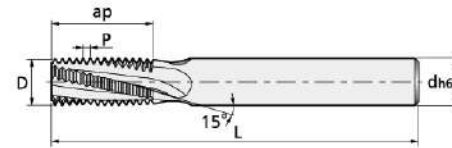
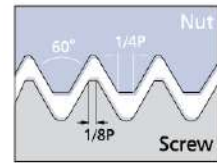
Designation (External)	Pitch	M coarse	Dimensions(mm)				No. of Inserts
			d	D	ap	L	
<b>ESMT</b> 04039C06 0.50ISO	0.5	M3x0.5	4	3.90	6.0	50	3
04039C09 0.75ISO	0.75	M4.5x0.75	4	3.90	9.0	50	3
04039C12 1.00ISO	1.0	M6x1.0	4	3.90	12.0	50	3
10100D16 1.00ISO	1.0	M8x1.0	10	10.00	16.5	75	4
12120E20 1.00ISO	1.0	M10x1.0	12	12.00	20.5	75	5
06059C16 1.25ISO	1.25	M8x1.25	6	5.90	16.3	50	3
10100D16 1.25ISO	1.25	M10x1.25	10	10.00	16.9	75	4
08079C21 1.50ISO	1.5	M10x1.5	8	7.90	21.0	60	3
10100D15 1.50ISO	1.5	M12x1.5	10	10.00	15.8	75	4
12120D20 1.50ISO	1.5	M14x1.5	12	12.00	20.3	75	4
12120D20 1.75ISO	1.75	M12x1.75	12	12.00	20.1	75	4
10099D28 2.00ISO	2.0	M14x2.0	10	9.90	28.0	75	4
12120D21 2.00ISO	2.0	M16x2.0	12	12.00	21.0	75	4

## ISO 60°METRIC



Designation (Internal)	Pitch	Mcoarse	Mfine	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
<b>SMT</b> 04022C06 0.50ISO	0.5	M3x0.5	M3.5-M16x0.5	4	2.20	6.0	50	3	2.5
06022C05 0.50ISO	0.5	M3x0.5	φ≥4	6	2.20	5.3	50	3	2.5
04030C08 0.50ISO	0.5	-	M4x0.5	4	3.00	8.0	50	3	3.5
04039C10 0.50ISO	0.5	-	M5x0.5	4	3.90	10.0	50	3	4.5
06038C10 0.50ISO	0.5	-	φ≥5	6	3.80	10.4	50	3	4.5
04028C08 0.70ISO	0.7	M4x0.7	-	4	2.80	8.4	50	3	3.3
06031C07 0.70ISO	0.7	M4x0.7	φ≥5	6	3.10	7.4	50	3	3.3
04039C12 0.75ISO	0.8	-	M6x0.75	4	3.90	12.0	50	3	5.3
06045C10 0.75ISO	0.8	-	φ≥6	6	4.50	10.1	50	3	5.3
04035C10 0.80ISO	0.8	M5x0.8	-	4	3.50	10.4	50	3	4.2
06036C09 0.80ISO	0.8	M5x0.8	φ≥6	6	3.60	9.2	50	3	4.2
04039C12 1.00ISO	1.0	M6x1.0	M8-M40x1.0	4	3.90	12.0	50	3	5.0
06040C10 1.00ISO	1.0	M6x1.0	φ≥7	6	4.00	10.5	50	3	5.0
06040C14 1.00ISO	1.0	M6x1.0	φ≥7	6	4.00	14.5	50	3	5.0
06059C16 1.00ISO	1.0	-	M8x1.0	6	5.90	16.0	50	3	7.0
08079C20 1.00ISO	1.0	-	M10x1.0	8	7.90	20.0	60	3	9.0
10099D24 1.00ISO	1.0	-	M12x1.0	10	9.90	24.0	75	4	11.0
06058C16 1.25ISO	1.25	M8x1.25	-	6	5.80	16.3	50	3	6.8
06050C19 1.25ISO	1.25	M8x1.25	φ≥10	6	5.00	19.4	50	3	6.8
08077C20 1.25ISO	1.25	-	M10x1.25	8	7.70	20.0	60	3	8.8
08077C21 1.50ISO	1.5	M10x1.5	M12-M48x1.5	8	7.70	21.0	60	3	8.5
08070C24 1.50ISO	1.5	M10x1.5	φ≥12	8	7.00	24.8	75	3	8.5
10094D24 1.50ISO	1.5	-	M12x1.5	10	9.40	24.0	75	4	10.5
12112D28 1.50ISO	1.5	-	M14x1.5	12	11.20	28.5	75	4	12.5
12119D33 1.50ISO	1.5	-	M16x1.5	12	11.90	33.0	75	4	14.5
16160F33 1.50ISO	1.5	-	φ≥20	16	16.00	33.8	100	6	18.5
08080C20 1.75ISO	1.75	M12x1.75	φ≥14	8	8.00	20.1	60	3	10.2
08080C28 1.75ISO	1.75	M12x1.75	φ≥14	8	8.00	28.9	75	3	10.2
10087D24 1.75ISO	1.75	M12x1.75	-	10	8.70	24.5	75	4	10.2
10099D28 2.00ISO	2.0	M14x2.0	M17-M80x2.0	10	9.90	28.0	75	4	12.0
10100C39 2.00ISO	2.0	M14x2.0	φ≥17	10	10.00	39.0	100	3	12.0
12119D32 2.00ISO	2.0	M16x2.0	M17-M80x2.0	12	11.90	32.0	75	4	14.0
20200F41 2.00ISO	2.0	-	φ≥26	20	20.00	41.0	100	5	24.0
14140D33 2.50ISO	2.5	M20x2.5	φ≥22	14	14.00	33.8	80	4	17.5
14140D48 2.50ISO	2.5	M20x2.5	φ≥22	14	14.00	48.8	100	4	17.5
16139E40 2.50ISO	2.5	M18-M22x2.5	-	16	13.90	40.0	100	5	15.5
16159D42 3.00ISO	3.0	M24x3.0	-	16	15.90	42.0	100	4	21.0
16160C58 3.00ISO	3.0	M24x3.0	φ≥25	16	16.00	58.5	120	3	21.0
20200D43 3.00ISO	3.0	M27x3.0	φ≥28	20	20.00	43.5	100	4	24.0

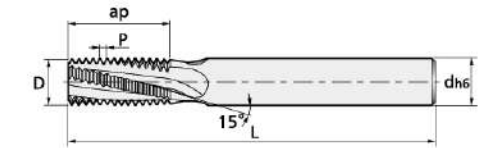
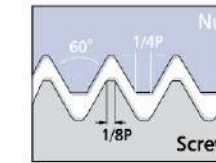
## UN 60°AMERICAN UN (UNC UNF UNEF UNS)



•Application: General engineering

Designation (External)	TPI	UNC	UNF	Dimensions(mm)				No. of Inserts
				d	D	ap	L	
SMT 04039C09 32UN	32	No.8-32	-	4	3.90	8.7	50	3
04039C12 28UN	28	-	No.12-28	4	3.90	11.8	50	3
04039C12 24UN	24	No.12-24	-	4	3.90	11.6	50	3
10100D16 24UN	24	-	5/16", 3/8"x24	10	10.00	16.4	75	4
04039C13 20UN	20	1/4"x20	-	4	3.90	12.7	50	3
12120E21 20UN	20	-	7/16", 1/2"x20	12	12.00	21.0	75	5
06059C17 18UN	18	5/16"x18	-	6	5.90	16.9	50	3
12120D20 18UN	18	-	9/16", 5/8"x18	12	12.00	20.5	75	4
08079C19 16UN	16	3/8"x16	-	8	7.90	19.1	60	3
12120D21 16UN	16	-	3/4"x16	12	12.00	21.4	75	4
12120D20 14UN	14	7/16"x14	7/8"x14	12	12.00	20.9	75	4
12119D30 12UN	12	9/16"x12	-	12	11.90	29.6	75	4

## UN 60°AMERICAN UN (UNC UNF UNEF UNS)

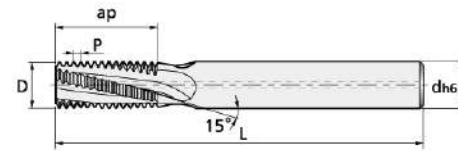
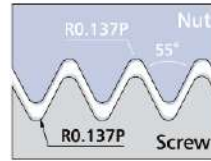


•Application: General engineering

Designation (Internal)	TPI	UNC	UNF	UNEF	Dimensions(mm)				No. of Inserts	Bore Dia.
					d	D	ap	L		
SMT 04030C09 36UN	36	-	No. 8-32	-	4	3.00	8.5	50	3	3.5
04033C11 32UN	32	No. 8-32	No. 10-32	No.12-3/8"x32	4	3.30	11.1	50	3	4.0
06032C06 32UN	32	No. 8-32	No. 10-32	No. 12-32	6	3.20	6.8	50	3	4.0
04038C12 28UN	28	-	No.12-28,1/4"x28	7/16", 1/2"x28	4	3.80	11.8	50	3	4.6
06040C11 28UN	28	-	1/4"x28	7/16", 1/2"x28	6	4.00	11.3	50	3	5.4
10092D23 28UN	28	-	-	7/16", 1/2"x28	10	9.20	22.7	75	4	10.2
04029C11 24UN	24	No. 10-24	5/16", 3/8"x24	9/16"-11/16"x24	4	2.90	10.6	50	3	3.8
04035C12 24UN	24	No. 12-24	5/16", 3/8"x24	9/16"-11/16"x24	4	3.50	11.6	50	3	4.5
06057C16 24UN	24	-	5/16", 3/8"x24	9/16"-11/16"x24	6	5.70	15.9	50	3	6.8
08074C19 24UN	24	-	3/8"x24	9/16"-11/16"x24	8	7.40	19.1	60	3	8.5
12119D29 24UN	24	-	-	9/16"-11/16"x24	12	11.90	28.6	75	4	13.2
04039C13 20UN	20	1/4"x20	7/16", 1/2"x20	3/4"-1"x20	4	3.90	12.7	50	3	5.2
06045C12 20UN	20	1/4"x20	-	-	6	4.50	12.1	50	3	5.2
08070C21 20UN	20	-	7/16", 1/2"x20	3/4"-1"x20	8	7.00	21.0	60	3	9.8
10085D23 20UN	20	-	7/16", 1/2"x20	3/4"-1"x20	10	8.50	22.9	75	4	9.8
10099D25 20UN	20	-	1/2"x20	3/4"-1"x20	10	9.90	25.4	75	4	11.5
12120E27 20UN	20	-	-	3/4"-1"x20	12	12.00	27.3	75	5	17.8
16159E38 20UN	20	-	-	3/4"-1"x20	16	15.90	38.1	100	5	17.8
06052C17 18UN	18	5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	6	5.20	16.9	50	3	6.5
10100D26 18UN	18	-	9/16", 5/8"x18	1 1/8" - 1 5/8" x18	10	10.00	26.1	75	4	12.8
12113D30 18UN	18	-	9/16", 5/8"x18	11/16"-1 11/16"x18	12	11.30	29.6	75	4	12.8
12119D33 18UN	18	-	5/8"x18	11/16"-1 11/16"x18	12	11.90	32.5	75	4	14.5
06060C16 16UN	16	3/8"x16	-	-	6	6.00	16.7	50	3	8.0
08067C19 16UN	16	3/8"x16	3/4"x16	-	8	6.70	19.1	60	3	8.0
12120D31 16UN	16	-	3/4"x16	-	12	12.00	30.0	75	4	17.5
16159D38 16UN	16	-	3/4"x16	-	16	15.90	38.1	100	4	17.5
08076D24 14UN	14	7/16"x14	7/8"x14	-	8	7.60	23.6	60	4	9.3
16150E37 14UN	14	-	7/8"x14	-	16	15.00	37.2	100	5	20.5
20187D44 14UN	14	-	7/8"x14	-	20	18.70	44.4	100	4	20.5
08080C22 13UN	13	1/2"x13	-	-	8	8.00	22.5	60	3	10.8
10089D25 13UN	13	1/2"x13	-	-	10	8.90	25.4	75	4	10.8
10100C26 12UN	12	9/16"x12	1"-1 1/2"x12	-	10	10.00	26.5	75	3	12.3
12103D30 12UN	12	9/16"x12	1"-1 1/2"x12	-	12	10.30	29.6	75	4	12.3
16160E41 12UN	12	-	1"-1 1/2"x12	-	16	16.00	41.3	100	5	23.5
20199E51 12UN	12	-	1"-1 1/2"x12	-	20	19.90	50.8	100	5	23.5
10100C29 11UN	11	5/8"x11	-	-	10	10.00	28.9	75	3	13.5
12110D32 11UN	11	5/8"x11	-	-	12	11.00	32.3	75	4	13.5
12120C34 10UN	10	3/4"x10	-	-	12	12.00	34.3	75	3	16.5
16135E38 10UN	10	3/4"x10	-	-	16	13.50	38.1	100	5	16.5
16152D45 9UN	9	7/8"x9	-	-	16	15.20	45.2	100	4	19.5
16150C43 8UN	8	1"x8	-	-	16	15.00	42.9	100	3	22.0
20170D51 8UN	8	1"x8	-	-	20	17.00	50.8	100	4	22.0
20200C45 7UN	7	1 1/8" - 1 1/4" x7	-	-	20	20.00	45.4	100	3	25.0



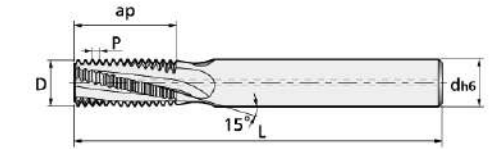
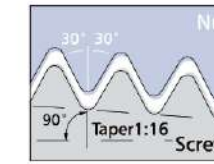
## W 55°WHIT WORTH (BSW,BSF,BSP, BSB)



\*Application: General engineering fittings and pipe couplings

Designation (External / Internal)	TPI	BSP (G)	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
SMT 06058C16 28W	28	1/16"x28, 1/8"x28	6	5.80	16.3	50	3	6.7
08077C20 28W	28	1/8"x28	8	7.70	20.0	60	3	8.7
08080C14 19W	19	1/4"x19, 3/8"x19	8	8.00	14.0	60	3	11.8
10099D27 19W	19	1/4"x19, 3/8"x19	10	9.90	26.7	75	4	11.8
16134D33 19W	19	3/8"x19	16	13.40	33.4	100	4	15.2
12120D19 14W	14	1/2", 7/8"x14	12	12.00	19.0	75	4	18.6
12120D26 14W	14	1/2", 7/8"x14	12	12.00	26.3	75	4	18.6
16157E43 14W	14	1/2", 3/4"x14	16	15.70	43.5	100	5	19.0
12120C24 11W	11	1", 1 1/2"x11	12	12.00	24.2	75	3	30.2
16160D38 11W	11	1", 1 1/2", 2", 2 1/2", 3"x11	16	16.00	38.1	100	4	30.7
20199E42 11W	11	1", 1 1/2", 2", 2 1/2"x11	20	19.90	41.6	100	5	30.7
20200E47 11W	11	>1" x11	20	20.00	47.3	100	5	30.7

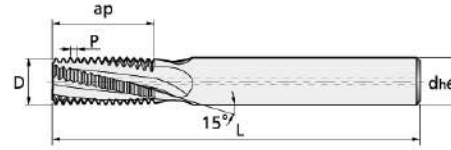
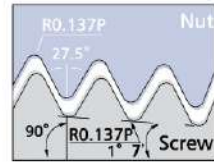
## NPT60°NATIOANL PIPE



\*Application: General engineering

Designation (External / Internal)	TPI	NPT	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
SMT 06053C09 27NPT	27	1/16"x27	6	5.30	9.4	50	3	6.3
08075E09 27NPT	27	1/8"x27	8	7.50	9.4	60	4	8.5
08080C14 18NPT	18	1/4"x18	8	8.00	14.8	60	3	11.1
10094E14 18NPT	18	1/4"x18	10	9.40	14.1	75	4	11.1
12119E14 18NPT	18	3/8"x18	12	11.90	14.1	75	4	14.5
12120D20 14NPT	14	1/2", 3/4"x14	12	12.00	20.9	75	4	17.7
16155E25 14NPT	14	1/2", 3/4"x14	16	15.50	25.4	100	5	17.7, 23.0
16160D27 11.5NPT	11.5	1"-2"x11.5	16	16.00	27.6	100	4	29.0
20199E33 11.5NPT	11.5	1"-2"x11.5	20	19.90	33.1	100	5	29.0-56.0
20199D38 8NPT	8	2 1/2", 3"x8	20	19.90	38.1	100	4	66.5

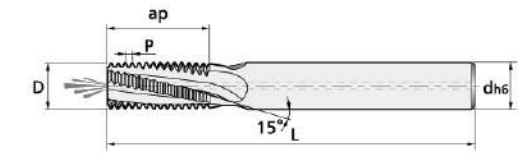
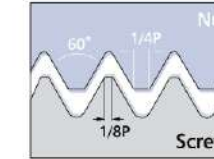
## BSPT 55° BRITISH STANDARD PIPE



•Application: General engineering fittings and pipe couplings

Designation (External / Internal)	TPI	BSPT	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
<b>SMT</b> 06058C16 28BSPT	28	1/16"x28	6	5.80	16.3	50	3	6.7
08077C20 28BSPT	28	1/8"x28	8	7.70	20.0	60	3	8.7
08080C14 19BSPT	19	1/4"x19	8	8.00	14.0	60	3	10.9
10099D27 19BSPT	19	1/4"x19	10	9.90	26.7	75	4	11.8
16134D33 19BSPT	19	3/8"x19	16	15.70	33.4	100	4	15.2
12120D19 14BSPT	14	1/2"-7/8" x14	12	12.00	19.1	75	4	18.0
16157E43 14NSPT	14	1/2", 3/4"x14	16	15.70	43.5	100	5	19.0
16160D28 11BSPT	11	1", 1 1/2", 2" x11	16	16.00	28.9	100	4	29.0
20199E42 11BSPT	11	1", 1 1/2", 2", 2 1/2"x11	20	19.90	41.6	100	5	30.7

## ISO 60° METRIC



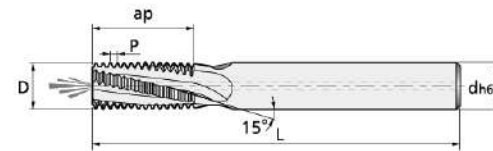
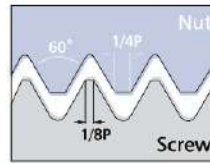
•Application: General engineering

1.5 x Do (ap < 1.5 x Thread Diameter)

Designation (Internal)	Pitch	Mcoarse	Mfine	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
<b>SMTB</b> 04024C04 0.50ISO	0.5	M3x0.5	M3.5-M16x0.5	4	2.40	4.7	50	3	2.5
04031C06 0.70ISO	0.7	M4x0.7	-	4	3.15	6.6	50	3	3.3
04039C07 0.80ISO	0.8	M5x0.8	-	4	3.90	7.6	50	3	4.2
06048C09 1.00ISO	1.0	M6x1.0	M8-M40x1.0	6	4.80	9.5	50	3	5.0
08065C13 1.25ISO	1.25	M8x1.25	-	8	6.50	13.1	60	3	6.8
10082C15 1.50ISO	1.5	M10x1.5	M12-M48x1.5	10	8.20	15.7	75	3	8.5
10099D18 1.75ISO	1.75	M12x1.75	-	10	9.90	18.4	75	4	10.2
12116D21 2.00ISO	2.0	M14x2.0	M17-M80x2.0	12	11.60	21.0	75	4	12.0
14136D25 2.00ISO	2.0	M16x2.0	M17-M80x2.0	14	13.60	25.0	100	4	14.0



## ISO 60°METRIC

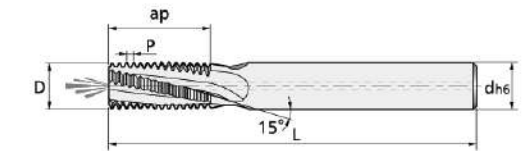
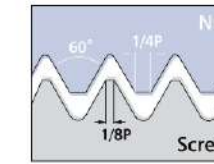


•Application: General engineering

2.0 x Do (ap ≤ 2.0 x Thread Diameter)

Designation (Internal)	Pitch	Mcoarse	Mfine	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
<b>SMTB</b> 04024C06 0.50ISO	0.5	M3x0.5	M3.5-M16x0.5	4	2.40	6.2	50	3	2.5
04032C08 0.50ISO	0.5	-	M4x0.5	4	3.20	8.2	50	3	3.5
06042C10 0.50ISO	0.5	-	M5x0.5	6	4.20	10.2	50	3	4.5
04031C08 0.70ISO	0.7	M4x0.7	-	4	3.15	8.7	50	3	3.3
06050C12 0.75ISO	0.75	-	M6x0.75	6	5.00	12.4	50	3	5.3
04039C10 0.80ISO	0.8	M5x0.8	-	4	3.90	10.8	50	3	4.2
06048C12 1.00ISO	1.0	M6x1.0	M8-M40x1.0	6	4.80	12.5	50	3	5.0
08067C16 1.00ISO	1.0	-	M8x1.0	8	6.70	16.5	60	3	7.0
10087C20 1.00ISO	1.0	-	M10x1.0	10	8.70	20.5	75	3	9.0
12107D24 1.00ISO	1.0	-	M12x1.0	12	10.70	24.5	75	4	11.0
06060C14 1.25ISO	1.25	M8x1.25	-	6	6.00	14.4	50	3	6.8
08065C16 1.25ISO	1.25	M8x1.25	-	8	6.50	16.9	60	3	6.8
10085C20 1.25ISO	1.25	-	M10x1.25	10	8.50	20.6	75	3	8.8
08078C17 1.50ISO	1.50	M10x1.5	M12-M48x1.5	8	7.80	17.0	60	3	8.5
10082C20 1.50ISO	1.5	M10x1.5	M12-M48x1.5	10	8.20	20.2	75	3	8.5
10099D24 1.50ISO	1.5	-	M12x1.5	10	9.90	24.7	75	4	10.5
12119D29 1.50ISO	1.5	-	M14x1.5	12	11.90	29.2	75	4	12.5
14139D32 1.50ISO	1.5	-	M16x1.5	14	13.90	32.2	100	4	14.5
16160F33 1.50ISO	1.5	-	M20x1.5	16	16.00	33.8	100	6	18.5
10099C25 1.75ISO	1.75	M12x1.75	-	10	9.90	25.4	75	4	10.2
10100C27 2.00ISO	2.0	M14x2.0	M15-M80x2.0	10	10.00	27.0	75	3	12.0
12116D29 2.00ISO	2.0	M14x2.0	M17-M80x2.0	12	11.60	29.0	75	4	12.0
14136D33 2.00ISO	2.0	M16x2.0	M17-M80x2.0	14	13.60	33.0	100	4	14.0
20200F41 2.00ISO	2.0	-	M26-M80x2.0	20	20.00	41.0	100	6	24.0
16148D36 2.50ISO	2.5	M18x2.5	-	16	14.80	36.2	100	4	15.5
16150E33 2.50ISO	2.5	M18x2.5	-	16	15.00	33.8	100	5	15.5
18171D41 2.50ISO	2.5	M20x2.5	-	18	17.10	41.2	100	4	17.5
20199D49 3.00ISO	3.0	M24x3.0	-	20	19.90	49.5	100	4	21.0

## ISO 60°METRIC

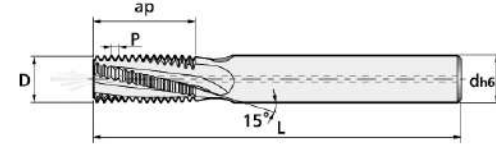
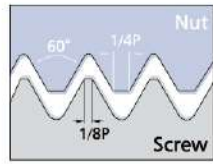


•Application: General engineering

3.0 x Do (ap ≤ 3.0 x Thread Diameter)

Designation (Internal)	Pitch	Mcoarse	Mfine	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
<b>SMTB</b> 04024C09 0.50ISO	0.5	M3x0.5	M3.5-M16x0.5	4	2.40	9.25	50	3	2.5
04031C12 0.70ISO	0.7	M4x0.7	-	4	3.15	12.95	50	3	3.3
04039C15 0.80ISO	0.8	M5x0.8	-	4	3.90	15.60	50	3	4.2
06048C18 1.00ISO	1.0	M6x1.0	M8-M40x1.0	6	4.80	18.50	50	3	5.0
06060C19 1.25ISO	1.25	M8x1.25	-	6	6.00	19.40	50	3	6.8
08065C25 1.25ISO	1.25	M8x1.25	-	8	6.50	25.63	60	3	6.8
08078C24 1.50ISO	1.5	M10x1.5	M12-M48x1.5	8	7.80	24.80	60	3	8.5
10082C30 1.50ISO	1.5	M10x1.5	M12-M48x1.5	10	8.20	30.75	75	3	8.5
10099D37 1.75ISO	1.75	M12x1.75	-	10	9.90	37.63	75	4	10.2
12118D39 2.00ISO	2.0	M16x2.0	M17-M80x2.0	12	11.80	39.00	100	4	14.0
14136D49 2.00ISO	2.0	M16x2.0	M17-M80x2.0	14	13.60	49.00	100	4	14.0
16150E48 2.50ISO	2.5	M20x2.5	-	16	15.00	48.80	100	5	17.5
20180D58 3.00ISO	3.0	M24x3.0	-	20	18.00	58.50	120	4	21.0

## UN 60° AMERICAN UN (UNC UNF UNEF UNS)

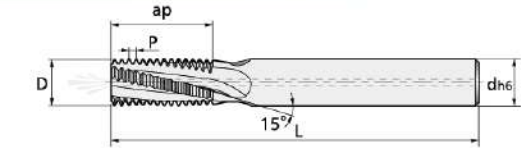
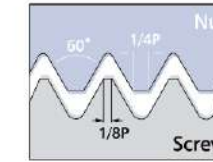


•Application: General engineering

1.5 x Do (ap ≤ 1.5 x Thread Diameter)

Designation (Internal)	TPI	UNC	UNF	UNEF	Dimensions(mm)				No. of Inserts	Bore Dia.
					d	D	ap	L		
<b>SMTB</b> 04035C07 24UN	24	No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	4	3.58	7.9	50	3	3.8
06041C09 24UN	24	No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	6	4.15	9.0	50	3	4.5
06048C09 20UN	20	1/4"x20	7/16", 1/2"x20	3/4"-1"x20	6	4.88	9.5	50	3	5.2
08061C12 18UN	18	5/16"x18	9/16", 5/8"x18	11/16"-1 1/16" x18	8	6.15	12.0	60	3	6.5
08076C15 16UN	16	3/8"x16	3/4"x16	-	8	7.65	15.1	75	3	8.0
10090C17 14UN	14	7/16"x14	7/8"x14	-	10	9.00	17.2	75	3	9.3
12104D20 13UN	13	1/2"x13	-	-	12	10.35	20.5	75	4	10.8
12118D22 12UN	12	9/16"x12	1"-1 1/2"x12	-	12	11.80	22.2		4	12.3

## UN 60° AMERICAN UN (UNC UNF UNEF UNS)



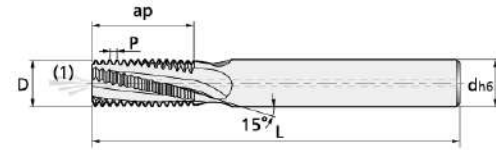
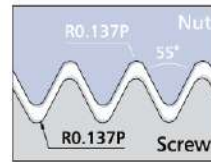
•Application: General engineering

2.0 x Do (ap ≤ 2.0 x Thread Diameter)

Designation (Internal)	TPI	UNC	UNF	UNEF	Dimensions(mm)				No. of Inserts	Bore Dia.
					d	D	ap	L		
<b>SMTB</b> 04038C10 32UN	32	-	No.10-32	No.12-3/8"x32	4	3.80	9.9	50	3	4.0
06044C11 32UN	32	-	-	No.12-3/8"x32	6	4.40	11.5	50	3	4.7
06060C14 32UN	32	-	-	5/16"x32	6	6.00	14.7	50	3	7.1
08080D18 32UN	32	-	-	3/8"x32	8	8.00	18.7	60	4	8.7
06043C11 28UN	28	-	No.12, 1/4"x28	7/16", 1/2"x28	6	4.30	11.3	50	3	4.6
06052C13 28UN	28	-	1/4"x28	7/16", 1/2"x28	6	5.20	13.1	50	3	5.5
10099C22 28UN	28	-	-	7/16", 1/2"x28	10	9.90	22.2	75	3	10.2
04035C10 24UN	24	No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	4	3.58	10.0	50	3	3.8
06041C11 24UN	24	No.10-24	5/16", 3/8"x24	9/16"-11/16"x24	6	4.15	11.1	50	3	4.5
08066C16 24UN	24	-	5/16", 3/8"x24	9/16"-11/16"x24	8	6.60	16.4	60	3	6.8
08080D21 24UN	24	-	3/8"x24	-	8	8.00	20.6	60	4	8.5
10082C20 24UN	24	-	3/8"x24	9/16"-11/16"x24	10	8.20	19.6	75	3	8.5
14129D29 24UN	24	-	-	9/16"-11/16"x24	14	12.90	29.1	100	4	13.2
06048C13 20UN	20	1/4"x20	7/16", 1/2"x20	3/4"-1"x20	6	4.88	13.3	50	3	5.2
08080C21 20UN	20	-	7/16"x20	-	8	8.00	21.0	60	3	9.8
10096C22 20UN	20	-	7/16", 1/2"x20	3/4"-1"x20	10	9.60	22.2	75	3	9.8
12111D26 20UN	20	-	1/2"x20	3/4"-1"x20	12	11.10	26.0	75	4	11.5
18174D38 20UN	20	-	-	3/4"-1"x20	18	17.40	38.7	100	4	17.8
06056C14 18UN	18	5/16"x18	-	1 1/8"-1 5/8"x18	6	5.60	14.8	50	3	6.5
08061C16 18UN	18	5/16"x18	9/16", 5/8"x18	11/16"-1 11/16"x18	8	6.15	16.2	60	3	6.5
12113D26 18UN	18	-	9/16", 5/8"x18	-	12	11.30	26.1	75	4	12.8
14125D28 18UN	18	-	9/16", 5/8"x18	11/16"-1 11/16"x18	14	12.50	28.9	100	4	12.8
16141D31 18UN	18	-	5/8"x18	11/16"-1 11/16"x18	16	14.10	31.7	100	4	14.5
08076C20 16UN	16	3/8"x16	3/4"x16	-	8	7.65	19.8	60	3	8.0
12120D31 16UN	16	-	3/4"x16	-	12	12.00	31.0	75	4	17.5
18170D38 16UN	16	-	3/4"x16	-	18	17.00	38.8	100	4	17.5
08077C20 14UN	14	7/16"x14	-	-	8	7.70	20.9	60	3	9.3
10090C22 14UN	14	7/16"x14	7/8"x14	-	10	9.00	22.7	75	3	9.3
16160E37 14UN	14	-	7/8"x14	-	16	16.00	37.2	100	5	20.5
20199D44 14UN	14	-	7/8"x14	-	20	19.90	44.4	100	4	20.5
10092C22 13UN	13	1/2"x13	-	-	10	9.20	22.5	75	3	10.8
12104D26 13UN	13	1/2"x13	-	-	12	10.35	26.4	75	4	10.8
12118D28 12UN	12	9/16"x12	1"-1 1/2"x12	-	12	11.80	28.6	75	4	12.3
16160E41 12UN	12	-	1"-1 1/2"x12	-	16	16.00	41.3	100	5	23.5
20199D51 12UN	12	-	1"-1 1/2"x12	-	20	19.90	51.9	100	4	23.5
12114C29 11UN	11	5/8"x11	-	-	12	11.40	28.9	75	3	13.5
14131D33 11UN	11	5/8"x11	-	-	14	13.10	33.5	100	4	13.5
16159D46 10UN	10	3/4"x10	-	-	16	15.90	39.4	100	4	16.5
16160C38 9UN	9	7/8"x9	-	-	16	16.00	38.1	100	3	19.5
20190D46 9UN	9	7/8"x9	-	-	20	19.00	46.6	100	4	19.5
20199D52 8UN	8	1"x8	-	-	20	19.90	52.4	100	4	22.0
20200D45 7UN	7	1 1/8"-1 1/4"x7	-	-	20	20.00	45.3	100	4	25.0



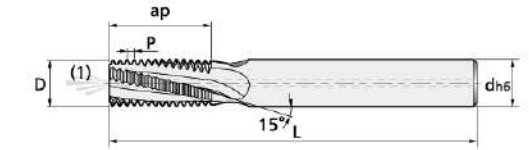
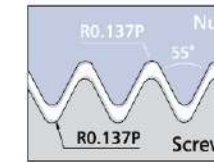
## W 55°WHIT WORTH (BSW,BSF, BSP, BSB )



•Application: General engineering fittings and pipe couplings

Designation (External / Internal)	TPI	BSW	BSF	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
SMTB 06050C13 26W	26	-	1/4"x26	6	5.00	13.2	50	3	5.3
08063C16 22W	22	-	5/16"x22	8	6.35	16.7	60	3	6.7
06044C13 20W	20	1/4"x20	3/8"x20	6	4.45	13.3	50	3	5.0
08076C20 20W	20	-	3/8"x20	8	7.65	19.7	60	3	8.2
06058C16 18W	18	5/16"x18	7/16"x18	6	5.85	16.2	50	3	6.5
10092C23 18W	18	-	7/16"x18	10	9.20	23.3	75	3	9.7
08072C20 16W	16	3/8"x16	1/2", 9/16"x16	8	7.20	19.8	60	3	7.9
12105D26 16W	16	-	1/2", 9/16"x16	12	10.50	26.2	75	4	11.1
14121D29 16W	16	-	9/16"x16	14	12.15	29.4	100	4	12.6
10085C22 14W	14	7/16"x14	5/8", 11/16"x14	10	8.50	22.7	75	3	9.2
14134D31 14W	14	-	5/8", 11/16"x14	14	13.40	31.7	100	4	14.0
16150D35 14W	14	-	11/16"x14	16	15.00	35.4	100	4	15.6
10096C26 12W	12	1/2"x12	3/4"x12	10	9.65	26.5	75	3	10.5
12112D28 12W	12	9/16"x12	3/4"x12	12	11.25	28.6	75	4	12.1
18162D39 12W	12	-	3/4"x12	18	16.20	39.2	100	4	16.8
14126D33 11W	11	5/8"x11	7/8"x11	14	12.60	33.5	100	4	13.4
16142D35 11W	11	11/16"x11	-	16	14.20	35.8	100	4	15.0

## W 55°WHIT WORTH (BSW,BSF, BSP, BSB )

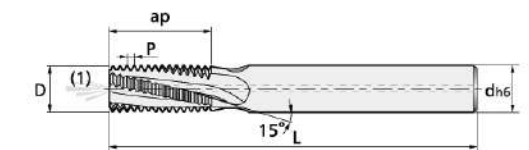
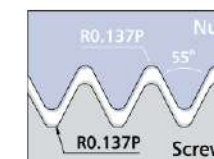


•Application: General engineering fittings and pipe couplings

1.5 x Do (ap < 1.5 x Thread Diameter)

Designation (External / Internal)	TPI	BSW	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
SMTB 08064C12 28W	28	1/16", 1/8"x28	8	6.40	12.2	60	3	6.7
10082C15 28W	28	1/8"x28	10	8.20	15.0	75	3	8.7
10100D16 19W	19	1/4", 3/8"x19	10	10.00	16.7	75	4	11.8
12110D20 19W	19	1/4", 3/8"x19	12	11.00	20.7	75	4	11.8
16145D26 19W	19	3/8"x19	16	14.50	26.1	100	4	15.2
16160E26 14W	14	1/2"-7/8"x14	16	16.00	26.3	100	5	19.0
20199D42 11W	11	1"-4"x11	20	19.90	42.7	100	4	30.7

## W 55°WHIT WORTH (BSW,BSF, BSP, BSB )

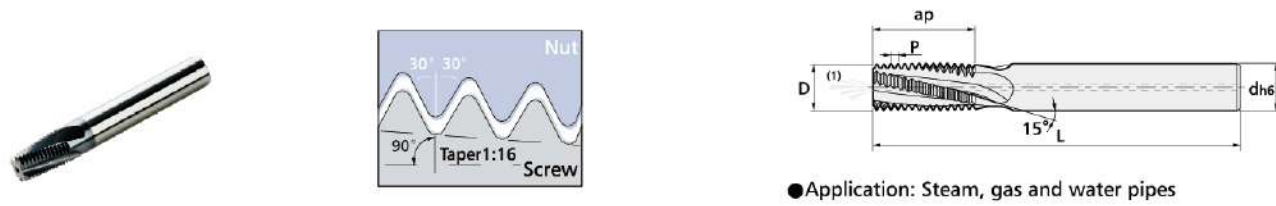


•Application: General engineering fittings and pipe couplings

2.0 x Do (ap < 2.0 x Thread Diameter)

Designation (External / Internal)	TPI	BSW	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
SMTB 08064C15 28W	28	1/16", 1/8"x28	8	6.40	15.9	60	3	6.7
10082C20 28W	28	1/8"x28	10	8.20	19.5	75	3	8.7
12110D27 19W	19	1/4", 3/8"x19	12	11.00	27.4	75	4	11.8
16145D34 19W	19	3/8"x19	16	14.50	34.1	100	4	15.2
18179D42 14W	14	1/2"-7/8"x14	18	17.90	42.6	100	4	19.0
16160D38 11W	11	1"-4"x11	16	16.00	38.1	100	4	30.7
20199E47 11W	11	1"-4"x11	20	19.90	47.3	100	5	30.7

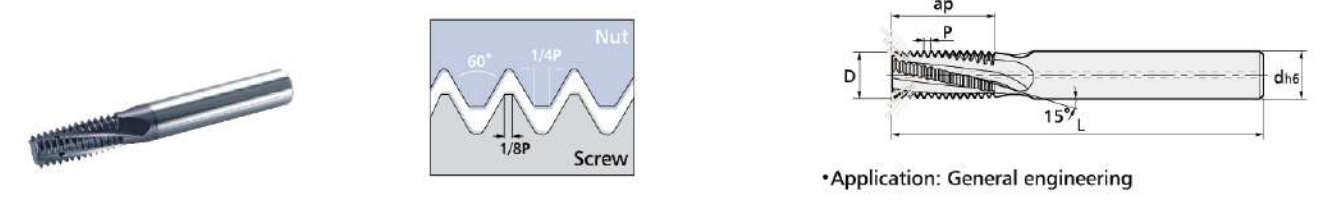
## NPT60°NATIOANL PIPE



●Application: Steam, gas and water pipes

Designation (External / Internal)	TPI	NPT	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
<b>SMTB</b> 06059C10 27NPT	27	1/16"x27	6	5.90	9.9	50	3	6.3
08076C10 27NPT	27	1/8"x27	8	7.65	9.9	60	3	8.5
10099C14 18NPT	18	1/4"x18	10	9.90	14.8	75	3	11.1
12111D14 18NPT	18	3/8"x18	12	11.15	14.8	75	4	14.5
16142D19 14NPT	14	1/2", 3/4"x14	16	14.25	19.0	100	4	17.0, 23.0
20196D23 11.5NPT	11.5	1", 1 1/4", 1 1/2", 2"x11.5	20	19.60	23.2	100	4	29.0, 37.7, 44.0, 56.0
20196D33 8NPT	8	2 1/2", 3"x8	20	19.60	33.3	100	4	66.5, 82.1

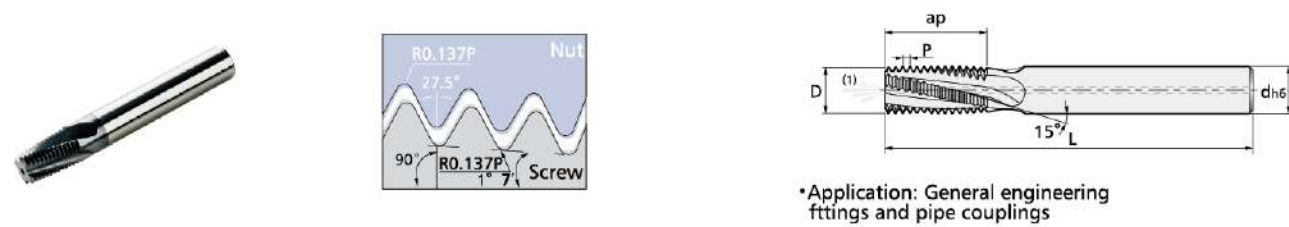
## ISO 60°METRIC



●Application: General engineering

Designation (Internal)	Pitch	Mcoarse	Mcoarse	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
<b>SMTZ</b> 06048C12 1.00ISO	1.0	M6x1.0	M8-M40x1.0	6	4.80	12.5	50	3	5.0
10087C23 1.00ISO	1.0	-	M10x1.0	10	8.70	20.5	75	3	9.0
12107D24 1.00ISO	1.0	-	M12x1.0	12	10.70	24.5	75	4	11.0
08065C16 1.25ISO	1.25	M8x1.25	-	8	6.50	16.9	60	3	6.8
10082C20 1.50ISO	1.5	M10x1.5	M12-M48x1.5	10	8.20	20.3	75	3	8.5
10099D24 1.50ISO	1.5	-	M12x1.5	10	9.90	24.80	75	4	10.5
12119D29 1.50ISO	1.5	-	M14x1.5	12	11.90	29.30	75	4	12.5
14139D32 1.50ISO	1.5	-	M16x1.5	14	13.90	32.30	75	4	14.5
16160E33 1.50ISO	1.5	-	M20x1.5	16	16.00	33.80	100	5	18.5
10099D25 1.75ISO	1.75	M12x1.75	-	10	9.90	25.40	75	4	10.2
10099C27 2.00ISO	2.0	M14x2.0	-	10	9.90	27.00	75	3	12.0
12118D27 2.00ISO	2.0	M16x2.0	M17-M80x2.0	12	11.80	27.00	75	4	14.0
16150E33 2.50ISO	2.5	M20x2.5	-	16	15.00	33.80	100	5	17.5

## BSPT 55°BRITISH STANDARD PIPE

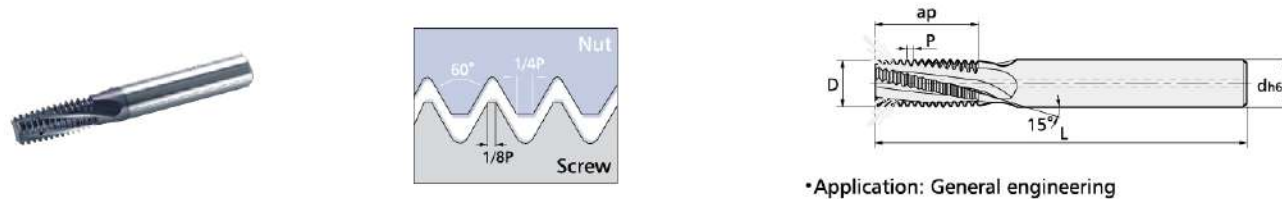


●Application: General engineering fittings and pipe couplings

Designation (External / Internal)	TPI	BSPT	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
<b>SMTB</b> 06059C10 28BSPT	28	1/16"x28	6	5.90	10.2	50	3	6.7
08076C10 28BSPT	28	1/8"x28	8	7.60	10.2	60	3	8.7
10099C15 19BSPT	19	1/4"x19	10	9.90	15.4	75	3	11.8
12111D15 19BSPT	19	3/8"x19	12	11.15	15.4	75	4	15.2
16142D22 14BSPT	14	1/2", 3/4"x14	16	14.20	22.7	100	4	19.0
16160D28 11BSPT	11	1", 1 1/2", 2", 2 1/2"x11	16	16.00	28.9	100	4	30.7
20196D28 11BSPT	11	1", 1 1/2", 2", 2 1/2"x11	20	19.60	28.9	100	4	30.7



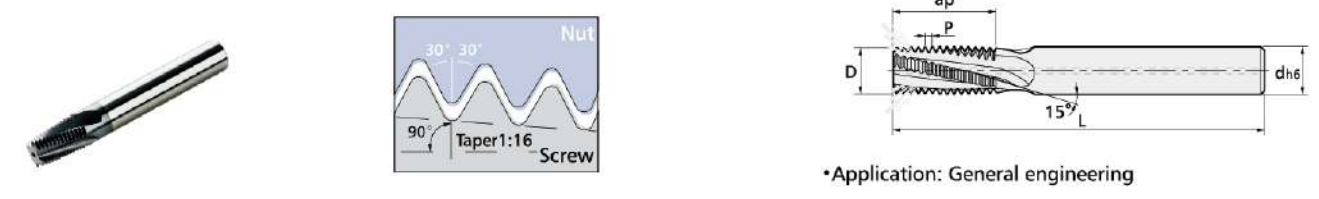
## UN 60° AMERICAN UN (UNC UNF UNEF UNS)



•Application: General engineering

Designation (Internal)	TPI	UNC	UNF	UNEF	Dimensions(mm)				No. of Inserts	Bore Dia.
					d	D	ap	L		
<b>SMTZ</b> 06050C11 28UN	28	-	1/4"x28	7/16", 1/2"x28	6	5.00	11.3	50	3	5.5
06060C14 28UN	28	-	-	7/16", 1/2"x28	6	6.00	14.1	50	3	10.2
08066C14 24UN	24	-	5/16", 3/8"x24	9/16"-11/16"x24	8	6.60	14.3	60	3	6.8
08080D21 24UN	24	-	3/8"x24	9/16"-11/16"x24	8	8.00	20.6	60	4	8.5
08080C21 20UN	20	-	7/16", 1/2"x20	3/4"-1"x20	8	8.00	21.0	60	3	9.8
10100D22 20UN	20	-	1/2"x20	3/4"-1"x20	10	10.00	22.3	75	4	11.5
12120E27 20UN	20	-	-	3/4"-1"x20	12	12.00	27.3	75	5	17.8
06056C14 18UN	18	5/16"x18	9/16", 5/8"x18	11/16"-1 1/16"x18	6	5.60	14.8	50	3	6.5
12113D26 18UN	18	-	9/16", 5/8"x18	1 1/8"-1 5/8"x18	12	11.30	26.1	75	4	12.8
08067C16 16UN	16	3/8"x16	3/4"x16	-	8	6.70	16.7	60	3	8.0
12120D31 16UN	16	-	3/4"x16	-	12	12.00	31.0	75	4	17.5
08077C20 14UN	14	7/16"x14	7/8"x14	-	8	7.70	20.9	60	3	9.3
16160E37 14UN	14	-	7/8"x14	-	16	16.00	37.2	100	5	20.5
10092C22 13UN	13	1/2"x13	-	-	10	9.20	22.5	75	3	10.8
12105C26 12UN	12	9/16"x12	1"-1 1/2"x12	-	12	10.50	26.5	75	3	12.3
12114C28 11UN	11	5/8"x11	-	-	12	11.40	28.9	75	3	13.5
16144D34 10UN	10	3/4"x10	-	-	16	14.40	34.3	100	4	16.5

## NPT60° NATIOANL PIPE



•Application: General engineering

Designation (External / Internal)	TPI	NPT	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
<b>SMTZ</b> 08076C10 27NPT	27	1/8"x27	8	7.60	10.8	60	3	8.5
10100D16 18NPT	18	1/4", 3/8"x18	10	10.00	16.2	75	4	11.1, 14.5
16155D22 14NPT	14	1/2", 3/4"x14	16	15.50	22.7	100	4	17.7, 23.0

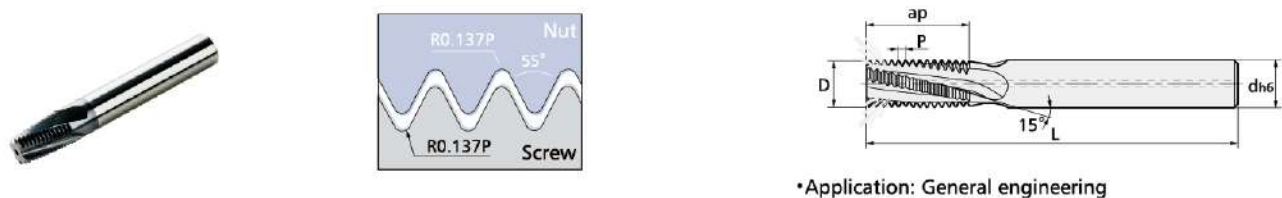
## BSPT 55° BRITISH STANDARD PIPE



•Application: General engineering

Designation (External / Internal)	TPI	BSP (G)	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
<b>SMTZ</b> 08078C14 28BSPT	28	1/8"x28	8	7.80	14.1	60	3	8.7
10100D16 19BSPT	19	1/4", 3/8"x19	10	10.00	16.7	75	4	11.8
16160E26 14BSPT	14	1/2", 3/4", 7/8"x14	16	16.00	26.3	100	5	19.0
16160D28 11BSPT	11	1", 1 1/2", 2", 2 1/2"x11	16	16.00	38.1	100	4	30.7

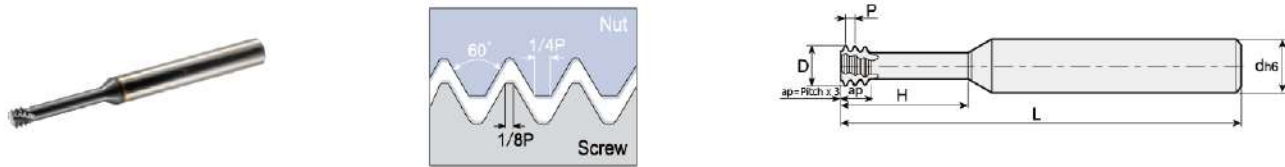
## W 55° WHIT WORTH (BSW,BSF, BSP, BSB )



•Application: General engineering

Designation (External / Internal)	TPI	BSP (G)	Dimensions(mm)				No. of Inserts	Bore Dia.
			d	D	ap	L		
<b>SMTZ</b> 08078C14 28W	28	1/8"x28	8	7.80	14.1	60	3	8.7
10100D16 19W	19	1/4"x19, 3/8"x19	10	10.00	16.7	75	4	11.8
16160E26 14W	14	1/2", 3/4", 7/8"x14	16	16.00	26.3	100	5	19.0
16160D38 11W	11	1", 1 1/2", 2", 2 1/2"x11	16	16.00	38.1	100	4	30.7

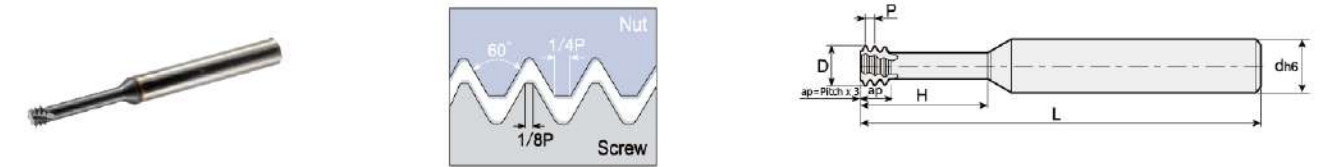
## ISO 60°METRIC



2 x Do (H ≤ 2 x Thread Diameter)

Designation (Internal)	Pitch	Mcoarse	Mfine	Dimensions(mm)					No. of Inserts	Bore Dia.
				d	D	ap	H	L		
MSMT 04006C02 0.25ISO	0.25	M1.0x0.25		4	0.65	0.75	2.2	50	3	0.75
04008C02 0.25ISO	0.25	M1.2x0.25		4	0.85	0.75	2.6	50	3	0.95
04010C03 0.30ISO	0.3	M1.4x0.3		4	1.00	0.90	3.0	50	3	1.10
04011C03 0.35ISO	0.35	M1.6x0.35		4	1.15	1.05	3.4	50	3	1.25
04014C04 0.40ISO	0.4	M2x0.4		4	1.45	1.20	4.5	50	3	1.60
04019C05 0.45ISO	0.45	M2.5x0.45		4	1.90	1.35	5.5	50	3	2.05
04023C06 0.50ISO	0.5	M3X0.5	M3.5-M16x0.5	4	2.35	1.50	6.5	50	3	2.50
04031C08 0.70ISO	0.75	M4x0.7		4	3.15	2.10	8.5	50	3	3.30
06040C10 0.80ISO	0.8	M5x0.8		6	4.00	2.40	10.5	50	3	4.20
06048C12 1.00ISO	1.0	M6x1.0	M8-M40x1.0	6	4.80	3.00	12.5	50	3	5.00
08065D16 1.25ISO	1.25	M8x1.25		8	6.50	3.75	16.5	60	4	6.75
10082D21 1.50ISO	1.5	M10x1.5		10	8.20	4.50	21.0	75	4	8.50
12120D29 1.50ISO	1.5		M14x1.5	12	12.00	4.50	29.0	75	4	12.50
14140D33 1.50ISO	1.5		M16x1.5	14	14.00	4.50	33.0	80	4	14.50
10099D25 1.75ISO	1.75	M12x1.75		10	9.90	5.25	25.0	75	4	10.20
12116D29 2.00ISO	2.0	M14x2.0		12	11.60	6.00	29.0	75	4	12.00
14136D33 2.00ISO	2.0	M16x2.0		14	13.60	6.00	33.0	80	4	14.00
16160D40 2.50ISO	2.5	M20x2.5		16	16.00	7.50	40.0	100	4	17.50

## ISO 60°METRIC



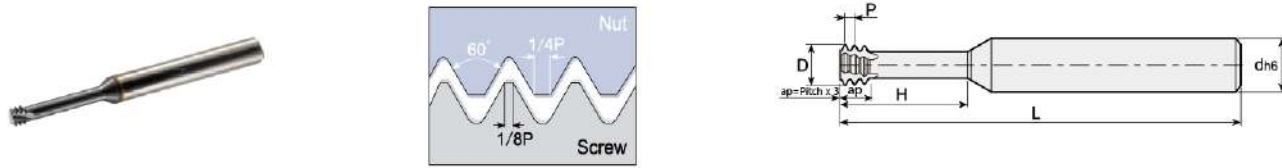
3 x Do (H ≤ 3 x Thread Diameter)

Designation (Internal)	Pitch	Mcoarse	Mfine	Dimensions(mm)					No. of Inserts	Bore Dia.
				d	D	ap	H	L		
MSMT 04008C03 0.25ISO	0.25	M1.2x0.25		4	0.85	0.75	3.6	50	3	0.95
04010C04 0.30ISO	0.3	M1.4x0.3		4	1.00	0.90	4.2	50	3	1.10
04011C04 0.35ISO	0.35	M1.6x0.35		4	1.15	1.05	4.8	50	3	1.25
04014C06 0.40ISO	0.4	M2x0.4		4	1.45	1.20	6.0	50	3	1.60
04019C07 0.45ISO	0.45	M2.5x0.45		4	1.90	1.35	7.5	50	3	2.05
04023C09 0.50ISO	0.5	M3X0.5	M3.5-M16x0.5	4	2.35	1.50	9.0	50	3	2.50
06042C15 0.50ISO	0.5		M5x0.5	6	4.20	1.50	15.0	50	3	4.50
04031C12 0.70ISO	0.7	M4x0.7		4	3.15	2.10	12.0	50	3	3.30
06050C18 0.75ISO	0.75		M6x0.75	6	5.00	2.25	18.0	50	3	5.25
06040C15 0.80ISO	0.8	M5x0.8		6	4.00	2.40	15.0	50	3	4.20
06048C18 1.00ISO	1.0	M6x1.0	M8-M40x1.0	6	4.80	3.00	18.0	50	3	5.00
08065D24 1.00ISO	1.0		M8x1.0	8	6.50	3.00	24.0	60	4	7.00
10085D30 1.00ISO	1.0		M10x1.0	10	8.50	3.00	30.0	75	4	9.00
10100D36 1.00ISO	1.0		M12x1.0	10	10.00	3.00	36.0	75	4	11.00
08065D24 1.25ISO	1.25	M8x1.25		8	6.50	3.75	24.0	60	4	6.75
10082D30 1.25ISO	1.25		M10x1.25	10	8.20	3.75	30.0	75	4	8.75
10100D36 1.25ISO	1.25		M12x1.25	10	10.00	3.75	36.0	75	4	10.75
10082D30 1.50ISO	1.5	M10x1.5		10	8.20	4.50	30.0	75	4	8.50
10100D36 1.50ISO	1.5		M12x1.5	10	10.00	4.50	36.0	75	4	10.50
12120D36 1.50ISO	1.5		M14x1.5	12	12.00	4.50	36.0	75	4	12.50
14140D40 1.50ISO	1.5		M16x1.5	14	14.00	4.50	40.0	80	4	14.50
10099D36 1.75ISO	1.75	M12x1.75		10	9.90	5.25	36.0	75	4	10.20
12116D36 2.00ISO	2.0	M14x2.0		12	11.60	6.00	36.0	75	4	12.00
14136D40 2.00ISO	2.0	M16x2.0		14	13.60	6.00	40.0	80	4	14.00
16148D54 2.50ISO	2.5	M18x2.5		16	14.80	7.50	54.0	100	4	15.50
16160D60 2.50ISO	2.5	M20x2.5		16	16.00	7.50	60.0	100	4	17.50



# Mini Mill-Thread Solid Carbide

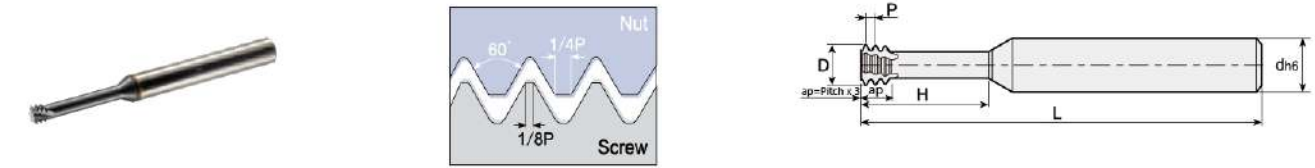
## UN 60° AMERICAN UN (UNC UNF UNEF UNS)



2 x Do (H ≤ 2 x Thread Diameter)

Designation (Internal)	TPI	UNC	UNF	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
<b>MSMT</b> 06015C03 72UN	72		No.1-72	6	1.45	3.9	50	3	1.6
06014C04 64UN	64	No.1-64	No.2-64	6	1.40	4.2	50	3	1.5
06017C05 56UN	56	No.2-56	No.3-56	6	1.65	5.0	50	3	1.8
06019C06 48UN	48	No.3-48	No.4-48	6	1.90	6.0	50	3	2.1
06021C06 40UN	40	No.4, No.5-40	No.6-40	6	2.10	6.0	50	3	2.3
06025C07 40UN	40	No.5-40	No.6-40	6	2.45	7.2	50	3	2.6
06033C08 36UN	36		No.8-36	6	3.30	8.7	50	3	3.5
06026C07 32UN	32	No.6, No.8-32	No.10-32	6	2.55	7.4	50	3	2.8
06032C10 32UN	32	No.8-32	No.10-32	6	3.20	10.0	50	3	3.5
06038C10 32UN	32		No.10-32	6	3.80	10.3	50	3	4.0
06053C13 28UN	28		1/4"x28	6	5.25	13.2	50	3	5.5
06036C10 24UN	24	No.10-24	5/16"x24	6	3.58	10.2	50	3	3.9
08067C16 24UN	24		5/16"x24	8	6.68	16.5	60	3	6.9
06049C13 20UN	20	1/4"x20	7/16"x20	6	4.88	13.4	50	3	5.2
10096C23 20UN	20		7/16"x20	10	9.55	23.0	75	3	9.9
08062C16 18UN	18	5/16"x18		8	6.15	16.9	60	3	6.6
08067C19 16UN	16	3/8"x16		8	6.70	19.1	60	3	8.0
10080C12 14UN	14	7/16"x14		10	9.00	23.3	75	3	9.4

## UN 60° AMERICAN UN (UNC UNF UNEF UNS)



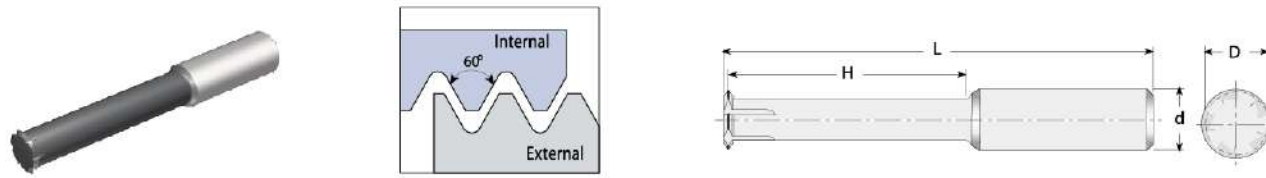
3 x Do (H ≤ 3 x Thread Diameter)

Designation (Internal)	TPI	UNC	UNF	Dimensions(mm)				No. of Inserts	Bore Dia.
				d	D	ap	L		
<b>MSMT</b> 06015C05 72UN	72		No.1-72	6	1.45	5.8	50	3	1.6
06017C07 56UN	56	No.2-56	No.3-56	6	1.65	7.0	50	3	1.8
06021C09 40UN	40	No.4, No.5-40	No.6-40	6	2.10	9.0	50	3	2.3
06025C10 40UN	40	No.5-40	No.6-40	6	2.45	10.0	50	3	2.6
06026C11 32UN	32	No.6, No.8-32	No.10-32	6	2.55	11.0	50	3	2.8
06032C13 32UN	32	No.8-32	No.10-32	6	3.20	13.0	50	3	3.5
06038C15 32UN	32		No.10-32	6	3.80	15.1	50	3	4.0
06044C17 28UN	28	No.12-28	1/4"x28	6	4.40	17.0	50	3	4.7
06053C19 28UN	28		1/4"x28	6	5.25	19.6	50	3	5.5
08067C24 24UN	24		5/16"x24	8	6.68	24.5	60	3	6.9
06049C19 20UN	20	1/4"x20	7/16"x20	6	4.88	19.8	50	3	5.2
08062C24 18UN	18	5/16"x18		8	6.15	24.0	60	3	6.6

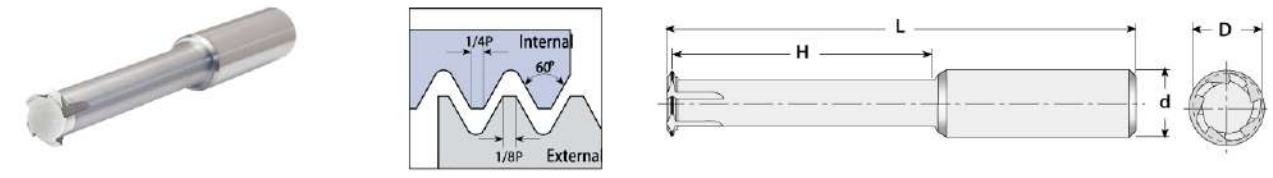
\* Bore diameter applies to smallest thread dia.

# Mini Mill-Thread Solid Carbide for Deep Parts

## Partial Profile 60°



## ISO Metric



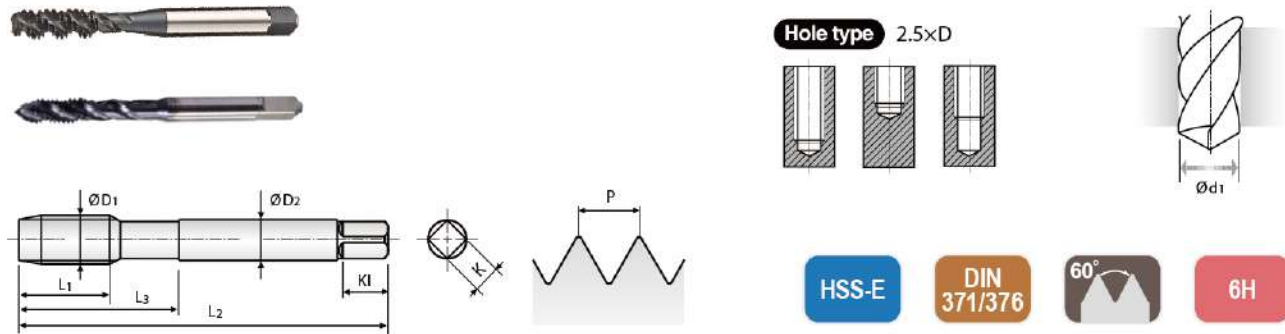
3 x Do (H < 3 x Thread Diameter)

Designation (Internal)	Pitch		MCoarse	Mfine	Min. Thread UN, UNS, UNF, UNEF	Dimensions(mm)				No. of flutes
	mm	TPI				d	D	H	L	
<b>DSMT</b> 04011C3.4A60	0.25-0.35	72-100	M1.6x0.35	M1.6x0.25 M1.8x0.25 M2 x0.25	No. 0-80UNF	4	1.05	3.4	50	3
04015C4.5A60	0.35-0.45	56-72	M2x0.4 M2.2x0.45	M2x0.35 M2.2x0.35	No. 1-64UNC, No. 1-72UNF, No. 2-56UNC, No. 2-64UNF	4	1.45	4.5	50	3
04019C5.5A60	0.35-0.6	40-56	M2.5x0.45	M2.5x0.35 M3x0.35	No. 3-48UNC, No. 3-56UNF	4	1.90	5.5	50	3
04023C6.5A60	0.45-0.6	40-48	M3x0.5 M3.5x0.6	M3.5x0.5	No. 4-40UNC, No. 4-48UNC, No. 5-40UNC, No. 5-44UNF	4	2.35	6.5	50	3
04032C8.5A60	0.5-0.8	32-48	M4x0.7 M4.5x0.75	M4x0.5	No. 6-32UNC, No. 6-40UNF, No. 8-32UNC, No. 8-36UNF	4	3.15	8.5	50	3
04039D16A60	0.5-0.8	32-56	M5x0.8	M5x0.5 M5x0.75	No.10-56UNS, No.10-48UNS, No.10-40UNS, No.10-36UNS, No.10-32UNF	4	3.90	16.0	50	4
06040C10A60	0.7-1.0	24-36	M5x0.8 M6x1.0	M5x0.75 M6x0.75	No.10-36UNS, No.10-40UNS, No.12-24UNC, No.12-28UNF	6	3.15	10.0	50	3
060049E20B60	0.5-1.0	24-36	M6x1.0	M6x0.5, M6x0.75	No.12-56UNS, No.12-48UNS, 1/4 -40UNS, 1/4 -36UNS, 1/4 -32UNEF, 1/4 -28UNF, 1/4 -27UNS, 1/4 -24UNS	6	4.85	20.0	50	5
06048C12A60	0.8-1.25	20-32	M6x1.0 M8x1.25	M7.5x1.0	5/16 -32UNEF, 5/16 -28UN, 5/16 -27UNS, 5/16 -24UNS, 5/16 -20UN	6	4.80	12.0	50	3
06059E20B60	0.5-1.25	20-48	M8x1.25	M7x0.5 M7x0.75 M7.5x1.0	5/16 -48UNS, 5/16 -40UNS, 5/16 -36UNS, 5/16 -32UNEF, 5/16 -28UN, 5/16 -27UNS, 5/16 -24UNS, 5/16 -20UN	6	5.90	25.0	50	5
10099F35B60	0.5-1.0	16-24	—	M10.5x0.5, M11x0.75, M11x1.0	7/16 -32UN, 7/16 -28UNEF, 7/16 -27UNS, 7/16 -24UNS	10	9.90	35.0	75	6
08065F16C60	1.0-1.5	24-14	M10x1.5	M10x1.0 M10x1.25	3/8 -24UNF, 3/8 -20UN, 7/16 -18UNS, 7/16 -16UN	8	6.50	16.0	50	6
08079F32C60	1.0-1.5	16-24	M10x1.5	M10x1.0, M10x1.25	3/8 -24UNF, 3/8 -20UN, 7/16 -18UNS, 7/16 -16UN	8	7.90	32.0	60	6
10082F21A60	1.25-1.75	14-24	M12x1.75	M10x1.25 M12x1.25	1/2 -24UNS, 1/2 -20UNS, 1/2 -18UNS, 1/2 -16UNS, 1/2 -14UNS	10	8.20	21.0	75	6
10099F38D60	1.0-1.75	14-24	M12x1.75	M12x1.0, M12x1.25, M12x1.5	1/2 -24UNS, 1/2 -20UNS, 1/2 -18UNS, 1/2 -16UNS, 1/2 -14UNS	10	9.90	38.0	75	6
12119F45D60	1.0-1.75	14-24	—	M13.5x1.0, M14x1.25, M14x1.5	9/16 -24UNEF	12	11.90	45.0	80	6

Designation (Internal)	Pitch	MCoarse	Dimensions(mm)				No. of flutes	Bore Dia.
			d	D	H	L		
<b>DSMT</b> 08041C19 1.00ISO	1.0	M6x1	8	4.10	19.0	60	3	5.0
10058C26 1.25ISO	1.25	M8x1.25	10	5.80	26.0	75	3	6.8
10077C32 1.50ISO	1.5	M10x1.5	10	7.70	32.0	75	3	8.5
12094D38 1.50ISO	1.5	M12x1.5	12	9.40	38.0	75	4	10.5
12087D38 1.75ISO	1.75	M12x1.75	12	8.70	38.0	75	4	10.2
16102D44 2.00ISO	2.0	M14x2	16	10.20	44.0	100	4	12.0
16122D50 2.00ISO	2.0	M16x2	16	12.20	50.0	100	4	14.0
16129E57 2.50ISO	2.5	M18x2.5	16	12.90	57.0	120	5	15.5
16148E63 2.50ISO	2.5	M20x2.5	16	14.80	63.0	120	5	17.5

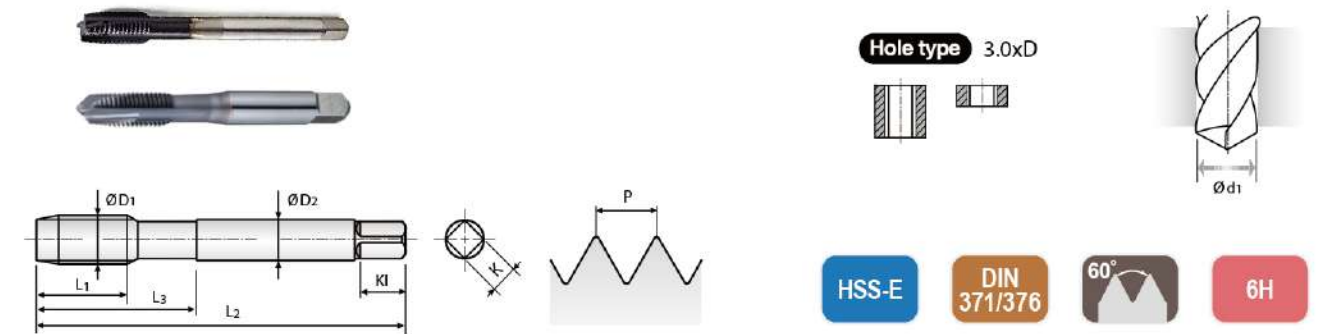


## Spiral flute taps for multi-purpose



Size	Pitch	Order No.		Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD 1	P	TiAlN	TiN	L1	L2	L3	ØD 2	K	K1	Z	Ød 1
M2	0.40	TSF02004016	TSF02004026	6.0	45	18	2.8	2.10	5	3	1.60
M2.5	0.45	TSF02504516	TSF02504526	6.0	45	18	2.8	2.10	5	3	2.05
M3	0.50	TSF03005016	TSF03005026	6.0	56	18	3.5	2.70	6	3	2.50
M4	0.70	TSF04007016	TSF04007026	7.5	63	21	4.5	3.40	6	3	3.30
M5	0.80	TSF05008016	TSF05008026	8.5	70	25	6.0	4.90	8	3	4.20
M6	1.00	TSF06010016	TSF06010026	11.0	80	30	6.0	4.90	8	3	5.00
M8	1.25	TSF08012516	TSF08012526	14.0	90	35	8.0	6.20	9	3	6.80
M10	1.50	TSF10015016	TSF10015026	16.0	100	39	10.0	8.00	11	3	8.50
M12	1.75	TSF12017516	TSF12017526	18.5	110	49	9.0	7.00	10	3	10.20
M14	2.00	TSF14020016	TSF14020026	20.0	110	53	11.0	9.00	12	3	12.00
M16	2.00	TSF16020016	TSF16020026	20.0	110	54	12.0	9.00	12	3	14.00
M18	2.50	TSF18025016	TSF18025026	25.0	125	62	14.0	11.00	14	4	15.50
M20	2.50	TSF20025016	TSF20025026	25.0	140	62	16.0	12.00	15	4	17.50
M22	2.50	TSF22025016	TSF22025026	25.0	140	62	18.0	14.50	17	4	19.50
M24	3.00	TSF24030016	TSF24030026	30.0	160	73	18.0	14.50	17	4	21.00
M27	3.00	TSF27030016	TSF27030026	30.0	160	73	20.0	16.00	19	4	24.00
M30	3.50	TSF30035016	TSF30035026	35.0	180	85	22.0	18.00	21	4	26.50

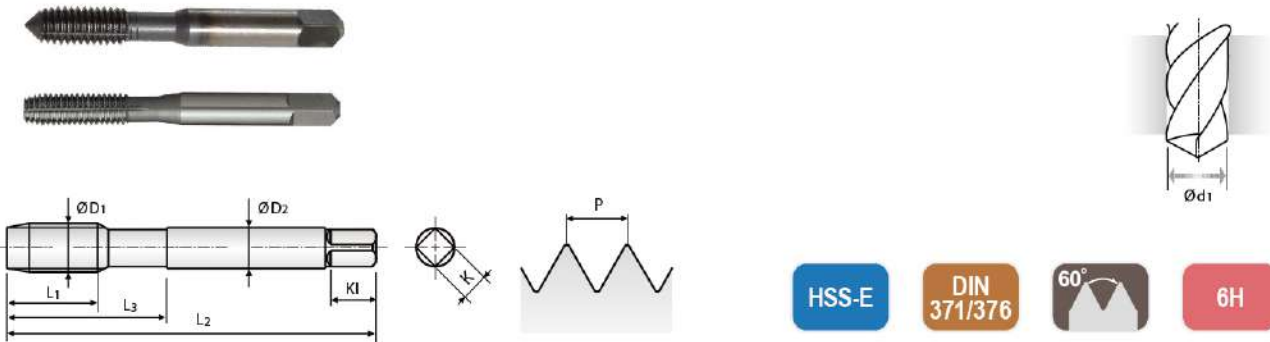
## Spiral point taps for multi-purpose



Size	Pitch	Order No.		Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD 1	P	TiAlN	TiN	L1	L2	L3	ØD 2	K	K1	Z	Ød 1
M2	0.40	TSP02004016	TSP02004026	10.0	45	18	2.8	2.10	5	3	1.60
M2.5	0.45	TSP02504516	TSP02504526	10.0	45	18	2.8	2.10	5	3	2.05
M3	0.50	TSP03005016	TSP03005026	10.0	56	18	3.5	2.70	6	3	2.50
M4	0.70	TSP04007016	TSP04007026	12.0	63	21	4.5	3.40	6	3	3.30
M5	0.80	TSP05008016	TSP05008026	14.0	70	25	6.0	4.90	8	3	4.20
M6	1.00	TSP06010016	TSP06010026	16.0	80	30	6.0	4.90	8	3	5.00
M8	1.25	TSP08012516	TSP08012526	18.0	90	35	8.0	6.20	9	3	6.80
M10	1.50	TSP10015016	TSP10015026	20.0	100	39	10.0	8.00	11	3	8.50
M12	1.75	TSP12017516	TSP12017526	24.0	110	49	9.0	7.00	10	3	10.20
M14	2.00	TSP14020016	TSP14020026	26.0	110	53	11.0	9.00	12	3	12.00
M16	2.00	TSP16020016	TSP16020026	26.0	110	54	12.0	9.00	12	3	14.00
M18	2.50	TSP18025016	TSP18025026	30.0	125	62	14.0	11.00	14	4	15.50
M20	2.50	TSP20025016	TSP20025026	32.0	140	62	16.0	12.00	15	4	17.50
M22	2.50	TSP22025016	TSP22025026	32.0	140	62	18.0	14.50	17	4	19.50
M24	3.00	TSP24030016	TSP24030026	34.0	160	73	18.0	14.50	17	4	21.00
M27	3.00	TSP27030016	TSP27030026	36.0	160	73	20.0	16.00	19	4	24.00
M30	3.50	TSP30035016	TSP30035026	40.0	180	85	22.0	18.00	21	4	26.50



## Forming taps for multi-purpose



Size	Pitch	Order No.		Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD 1	P	TiAlN	TiN	L1	L2	L3	ØD 2	K	K1	Z	Ød 1
M2	0.40	TFO02004016	TFO02004026	6.0	45	18	2.8	2.10	5	3	1.83
M2.5	0.45	TFO02504516	TFO02504526	6.0	50	18	2.8	2.10	5	3	2.30
M3	0.50	TFO03005016	TFO03005026	10.0	56	18	3.5	2.70	6	3	2.80
M4	0.70	TFO04007016	TFO04007026	12.0	63	21	4.5	3.40	6	3	3.70
M5	0.80	TFO05008016	TFO05008026	14.0	70	25	6.0	4.90	8	3	4.65
M6	1.00	TFO06010016	TSP06010026	16.0	90	30	6.0	4.90	8	3	5.55
M8	1.25	TFO08012516	TFO08012526	17.0	90	35	8.0	6.20	9	3	7.40
M10	1.50	TFO10015016	TFO10015026	20.0	100	39	10.0	8.00	11	3	9.30
M12	1.75	TFO12017516	TFO12017526	18.5	110	49	9.0	7.00	10	3	11.20
M14	2.00	TFO14020016	TFO14020026	20.0	110	53	11.0	9.00	12	3	13.10
M16	2.00	TFO16020016	TFO16020026	20.0	110	54	12.0	9.00	12	3	15.10

## DIN 471/472 Standard (Partial Profile)

Type	Designation (Right)	Designation (Left)	Groove width m(H13)=W	Dimensions		Picture
				IC	t	
External	ER 11-0.50-D471-1.00	EL 11-0.50-D471-0.70	0.50	6.350	0.70	
	11-0.60-D471-1.00	11-0.60-D471-1.00	0.60	6.350	1.00	
	11-0.80-D471-1.20	11-0.80-D471-1.20	0.80	6.350	1.20	
	11-1.00-D471-1.50	11-1.00-D471-1.50	1.00	6.350	1.50	
	11-1.20-D471-1.50	11-1.20-D471-1.50	1.20	6.350	1.50	
	11-1.40-D471-1.50	11-1.40-D471-1.50	1.40	6.350	1.50	
	11-1.50-D471-1.50	11-1.50-D471-1.50	1.50	6.350	1.50	
	11-1.80-D471-1.80	11-1.80-D471-1.80	1.80	6.350	1.80	
	16-0.33-D471-1.30	16-0.33-D471-1.30	0.33	9.525	1.30	
	16-0.50-D471-1.30	16-0.50-D471-1.30	0.50	9.525	1.30	
	16-0.75-D471-1.30	16-0.75-D471-1.30	0.75	9.525	1.30	
	16-0.80-D471-1.30	16-0.80-D471-1.30	0.80	9.525	1.30	
	16-1.00-D471-1.30	16-1.00-D471-1.30	1.00	9.525	1.30	
	16-1.10-D471-1.30	16-1.10-D471-1.30	1.10	9.525	1.30	
	16-1.17-D471-1.30	16-1.17-D471-1.30	1.17	9.525	1.30	
	16-1.20-D471-1.60	16-1.20-D471-1.60	1.20	9.525	1.60	
	16-1.37-D471-1.60	16-1.37-D471-1.60	1.37	9.525	1.60	
	16-1.40-D471-1.60	16-1.40-D471-1.60	1.40	9.525	1.60	
	16-1.50-D471-1.60	16-1.50-D471-1.60	1.50	9.525	1.60	
	16-1.60-D471-1.60	16-1.60-D471-1.60	1.60	9.525	1.60	
	16-1.67-D471-1.60	16-1.67-D471-1.60	1.67	9.525	1.60	
	16-1.70-D471-1.85	16-1.70-D471-1.85	1.70	9.525	1.85	
	16-1.75-D471-1.85	16-1.75-D471-1.85	1.75	9.525	1.85	
	16-1.80-D471-1.85	16-1.80-D471-1.85	1.80	9.525	1.85	
	16-1.85-D471-1.85	16-1.85-D471-1.85	1.85	9.525	1.85	
	16-1.92-D471-1.85	16-1.92-D471-1.85	1.92	9.525	1.85	
	16-2.00-D471-1.85	16-2.00-D471-1.85	2.00	9.525	1.85	
	16-2.15-D471-1.85	16-2.15-D471-1.85	2.15	9.525	1.85	
	16-2.15-D471-2.00	16-2.15-D471-1.85	2.15	9.525	2.00	
	16-2.20-D471-1.85	16-2.20-D471-1.85	2.20	9.525	1.85	
	16-2.20-D471-2.00	16-2.20-D471-2.00	2.20	9.525	2.00	
	16-2.25-D471-1.85	16-2.25-D471-1.85	2.25	9.525	1.85	
	16-2.25-D471-2.00	16-2.25-D471-2.00	2.25	9.525	2.00	
	16-2.30-D471-1.85	16-2.30-D471-1.85	2.30	9.525	1.85	
16-2.30-D471-2.00	16-2.30-D471-2.00	2.30	9.525	2.00		
16-2.50-D471-1.85	16-2.50-D471-1.85	2.50	9.525	1.85		
16-2.50-D471-2.00	16-2.50-D471-2.00	2.50	9.525	2.00		
16-2.65-D471-2.20	16-2.65-D471-2.20	2.65	9.525	2.20		
16-2.72-D471-2.20	16-2.72-D471-2.20	2.72	9.525	2.20		
Internal	IR 11-0.50-D472-0.70	IL 11-0.50-D472-0.70	0.50	6.350	0.70	
	11-0.60-D472-0.70	11-0.60-D472-0.70	0.60	6.350	0.70	
	11-0.80-D472-0.70	11-0.80-D472-0.70	0.80	6.350	0.70	
	11-1.00-D472-0.70	11-1.00-D472-0.70	1.00	6.350	0.70	
	11-1.17-D472-0.70	11-1.17-D472-0.70	1.17	6.350	0.70	
	11-1.20-D472-1.50	11-1.20-D472-1.50	1.20	6.350	1.50	
	11-1.37-D472-1.50	11-1.37-D472-1.50	1.37	6.350	1.50	
	11-1.40-D472-1.50	11-1.40-D472-1.50	1.40	6.350	1.50	
	11-1.50-D472-1.50	11-1.50-D472-1.50	1.50	6.350	1.50	
	11-1.67-D472-1.50	11-1.67-D472-1.50	1.67	6.350	1.50	
	11-1.80-D472-1.80	11-1.80-D472-1.80	1.80	6.350	1.80	
	11-1.92-D472-1.80	11-1.92-D472-1.80	1.92	6.350	1.80	
	11-2.20-D472-1.80	11-2.20-D472-1.80	2.20	6.350	1.80	
	16-0.33-D472-1.20	16-0.33-D472-1.20	0.33	9.525	1.20	
	16-0.50-D472-1.20	16-0.50-D472-1.20	0.50	9.525	1.20	
	16-0.75-D472-1.20	16-0.75-D472-1.20	0.75	9.525	1.20	
	16-0.80-D472-1.20	16-0.80-D472-1.20	0.80	9.525	1.20	
	16-1.00-D472-1.20	16-1.00-D472-1.20	1.00	9.525	1.20	
	16-1.10-D472-1.20	16-1.10-D472-1.20	1.10	9.525	1.20	
	16-1.17-D472-1.20	16-1.17-D472-1.20	1.17	9.525	1.20	
	16-1.20-D472-1.20	16-1.20-D472-1.20	1.20	9.525	1.20	
	16-1.37-D472-1.80	16-1.37-D472-1.60	1.37	9.525	1.80	
	16-1.40-D472-1.80	16-1.40-D472-1.60	1.40	9.525	1.80	
	16-1.50-D472-1.80	16-1.50-D472-1.60	1.50	9.525	1.80	
	16-1.60-D472-1.80	16-1.60-D472-1.60	1.60	9.525	1.80	
	16-1.67-D472-1.80	16-1.67-D472-1.60	1.67	9.525	1.80	
	16-1.70-D472-1.80	16-1.70-D472-1.80	1.70	9.525	1.80	
	16-1.75-D472-1.80	16-1.75-D472-1.80	1.75	9.525	1.80	
	16-1.80-D472-1.80	16-1.80-D472-1.80	1.80	9.525	1.80	
	16-1.85-D472-1.80	16-1.85-D472-1.80	1.85	9.525	1.80	
	16-1.92-D472-1.80	16-1.92-D472-1.80	1.92	9.525	1.80	
	16-2.00-D472-2.20	16-2.00-D472-2.20	2.00	9.525	2.20	
	16-2.15-D472-2.20	16-2.15-D472-2.20	2.15	9.525	2.20	
	16-2.20-D472-2.20	16-2.20-D472-2.20	2.20	9.525	2.20	
16-2.25-D472-2.20	16-2.25-D472-2.20	2.25	9.525	2.20		
16-2.30-D472-2.20	16-2.30-D472-2.20	2.30	9.525	2.20		
16-2.50-D472-2.20	16-2.50-D472-2.20	2.50	9.525	2.20		
16-2.65-D472-2.20	16-2.65-D472-2.20	2.65	9.525	2.20		
16-2.72-D472-2.20	16-2.72-D472-2.20	2.72	9.525	2.20		

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

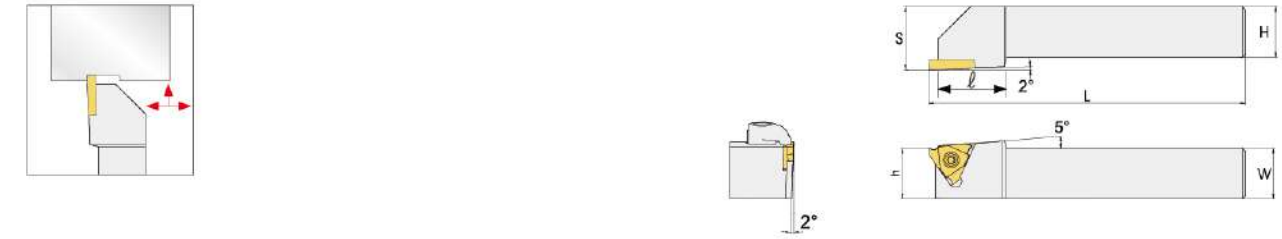
TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



## DIN 7993 Standard

Type	Designation (Right)	Designation (Left)	Groove width		Dimensions			Picture
			R	IC	W	t		
External	ER 16-0.40-D7993-0.60	EL 16-0.40-D7993-0.60	0.40	9.525	0.80	0.60		
	16-0.50-D7993-1.40	16-0.50-D7993-1.40	0.50	9.525	1.00	1.40		
	16-0.60-D7993-0.80	16-0.60-D7993-0.80	0.60	9.525	1.20	0.80		
	16-0.60-D7993-1.60	16-0.60-D7993-1.60	0.60	9.525	1.20	1.60		
	16-0.90-D7993-1.10	16-0.90-D7993-1.10	0.90	9.525	1.80	1.10		
	16-0.90-D7993-2.00	16-0.90-D7993-2.00	0.90	9.525	1.80	2.00		
	16-1.00-D7993-1.20	16-1.00-D7993-1.20	1.00	9.525	2.00	1.20		
	16-1.00-D7993-2.15	16-1.00-D7993-2.15	1.00	9.525	2.00	2.15		
	16-1.10-D7993-2.15	16-1.10-D7993-2.15	1.10	9.525	2.20	2.15		
	16-1.20-D7993-2.25	16-1.20-D7993-2.25	1.20	9.525	2.40	2.25		
Internal	IR 16-0.50-D7993-1.40	IL 16-0.50-D7993-1.40	0.50	9.525	1.00	1.40		
	16-0.60-D7993-0.80	16-0.60-D7993-0.80	0.60	9.525	1.20	0.80		
	16-0.60-D7993-1.60	16-0.60-D7993-1.60	0.60	9.525	1.20	1.60		
	16-0.90-D7993-1.10	16-0.90-D7993-1.10	0.90	9.525	1.80	1.10		
	16-0.90-D7993-2.00	16-0.90-D7993-2.00	0.90	9.525	1.80	2.00		
	16-1.00-D7993-1.20	16-1.00-D7993-1.20	1.00	9.525	2.00	2.00		
	16-1.00-D7993-2.15	16-1.00-D7993-2.15	1.00	9.525	2.00	2.15		
	16-1.10-D7993-2.15	16-1.10-D7993-2.15	1.10	9.525	2.20	2.15		
	16-1.20-D7993-2.25	16-1.20-D7993-2.25	1.20	9.525	2.40	2.25		

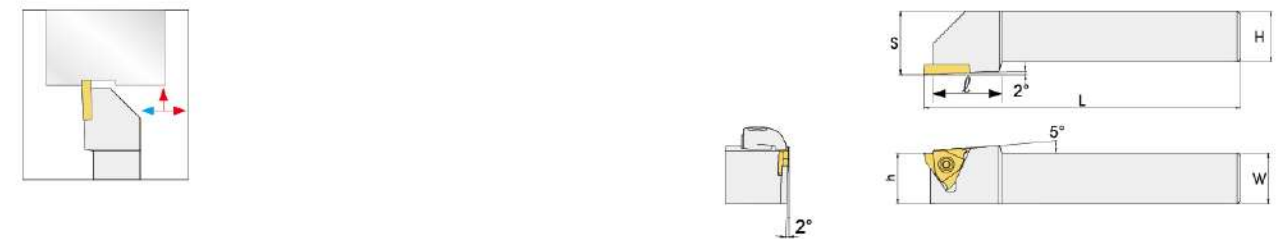
## SGBR/L



External grooving holder, for 3 corner inserts

Designation	Stock		Dimensions(mm)						Insert	Spare parts	
	R	L	W	H	S	L	h	ℓ		screw	Wrench
SGBR/L 1616H16	●	●	16	16	21	100	16	22	GBA32R/L	M4.0x10	T-15
2020K16	●	●	20	20	25	125	20	26			
2525M16	●	●	25	25	30	150	25	26			
2020K22-1	●	●	20	20	25	125	20	26	GBA43R/L125-185	M5.0x12	T-20
2525M22-1	●	●	25	25	30	150	25	26			
2020K22-2	●	●	20	20	25	125	20	26	GBA43R/L200-280	M5.0x12	T-20
2525M22-2	●	●	25	25	30	150	25	26			
2020K22-3	●	●	20	20	25	125	20	26	GBA43R/L300-480	M5.0x12	T-20
2525M22-3	●	●	25	25	30	150	25	26			

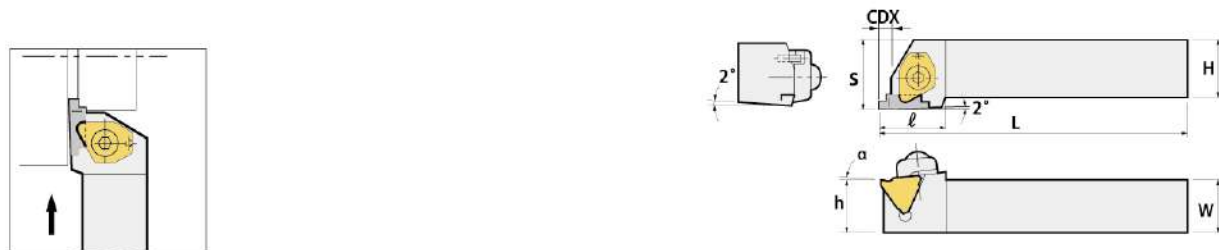
## CGBR/L



External grooving holder, for 3 corner inserts

Designation	Stock		Dimensions(mm)						Insert	Spare parts			
	R	L	W	H	S	L	h	ℓ		Clamp	Clamp Screw	screw	Wrench
CGBR/L 1616H16			16	16	21	100	16	22	GBA32R/L	JTY16	JTS06	M4.0x10	T-15 HW30L
2020K16			20	20	25	125	20	26					
2525M16			25	25	30	150	25	26					
2020K22-1			20	20	25	125	20	26	GBA43R/L125-185	JTY16	JTS06	M5.0x12	T-20 HW30L
2525M22-1			25	25	30	150	25	26					
2020K22-2			20	20	25	125	20	26	GBA43R/L200-280	JTY16	JTS06	M5.0x12	T-20 HW30L
2525M22-2			25	25	30	150	25	26					
2020K22-3			20	20	25	125	20	26	GBA43R/L300-480	JTY16	JTS06	M5.0x12	T-20 HW30L
2525M22-3			25	25	30	150	25	26					

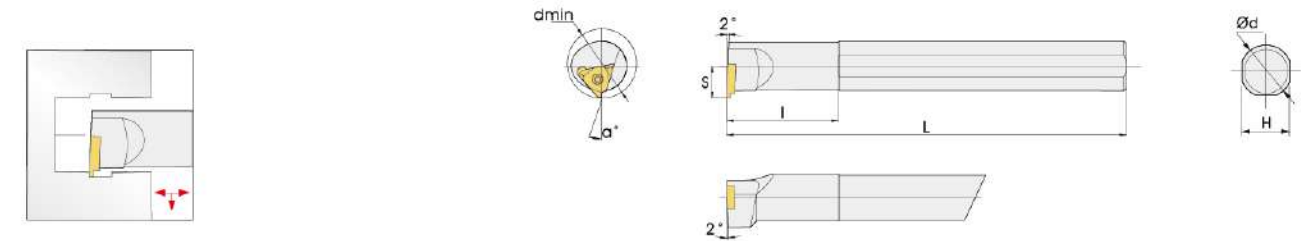
## KGBR/L



External grooving holder, for 3 corner inserts

Designation	Stock		Size					Applicable Insert	Spare parts						
	R	L	W	H	S	L	h		l	CDX	Clamp Bridge	Clamp screw	Spring	Insert screw	Wrench
KGBR/L 2020-K16	●	●	20	20	25	125	20	24.0	2.5	GBA32R/L	YBG22	DSPM6	GTS06	M4.0x10	HW40L T-15
2525-M16	●	●	25	25	30	150	25	24.0	2.5					GBA/L125-185	YBG22
2020-K22-15	●	●	20	20	25	125	20	25.5	4.0						
2525-M22-15	●	●	25	25	30	150	25	25.5	4.0						
2020-K22-25	●	●	20	20	25	125	20	25.5	4.5						
2525-M22-25	●	●	25	25	30	150	25	25.5	4.5						
2020-K22-35	●	●	20	20	25	125	20	25.5	5.5						
2525-M22-35	●	●	25	25	30	150	25	25.5	5.5						

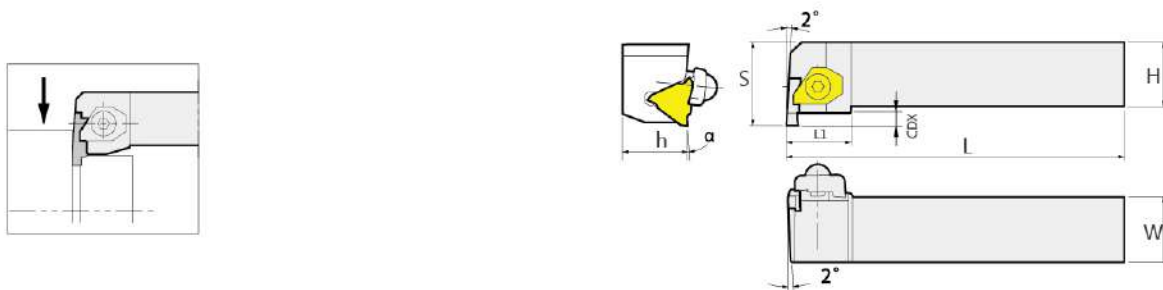
## SGBR/L



Internal grooving holder, for 3 corner inserts

Designation	Stock		Dimensions(mm)					Insert	Spare parts		
	R	L	Dmin	d	H	L	l		S	screw	Wrench
S16Q-SGBR/L11			20	16	11.5	180	40	15	GBA22R/L	M2.5x6	T-8
S20Q-SGBR/L11			25	20	12.5	180	40	18			
S16Q-SGBR/L16			20	16	11.5	180	40	15	GBA32R/L	M4.0x10	T-15
S20Q-SGBR/L16			25	20	12.5	180	40	18			
S25R-SGBR/L16			35	25	17.5	200	45	23	GBA43R/L125-185	M5.0x12	T-20
S25R-SGBR/L22-1			35	25	18.2	200	45	23			
S32S-SGBR/L22-1			40	32	21.0	250	45	30			
S25R-SGBR/L22-2			35	25	18.2	200	45	23			
S32S-SGBR/L22-2			40	32	21.0	250	45	30			
S25R-SGBR/L22-3			35	25	18.2	200	45	23			
S32R-SGBR/L22-3			40	32	21.0	250	45	30			

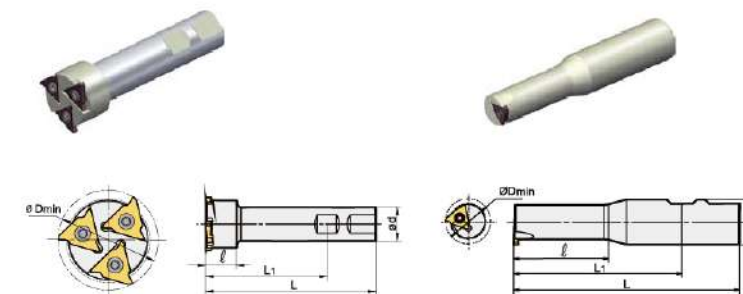
## KGBSR/L



External grooving holder, for 3 corner inserts

Designation	Stock		Size					Applicable Insert	Spare parts						
	R	L	W	H	S	L	h		l	CDX	Clamp Bridge	Clamp screw	Spring	Insert screw	Wrench
KGBSR/L 2020-K16			20	20	25	125	20	25.0	2.5	GBA32R/L	YBG22	DSPM6	GTS06	M4.0x10	HW40L T-15
2525-M16			25	25	30	150	25	25.0	2.5					GBA/L125-185	YBG22
2020-K22-15			20	20	27	125	20	25.0	4.0						
2525-M22-15			25	25	32	150	25	25.0	4.0						
2020-K22-25			20	20	27	125	20	25.0	4.5						
2525-M22-25			25	25	32	150	25	25.0	4.5						
2020-K22-35			20	20	27	125	20	25.0	5.5						
2525-M22-35			25	25	32	150	25	25.0	5.5						

## SGBR/L



Grooving milling cutter, for 3 corner inserts

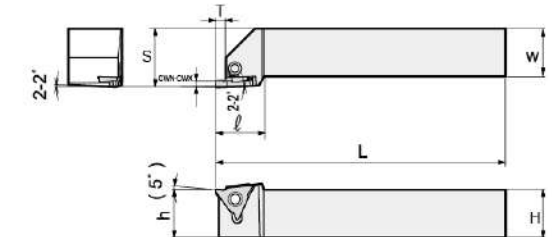
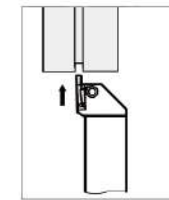
Designation	Stock		Dimensions(mm)							Insert	Spare parts	
	R	L	Dmin	d	L1	L	l	Z	Width		screw	Wrench
GB32 025B300-W25-1T			25	25	89	125	40	1	0.5-3.0	GBA32L050-030	M4.0x11	T-15
039B300-W25-3T			39	25	89	125	23	3	0.5-3.0			
GB43 044B480-W32-3T			44	32	89	125	23	3	1.0-4.8	GBA43L100-480	M5.0x13	T-20



## Inserts

Shape	Designation	Size						Coated		Configuration	
		W±0.025	La max	re	IC	H	d	TTIM45	TTIS30		
TURN LINE THREAD LINE GROOVE LINE	GBA22R/L	050	0.50	1.00	0.05	6.35	3.18	2.8	●	●	
		100	1.00	1.50	0.05	6.35	3.18	2.8	●	●	
		120	1.20	1.50	0.20	6.35	3.18	2.8	●	●	
		145	1.45	1.50	0.20	6.35	3.18	2.8	●	●	
		150	1.50	1.50	0.20	6.35	3.18	2.8	●	●	
		200	2.00	2.00	0.20	6.35	3.18	2.8	●	●	
GROOVE LINE	GBA32R/L	050	0.50	1.00	0.05	9.525	3.18	4.4	●	●	
		100	1.00	2.00	0.05	9.525	3.18	4.4	●	●	
		110	1.10	2.00	0.05	9.525	3.18	4.4	●	●	
		120	1.20	2.00	0.05	9.525	3.18	4.4	●	●	
		125	1.25	2.00	0.20	9.525	3.18	4.4	●	●	
		145	1.45	2.00	0.20	9.525	3.18	4.4	●	●	
		150	1.50	2.00	0.20	9.525	3.18	4.4	●	●	
		175	1.75	2.00	0.20	9.525	3.18	4.4	●	●	
		185	1.85	2.50	0.20	9.525	3.18	4.4	●	●	
		200	2.00	2.50	0.20	9.525	3.18	4.4	●	●	
MILL LINE DRILL LINE TOOL LINE	GBA43R/L	125	1.25	2.00	0.20	12.7	4.76	5.5	●	●	
		145	1.45	2.00	0.20	12.7	4.76	5.5	●	●	
		150	1.50	3.50	0.20	12.7	4.76	5.5	●	●	
		175	1.75	3.50	0.20	12.7	4.76	5.5	●	●	
		185	1.85	3.50	0.20	12.7	4.76	5.5	●	●	
		200	2.00	3.50	0.20	12.7	4.76	5.5	●	●	
		230	2.30	3.50	0.20	12.7	4.76	5.5	●	●	
		250	2.50	4.00	0.30	12.7	4.76	5.5	●	●	
		265	2.65	4.00	0.30	12.7	4.76	5.5	●	●	
		280	2.80	4.00	0.30	12.7	4.76	5.5	●	●	
		300	3.00	4.00	0.30	12.7	4.76	5.5	●	●	
		320	3.20	4.00	0.30	12.7	4.76	5.5	●	●	
		330	3.30	4.00	0.30	12.7	4.76	5.5	●	●	
		350	3.50	5.00	0.30	12.7	4.76	5.5	●	●	
400	4.00	5.00	0.40	12.7	4.76	5.5	●	●			
430	4.30	5.00	0.40	12.7	4.76	5.5	●	●			
450	4.50	5.00	0.40	12.7	4.76	5.5	●	●			
480	4.80	5.00	0.40	12.7	4.76	5.5	●	●			

## CTGFR/L

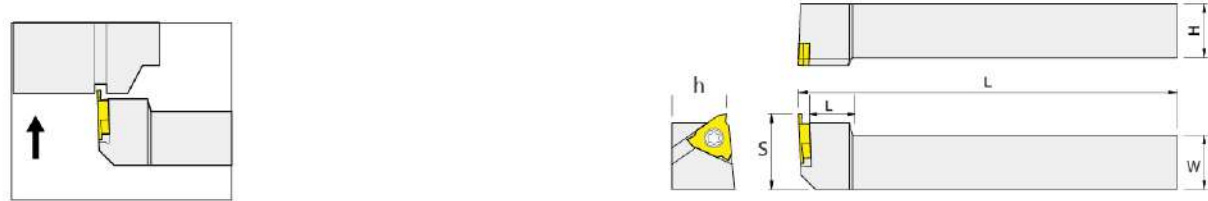


External grooving holder, for 3 corner inserts

R Type insert

Designation	Stock		Dimensions(mm)								Insert	Spare parts			
	R	L	CWN-CWX	H	W	h	L	ℓ	S	Tmax		Clamp	Clamp Screw	screw	Wrench
CTGFR/L 1616-H16	●	●	0.33-3.00	16	16	16	100	22	20	3.2	TGF32R/L	JTY16	JTS06	M4.0x10	T-15 HW30L
2020-K16	●	●	0.33-3.00	20	20	20	125	22	25	3.2					
2525-M16	●	●	0.33-3.00	25	25	25	150	22	32	3.2					

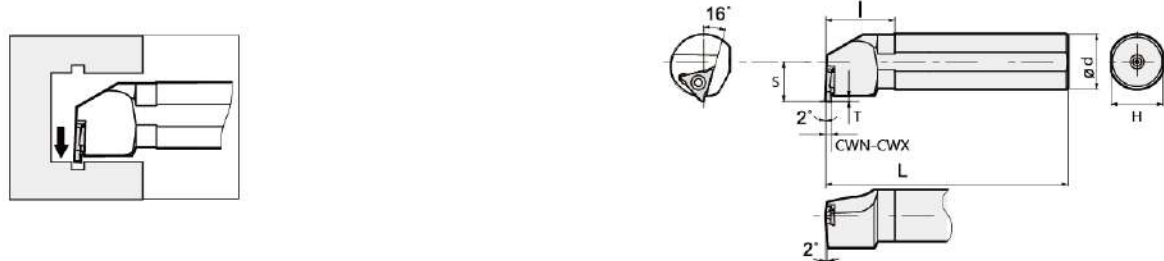
## CTGVR/L



Perpendicular toolholder for external grooving, for 3 corner inserts

Designation	Stock		Dimensions(mm)								Insert	Spare parts			
	R	L	CWN-CWX	H	W	h	L	ℓ	S	Tmax		Clamp	Clamp Screw	screw	Wrench
CTGVR/L 1616-H16			0.33-3.00	16	16	16	100	16	20	3.2	TGF32R/L	JTY16	JTS06	M4.0x10	T-15 HW30L
2020-K16			0.33-3.00	20	20	20	125	20	27	3.2					
2525-M16			0.33-3.00	25	25	25	150	20	32	3.2					

## STGFR/L



Internal grooving holder, for 3 corner inserts

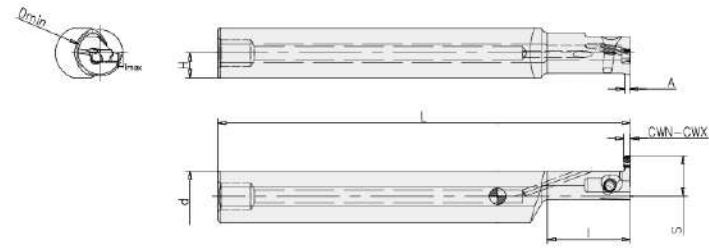
Designation	Stock		Dimensions(mm)								Insert	Spare parts	
	R	L	CWN-CWX	Dmin	d	H	L	ℓ	S	Tmax		screw	Wrench
S20Q-STGFR/L16	●	●	25	28	20	18	180	30	13.0	2.0	TGF32R/L	M4.0x10	T-15
S25R-STGFR/L16	●	●	39	31	25	23	200	30	17.5	2.0			
S32S-STGFR/L16	●	●	44	38	32	30	250	45	19.0	2.0			

## Inserts

Shape	Designation	Size						Coated		Configuration
		W±0.025	La max	re	IC	H	d	TTIM45	TTIS30	
TGF32R/L	033	0.33	0.80	0.05	9.525	3.18	4.6	●	●	
	043	0.43	1.20	0.05	9.525	3.18	4.6	●	●	
	050	0.50	1.20	0.05	9.525	3.18	4.6	●	●	
	065	0.65	2.20	0.05	9.525	3.18	4.6	●	●	
	075	0.75	2.20	0.05	9.525	3.18	4.6	●	●	
	080	0.80	2.20	0.10	9.525	3.18	4.6	●	●	
	085	0.85	2.20	0.10	9.525	3.18	4.6	●	●	
	090	0.90	2.20	0.10	9.525	3.18	4.6	●	●	
	095	0.95	2.20	0.10	9.525	3.18	4.6	●	●	
	100	1.00	2.20	0.10	9.525	3.18	4.6	●	●	
	110	1.10	2.20	0.10	9.525	3.18	4.6	●	●	
	115	1.15	2.20	0.10	9.525	3.18	4.6	●	●	
	120	1.20	2.20	0.10	9.525	3.18	4.6	●	●	
	125	1.25	2.20	0.10	9.525	3.18	4.6	●	●	
	130	1.30	2.20	0.10	9.525	3.18	4.6	●	●	
	135	1.35	2.20	0.10	9.525	3.18	4.6	●	●	
	140	1.40	2.20	0.10	9.525	3.18	4.6	●	●	
	145	1.45	2.20	0.10	9.525	3.18	4.6	●	●	
	150	1.50	2.20	0.10	9.525	3.18	4.6	●	●	
	155	1.55	2.20	0.10	9.525	3.18	4.6	●	●	
	160	1.60	2.20	0.10	9.525	3.18	4.6	●	●	
	165	1.65	2.20	0.10	9.525	3.18	4.6	●	●	
	170	1.70	2.20	0.10	9.525	3.18	4.6	●	●	
	175	1.75	2.20	0.10	9.525	3.18	4.6	●	●	
	180	1.80	2.20	0.10	9.525	3.18	4.6	●	●	
	190	1.90	2.20	0.10	9.525	3.18	4.6	●	●	
	195	1.95	2.20	0.10	9.525	3.18	4.6	●	●	
	200	2.00	2.70	0.10	9.525	3.18	4.6	●	●	
	220	2.20	2.70	0.10	9.525	3.18	4.6	●	●	
	225	2.25	2.70	0.10	9.525	3.18	4.6	●	●	
240	2.40	2.70	0.10	9.525	3.18	4.6	●	●		
250	2.50	2.70	0.10	9.525	3.18	4.6	●	●		
270	2.70	2.70	0.15	9.525	3.18	4.6	●	●		
275	2.75	2.70	0.15	9.525	3.18	4.6	●	●		
300	3.00	3.20	0.15	9.525	3.18	4.6	●	●		



## HGEPIR/L



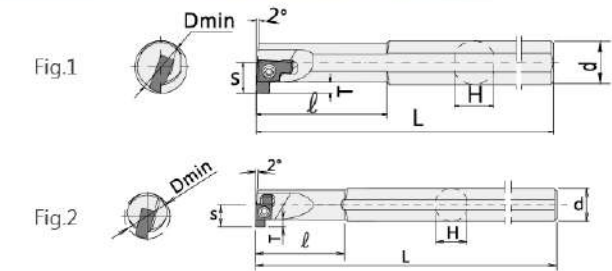
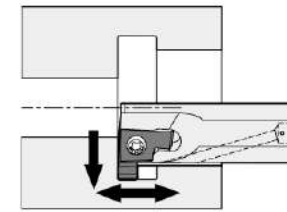
Internal deep grooving holder, for double-sided inserts

Designation	Stock		Size										Spare parts	
	R	L	CWN	CWX	Dmin	d	ℓ	L	S	A	H	Tmax	screw	Wrench
HGEPIR/L 1620-D08-2-2.0	●		2.0	2.5	8	16.0	20	120	5.6	1.8	7.5	2	L1060SSTX4.0-5.7P	TPF-15
1625-D10-2-3.0	●		2.0	2.5	10	16.0	25	120	7.8	1.8	7.5	2		
1625-D12-2-3.5	●		1.9	2.3	11.5	16.0	25	120	8.8	1.6	7.5	3.5		
1630-D14-2-4.0	●		1.9	2.3	14.0	16.0	30	120	10.3	1.6	7.5	4.0		
1635-D15-2-4.0	●		1.9	2.3	15.0	16.0	35	150	12.3	1.6	7.5	6.0		
1630-D14-3-4.0	●		2.4	3.0	14.0	16.0	30	120	10.3	2.0	7.5	4.0		
1635-D15-3-6.0	●		2.4	3.0	15.0	16.0	35	150	12.3	2.0	7.5	6.0		
1640-D20-2-8.0	●		2.4	3.0	20.0	16.0	40	150	16.1	2.0	7.5	8.0		

## Inserts

Shape	Dimensions(mm)	Size						Coated		Configuration
		L	W	d	t	rε	TPM8020	TPM8125		
	3GEPI 2.00-0.20-Mini	6.00	2.0	1.8	2.30	0.20		●		
	2.50-0.20-Mini	6.00	2.5	1.8	2.30	0.20		●		
	2.00-R1.00-Mini	6.00	2.0	1.8	2.30	1.00		●		
	2.50-R1.25-Mini	6.00	2.5	1.8	2.30	1.25		●		
	4GEPI 2.00-0.10	10.03	2.0	1.8	2.90	0.10	●	●		
	2.50-0.20	10.03	2.5	2.2	2.90	0.20	●	●		
	3.00-0.20	10.03	3.0	2.2	2.90	0.20	●	●		
	2.00-R1.00	10.03	2.0	1.8	2.90	1.00	○	●		
3.00-R1.50	10.03	3.0	2.2	2.90	1.50	○	●			

## SIGER/L



Internal grooving holder, for 2 corner inserts

Designation	Stock		Size							Applicable Insert	Spare parts		Fig.
	R	L	Dmin	d	L	ℓ	H	S	T-max		screw	Wrench	
SIGER/L 0808A	●	○	8	8	100	20	7.2	4.8	1.5	GER/L**A-AR	M2.2x5	T-7	1
1010B	●	○	10	10	125	25	9.0	6.2	2.2	GER/L**B-BR	M2.5x6	T-8	1
1210B	●	○	12	10	125	30	9.0	7.0	2.2				1
1412C	●	○	14	12	150	33	11.4	8.0	2.5	GER/L**C-CR	M2.5x6	T-8	2
1612C	●	○	16	12	150	20	11.4	8.5	2.5				2
1616C	●	○	16	16	160	36	15.0	9.0	2.5				2
2020D	●	○	20	20	180	40	19.0	12.1	4.5	GER/L**D-DR	M3.0x8	T-10	2
2525D	●	○	25	25	200	45	24.0	12.3	4.5				2
2525E	●	○	25	25	200	45	24.0	15.3	6.5	GER/L**E-ER	M4.0x10	T-15	2
3232E	●	○	32	32	220	55	30.4	19.0	6.5				2
4032E	●	○	40	32	250	-	30.4	23.0	6.5				2

## Inserts

Shape	Designation	Size								Coated		Configuration
		W	d	H	L	A	B	C	re	TTIM45	TTIS30	
GER	050-005A	0.50	2.5	2.58	6.50	6.69	1.0	1.7	0.05	●	●	
	060-005A	0.60	2.5	2.58	6.50	6.69	1.0	1.7	0.05	●	●	
	070-005A	0.70	2.5	2.58	6.50	6.69	1.0	1.7	0.05	●	●	
	080-005A	0.80	2.5	2.58	6.50	6.69	1.0	1.7	0.05	●	●	
	100-005A	1.00	2.5	2.58	6.50	6.69	1.5	1.7	0.05	●	●	
	120-005A	1.20	2.5	2.58	6.50	6.69	1.5	1.7	0.05	●	●	
	125-005A	1.25	2.5	2.58	6.50	6.69	1.5	1.7	0.05	●	●	
	140-010A	1.40	2.5	2.58	6.50	6.69	1.5	1.7	0.10	●	●	
	150-010A	1.50	2.5	2.58	6.50	6.69	1.5	1.7	0.10	●	●	
	180-010A	1.80	2.5	2.58	6.50	6.69	1.5	1.7	0.10	●	●	
	200-010A	2.00	2.5	2.58	6.50	6.69	1.5	1.7	0.10	●	●	
	080-005B	0.80	2.7	3.18	8.20	8.46	1.8	2.5	0.05	●	●	
	100-005B	1.00	2.7	3.18	8.20	8.46	2.2	2.5	0.05	●	●	
	120-005B	1.20	2.7	3.18	8.20	8.46	2.2	2.5	0.05	●	●	
	125-005B	1.25	2.7	3.18	8.20	8.46	2.2	2.5	0.05	●	●	
	145-010B	1.45	2.7	3.18	8.20	8.46	2.2	2.5	0.10	●	●	
	150-010B	1.50	2.7	3.18	8.20	8.46	2.2	2.5	0.10	●	●	
	180-010B	1.80	2.7	3.18	8.20	8.46	2.2	2.5	0.10	●	●	
	200-010B	2.00	2.7	3.18	8.20	8.46	2.2	2.5	0.10	●	●	
	250-020B	2.50	2.7	3.18	8.20	8.46	2.2	2.5	0.20	●	●	
280-020B	2.80	2.7	3.18	8.20	8.46	2.2	2.5	0.20	●	●		
300-020B	3.00	2.7	3.18	8.20	8.46	2.2	2.5	0.20	●	●		
GEL	050-005A	0.50	2.5	2.58	6.50	6.69	1.0	1.7	0.05	○	○	
	060-005A	0.60	2.5	2.58	6.50	6.69	1.0	1.7	0.05	○	○	
	070-005A	0.70	2.5	2.58	6.50	6.69	1.0	1.7	0.05	○	○	
	080-005A	0.80	2.5	2.58	6.50	6.69	1.0	1.7	0.05	○	○	
	100-005A	1.00	2.5	2.58	6.50	6.69	1.5	1.7	0.05	○	○	
	120-005A	1.20	2.5	2.58	6.50	6.69	1.5	1.7	0.05	○	○	
	125-005A	1.25	2.5	2.58	6.50	6.69	1.5	1.7	0.05	○	○	
	140-010A	1.40	2.5	2.58	6.50	6.69	1.5	1.7	0.10	○	○	
	150-010A	1.50	2.5	2.58	6.50	6.69	1.5	1.7	0.10	○	○	
	180-010A	1.80	2.5	2.58	6.50	6.69	1.5	1.7	0.10	○	○	
	200-010A	2.00	2.5	2.58	6.50	6.69	1.5	1.7	0.10	○	○	
	080-005B	0.80	2.7	3.18	8.20	8.46	1.8	2.5	0.05	○	○	
	100-005B	1.00	2.7	3.18	8.20	8.46	2.2	2.5	0.05	○	○	
	120-005B	1.20	2.7	3.18	8.20	8.46	2.2	2.5	0.05	○	○	
	125-005B	1.25	2.7	3.18	8.20	8.46	2.2	2.5	0.05	○	○	
	145-010B	1.45	2.7	3.18	8.20	8.46	2.2	2.5	0.10	○	○	
	150-010B	1.50	2.7	3.18	8.20	8.46	2.2	2.5	0.10	○	○	
	180-010B	1.80	2.7	3.18	8.20	8.46	2.2	2.5	0.10	○	○	
	200-010B	2.00	2.7	3.18	8.20	8.46	2.2	2.5	0.10	○	○	
	250-020B	2.50	2.7	3.18	8.20	8.46	2.2	2.5	0.20	○	○	
280-020B	2.80	2.7	3.18	8.20	8.46	2.2	2.5	0.20	○	○		
300-020B	3.00	2.7	3.18	8.20	8.46	2.2	2.5	0.20	○	○		

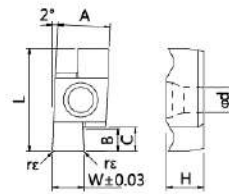
## Inserts

Shape	Designation	Size								Coated		Configuration
		W	d	H	L	A	B	C	re	TTIM45	TTIS30	
GER	100-005C	1.00	2.8	4.05	11.48	5.80	2.5	2.7	0.05	●	●	
	120-005C	1.20	2.8	4.05	11.48	5.80	2.5	2.7	0.05	●	●	
	125-005C	1.25	2.8	4.05	11.48	5.80	2.5	2.7	0.05	●	●	
	140-005C	1.40	2.8	4.05	11.48	5.80	2.5	2.7	0.05	●	●	
	145-010C	1.45	2.8	4.05	11.48	5.80	2.5	2.7	0.10	●	●	
	150-010C	1.50	2.8	4.05	11.48	5.80	2.5	2.7	0.10	●	●	
	170-010C	1.70	2.8	4.05	11.48	5.80	2.5	2.7	0.10	●	●	
	185-010C	1.85	2.8	4.05	11.48	5.80	2.5	2.7	0.10	●	●	
	195-010C	1.95	2.8	4.05	11.48	5.80	2.5	2.7	0.10	●	●	
	200-010C	2.00	2.8	4.05	11.48	5.80	2.5	2.7	0.10	●	●	
	250-020C	2.50	2.8	4.05	11.48	5.80	2.5	2.7	0.20	●	●	
	300-020C	3.00	2.8	4.05	11.48	5.80	2.5	2.7	0.20	●	●	
	350-020C	3.50	2.8	4.05	11.48	5.80	2.5	2.7	0.20	●	●	
	100-005D	1.00	3.4	5.05	16.44	6.80	2.5	4.8	0.05	●	●	
	140-005D	1.40	3.4	5.05	16.44	6.80	2.5	4.8	0.05	●	●	
	145-010D	1.45	3.4	5.05	16.44	6.80	2.5	4.8	0.10	●	●	
	150-010D	1.50	3.4	5.05	16.44	6.80	3.0	4.8	0.10	●	●	
	170-010D	1.70	3.4	5.05	16.44	6.80	3.0	4.8	0.10	●	●	
	185-010D	1.85	3.4	5.05	16.44	6.80	3.0	4.8	0.10	●	●	
	195-010D	1.95	3.4	5.05	16.44	6.80	3.0	4.8	0.10	●	●	
	200-010D	2.00	3.4	5.05	16.44	6.80	3.2	4.8	0.10	●	●	
	225-010D	2.25	3.4	5.05	16.44	6.80	3.2	4.8	0.10	●	●	
	230-010D	2.30	3.4	5.05	16.44	6.80	3.2	4.8	0.10	●	●	
	250-020D	2.50	3.4	5.05	16.44	6.80	3.2	4.8	0.20	●	●	
	275-020D	2.75	3.4	5.05	16.44	6.80	3.2	4.8	0.20	●	●	
	280-020D	2.80	3.4	5.05	16.44	6.80	3.2	4.8	0.20	●	●	
	300-020D	3.00	3.4	5.05	16.44	6.80	4.5	4.8	0.20	●	●	
	330-020D	3.30	3.4	5.05	16.44	6.80	4.5	4.8	0.20	●	●	
	350-020D	3.50	3.4	5.05	16.44	6.80	4.5	4.8	0.20	●	●	
	400-020D	4.00	3.4	5.05	16.44	6.80	4.5	4.8	0.20	●	●	
	100-005E	1.00	4.4	5.55	21.66	9.54	2.5	6.8	0.05	●	●	
	150-010E	1.50	4.4	5.55	21.66	9.54	3.0	6.8	0.10	●	●	
	170-010E	1.70	4.4	5.55	21.66	9.54	3.0	6.8	0.10	●	●	
	185-010E	1.85	4.4	5.55	21.66	9.54	3.0	6.8	0.10	●	●	
	195-010E	1.95	4.4	5.55	21.66	9.54	3.0	6.8	0.10	●	●	
	200-010E	2.00	4.4	5.55	21.66	9.54	3.2	6.8	0.10	●	●	
	225-010E	2.25	4.4	5.55	21.66	9.54	3.2	6.8	0.10	●	●	
	230-020E	2.30	4.4	5.55	21.66	9.54	3.2	6.8	0.20	●	●	
	250-020E	2.50	4.4	5.55	21.66	9.54	4.5	6.8	0.20	●	●	
	275-020E	2.75	4.4	5.55	21.66	9.54	4.5	6.8	0.20	●	●	
	280-020E	2.80	4.4	5.55	21.66	9.54	4.5	6.8	0.20	●	●	
	300-020E	3.00	4.4	5.55	21.66	9.54	4.5	6.8	0.20	●	●	
	330-020E	3.30	4.4	5.55	21.66	9.54	4.5	6.8	0.20	●	●	
	350-020E	3.50	4.4	5.55	21.66	9.54	5.5	6.8	0.20	●	●	
	400-020E	4.00	4.4	5.55	21.66	9.54	5.5	6.8	0.20	●	●	
	430-020E	4.30	4.4	5.55	21.66	9.54	5.5	6.8	0.20	●	●	
	450-020E	4.50	4.4	5.55	21.66	9.54	6.5	6.8	0.20	●	●	
	460-020E	4.60	4.4	5.55	21.66	9.54	6.5	6.8	0.20	●	●	
	500-020E	5.00	4.4	5.55	21.66	9.54	6.50	6.8	0.20	●	●	



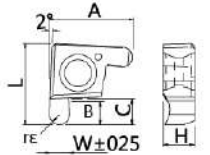
## Inserts

Shape	Designation	Size								Coated		Configuration
		W	d	H	L	A	B	C	re	TTIM45	TTIS30	
GEL	100-005C	1.00	2.8	4.05	11.48	5.80	2.5	2.7	0.05	○	○	
	120-005C	1.20	2.8	4.05	11.48	5.80	2.5	2.7	0.05			
	125-005C	1.25	2.8	4.05	11.48	5.80	2.5	2.7	0.05			
	140-005C	1.40	2.8	4.05	11.48	5.80	2.5	2.7	0.05			
	145-010C	1.45	2.8	4.05	11.48	5.80	2.5	2.7	0.10			
	150-010C	1.50	2.8	4.05	11.48	5.80	2.5	2.7	0.10	○	○	
	170-010C	1.70	2.8	4.05	11.48	5.80	2.5	2.7	0.10			
	185-010C	1.85	2.8	4.05	11.48	5.80	2.5	2.7	0.10			
	195-010C	1.95	2.8	4.05	11.48	5.80	2.5	2.7	0.10			
	200-010C	2.00	2.8	4.05	11.48	5.80	2.5	2.7	0.10	○	○	
	250-020C	2.50	2.8	4.05	11.48	5.80	2.5	2.7	0.20	○	○	
	300-020C	3.00	2.8	4.05	11.48	5.80	2.5	2.7	0.20	○	○	
	350-020C	3.50	2.8	4.05	11.48	5.80	2.5	2.7	0.20	○	○	
	100-005D	1.00	3.4	5.05	16.44	6.80	2.5	4.8	0.05	○	○	
	140-005D	1.40	3.4	5.05	16.44	6.80	2.5	4.8	0.05			
	145-010D	1.45	3.4	5.05	16.44	6.80	2.5	4.8	0.10			
	150-010D	1.50	3.4	5.05	16.44	6.80	3.0	4.8	0.10	○	○	
	170-010D	1.70	3.4	5.05	16.44	6.80	3.0	4.8	0.10			
	185-010D	1.85	3.4	5.05	16.44	6.80	3.0	4.8	0.10			
	195-010D	1.95	3.4	5.05	16.44	6.80	3.0	4.8	0.10			
	200-010D	2.00	3.4	5.05	16.44	6.80	3.2	4.8	0.10	○	○	
	225-010D	2.25	3.4	5.05	16.44	6.80	3.2	4.8	0.10			
	230-010D	2.30	3.4	5.05	16.44	6.80	3.2	4.8	0.10			
	250-020D	2.50	3.4	5.05	16.44	6.80	3.2	4.8	0.20	○	○	
	275-020D	2.75	3.4	5.05	16.44	6.80	3.2	4.8	0.20			
	280-020D	2.80	3.4	5.05	16.44	6.80	3.2	4.8	0.20			
	300-020D	3.00	3.4	5.05	16.44	6.80	4.5	4.8	0.20	○	○	
	330-020D	3.30	3.4	5.05	16.44	6.80	4.5	4.8	0.20			
	350-020D	3.50	3.4	5.05	16.44	6.80	4.5	4.8	0.20	○	○	
	400-020D	4.00	3.4	5.05	16.44	6.80	4.5	4.8	0.20	○	○	
100-005E	1.00	4.4	5.55	21.66	9.54	2.5	6.8	0.05	○	○		
150-010E	1.50	4.4	5.55	21.66	9.54	3.0	6.8	0.10	○	○		
170-010E	1.70	4.4	5.55	21.66	9.54	3.0	6.8	0.10				
185-010E	1.85	4.4	5.55	21.66	9.54	3.0	6.8	0.10				
195-010E	1.95	4.4	5.55	21.66	9.54	3.0	6.8	0.10				
200-010E	2.00	4.4	5.55	21.66	9.54	3.2	6.8	0.10				
225-010E	2.25	4.4	5.55	21.66	9.54	3.2	6.8	0.10	○	○		
230-020E	2.30	4.4	5.55	21.66	9.54	3.2	6.8	0.20				
250-020E	2.50	4.4	5.55	21.66	9.54	4.5	6.8	0.20				
275-020E	2.75	4.4	5.55	21.66	9.54	4.5	6.8	0.20				
280-020E	2.80	4.4	5.55	21.66	9.54	4.5	6.8	0.20				
300-020E	3.00	4.4	5.55	21.66	9.54	4.5	6.8	0.20	○	○		
330-020E	3.30	4.4	5.55	21.66	9.54	4.5	6.8	0.20				
350-020E	3.50	4.4	5.55	21.66	9.54	5.5	6.8	0.20	○	○		
400-020E	4.00	4.4	5.55	21.66	9.54	5.5	6.8	0.20	○	○		
430-020E	4.30	4.4	5.55	21.66	9.54	5.5	6.8	0.20				
450-020E	4.50	4.4	5.55	21.66	9.54	6.5	6.8	0.20	○	○		
460-020E	4.60	4.4	5.55	21.66	9.54	6.5	6.8	0.20				
500-020E	5.00	4.4	5.55	21.66	9.54	6.50	6.8	0.20	○	○		



## Inserts

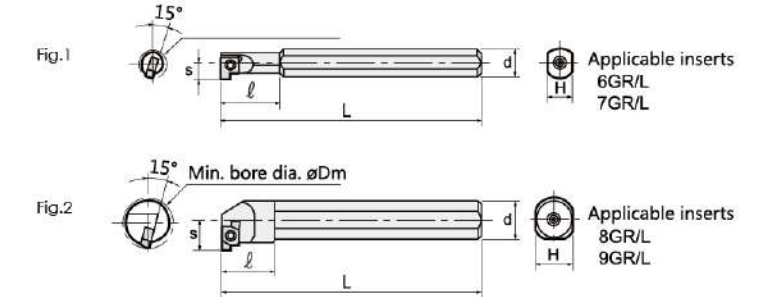
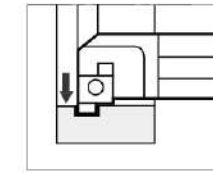
Shape	Designation	Size								Coated		Configuration
		W	d	H	L	A	B	C	re	TTIM45	TTIS30	
GER	100-050AR	1.00	2.5	2.58	6.50	6.69	1.5	1.7	0.50	●	●	
	150-075AR	1.50	2.5	2.58	6.50	6.69	1.5	1.7	0.75	●	●	
	200-100AR	2.00	2.5	2.58	6.50	6.69	1.5	1.7	1.00	●	●	
	100-050BR	1.00	2.7	3.18	8.20	8.46	2.2	2.5	0.50	●	●	
	150-075BR	1.50	2.7	3.18	8.20	8.46	2.2	2.5	0.75	●	●	
	200-100BR	2.00	2.7	3.18	8.20	8.46	2.2	2.5	1.00	●	●	
	250-125BR	2.50	2.7	3.18	8.20	8.46	2.2	2.5	1.25	●	●	
	300-150BR	3.00	2.7	3.18	8.20	8.46	2.2	2.5	1.50	●	●	
	100-050AR	1.00	2.5	2.58	6.50	6.69	1.5	1.7	0.50	○	○	
150-075AR	1.50	2.5	2.58	6.50	6.69	1.5	1.7	0.75	○	○		
200-100AR	2.00	2.5	2.58	6.50	6.69	1.5	1.7	1.00	○	○		
100-050BR	1.00	2.7	3.18	8.20	8.46	2.2	2.5	0.50	○	○		
150-075BR	1.50	2.7	3.18	8.20	8.46	2.2	2.5	0.75	○	○		
200-100BR	2.00	2.7	3.18	8.20	8.46	2.2	2.5	1.00	○	○		
250-125BR	2.50	2.7	3.18	8.20	8.46	2.2	2.5	1.25	○	○		
300-150BR	3.00	2.7	3.18	8.20	8.46	2.2	2.5	1.50	○	○		



## Inserts

Shape	Designation	Size								Coated		Configuration	
		W	d	H	L	A	B	C	re	TTIM45	TTIS30		
GER	100-050CR	1.00	2.8	4.05	11.48	5.80	2.5	2.7	0.50	●	●		
	150-075CR	1.50	2.8	4.05	11.48	5.80	2.5	2.7	0.75	●	●		
	200-100CR	2.00	2.8	4.05	11.48	5.80	2.5	2.7	1.00	●	●		
	250-125CR	2.50	2.8	4.05	11.48	5.80	2.5	2.7	1.25	●	●		
	300-150CR	3.00	2.8	4.05	11.48	5.80	2.5	2.7	1.50	●	●		
	150-075DR	1.50	3.4	5.05	16.44	6.80	3.2	4.8	0.75	●	●		
	200-100DR	2.00	3.4	5.05	16.44	6.80	3.2	4.8	1.00	●	●		
	250-125DR	2.50	3.4	5.05	16.44	6.80	4.5	4.8	1.25	●	●		
	300-150DR	3.00	3.4	5.05	16.44	6.80	4.5	4.8	1.50	●	●		
	250-125ER	2.50	4.4	5.55	21.66	9.54	5.5	6.8	1.25	●	●		
	300-150ER	3.00	4.4	5.55	21.66	9.54	5.5	6.8	1.50	●	●		
	350-175ER	3.50	4.4	5.55	21.66	9.54	5.5	6.8	1.75	●	●		
	400-200ER	4.00	4.4	5.55	21.66	9.54	6.5	6.8	2.00	●	●		
	450-225ER	4.50	4.4	5.55	21.66	9.54	6.5	6.8	2.25	●	●		
	500-250ER	5.00	4.4	5.55	21.66	9.54	6.5	6.8	2.50	●	●		
	GEL	100-050CR	1.00	2.8	4.05	11.48	5.80	2.5	2.7	0.50	○		○
		150-075CR	1.50	2.8	4.05	11.48	5.80	2.5	2.7	0.75	○		○
		200-100CR	2.00	2.8	4.05	11.48	5.80	2.5	2.7	1.00	○		○
250-125CR		2.50	2.8	4.05	11.48	5.80	2.5	2.7	1.25	○	○		
300-150CR		3.00	2.8	4.05	11.48	5.80	2.5	2.7	1.50	○	○		
150-075DR		1.50	3.4	5.05	16.44	6.80	3.2	4.8	0.75	○	○		
200-100DR		2.00	3.4	5.05	16.44	6.80	3.2	4.8	1.00	○	○		
250-125DR		2.50	3.4	5.05	16.44	6.80	4.5	4.8	1.25	○	○		
300-150DR		3.00	3.4	5.05	16.44	6.80	4.5	4.8	1.50	○	○		
250-125ER		2.50	4.4	5.55	21.66	9.54	5.5	6.8	1.25	○	○		
300-150ER		3.00	4.4	5.55	21.66	9.54	5.5	6.8	1.50	○	○		
350-175ER		3.50	4.4	5.55	21.66	9.54	5.5	6.8	1.75	○	○		
400-200ER		4.00	4.4	5.55	21.66	9.54	6.5	6.8	2.00	○	○		
450-225ER		4.50	4.4	5.55	21.66	9.54	6.5	6.8	2.25	○	○		
500-250ER		5.00	4.4	5.55	21.66	9.54	6.5	6.8	2.50	○	○		

## SNGR/L



### Internal grooving holder

Designation	Stock		Size						Applicable Insert	Spare parts		Fig.
	R	L	Dmin	d	L	ℓ	H	S		screw	Wrench	
SNGR/L 08-H06	●	○	8	8	100	18	7	4.7	6GR/L	M2.0x4	T-6	1
08-H07	●	○	10	8	100	23	7	5.8	7GR/L	M2.2x6	T-6	1
10-K07	●	○	12	10	125	29	9	6.8				1
10-K08	●	○	14	10	125	15	9	7.6	8GR/L	M2.2x6	T-6	2
12-M08	●	○	16	12	150	18	11	8.6				2
16-Q09	●	○	20	16	180	20	15	11.6	9GR/L	M2.5x6	T-8	2
20-R09	●	○	24	20	200	25	18	13.6				2

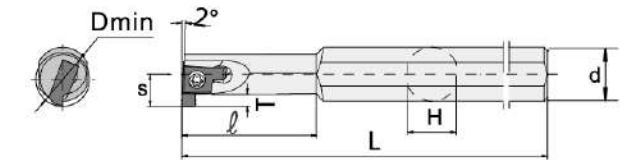
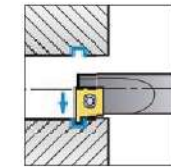


# Internal Groove (Side Limited)

## Inserts

Shape	Designation	Size								Coated		Configuration	
		W±0.025	d	H	L	A	B	r <sub>ε</sub>	Max.groove depth	TTIM45	TTIS30		
	6GR/L	100	1.00	2.30	2.34	6.44	5.56	4.76	0.2	1.5	●	●	
		150	1.50	2.30	2.34	6.44	5.56	4.76	0.2	1.5	●	●	
		200	2.00	2.30	2.34	6.44	5.56	4.76	0.2	1.5	●	●	
	7GR/L	100	1.00	2.58	3.08	7.36	5.56	5.56	0.2	1.5	●	●	
		150	1.50	2.58	3.08	7.36	5.56	5.56	0.2	1.5	●	●	
		200	2.00	2.58	3.08	7.36	5.56	5.56	0.2	1.5	●	●	
	8GR/L	150	1.50	2.58	3.87	10.16	6.15	5.56	0.2	2.0	●	●	
		200	2.00	2.58	3.87	10.16	6.15	5.56	0.2	2.0	●	●	
		250	2.50	2.58	3.87	10.16	6.15	5.56	0.2	2.0	●	●	
		300	3.00	2.58	3.87	10.16	6.15	5.56	0.2	2.0	●	●	
		350	3.50	2.58	3.87	10.16	6.15	5.56	0.2	2.0	●	●	
	9GR/L	100	1.00	2.86	4.66	12.95	7.74	6.35	0.2	1.5	●	●	
		150	1.50	2.86	4.66	12.95	7.74	6.35	0.2	1.2	●	●	
		200	2.00	2.86	4.66	12.95	7.74	6.35	0.2	3.0	●	●	
		250	2.50	2.86	4.66	12.95	7.74	6.35	0.2	3.0	●	●	
		300	3.00	2.86	4.66	12.95	7.74	6.35	0.2	3.0	●	●	
		350	3.50	2.86	4.66	12.95	7.74	6.35	0.2	3.0	●	●	

## SDNR/L



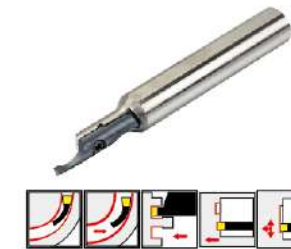
### Internal deep grooving holder, for small hole

Designation	Stock		Size							Applicable Insert	Spare parts	
	R	L	Dmin	d	L	ℓ	H	S	T-max		screw	Wrench
SDNR/L 0616-L06T	●	○	6.5	16	125	10	15	3.2	1.0	HDNR/L**-D06	M2.0x4	T-6
1416-L14T-0.8	●	○	14.0	16	150	33	15	7.0	4.0	HDNR/L100-200**-D14	M2.5x6	T-8
1416-L14T-2.0	●	○	14.0	16	150	33	15	7.0	4.0	HDNR/L230-400**-D14	M2.5x6	T-8
1616-L14T-0.8	●	○	16.0	16	150	38	15	8.1	4.0	HDNR/L100-200**-D14	M2.5x8	T-8
1616-L14T-2.0	●	○	16.0	16	150	38	15	8.1	4.0	HDNR/L230-400**-D14	M2.5x8	T-8
1820-L18T	●	○	18.0	20	180	35	19	9.1	6.6	HDNR/L**-D18	M4.0x7	T-15
2120-L18T	●	○	21.0	20	180	40	19	10.7	6.6			

## Inserts

Shape	Designation	Size						Coated		Configuration
		W	H	L	B	C	r <sub>e</sub>	TTIM45	TTIS30	
	050-0.8D06	0.50	1.80	5.2	0.8	1.2	0.05	●	●	
	075-0.8D06	0.75	1.80	5.2	0.8	1.2	0.05	●	●	
	100-1.0D06	1.00	1.80	5.2	1.0	1.2	0.10	●	●	
	120-1.0D06	1.20	1.80	5.2	1.0	1.2	0.10	●	●	
	125-1.0D06	1.25	1.80	5.2	1.0	1.2	0.10	●	●	
	150-1.0D06	1.50	1.80	5.2	1.0	1.2	0.10	●	●	
	050-1.0D14	0.50	3.97	11.0	1.0	4.5	0.05	●	●	
	075-1.5D14	0.75	3.97	11.0	1.5	4.5	0.05	●	●	
	100-3.0D14	1.00	3.97	11.0	3.0	4.5	0.05	●	●	
	125-3.5D14	1.25	3.97	11.0	3.5	4.5	0.05	●	●	
	150-3.5D14	1.50	3.97	11.0	3.5	4.5	0.05	●	●	
	200-4.0D14	2.00	3.97	11.0	4.0	4.5	0.20	●	●	
	250-4.0D14	2.50	3.97	11.0	4.0	4.5	0.20	●	●	
	300-4.0D14	3.00	3.97	11.0	4.0	4.5	0.20	●	●	
	350-4.0D14	3.50	3.97	11.0	4.0	4.5	0.20	●	●	
	100-3.0D18	1.00	5.35	15.0	3.0	6.6	0.05	●	●	
	125-3.0D18	1.25	5.35	15.0	3.0	6.6	0.05	●	●	
	140-4.5D18	1.40	5.35	15.0	4.5	6.6	0.05	●	●	
	150-4.5D18	1.50	5.35	15.0	4.5	6.6	0.05	●	●	
	175-5.0D18	1.75	5.35	15.0	5.0	6.6	0.05	●	●	
200-5.5D18	2.00	5.35	15.0	5.5	6.6	0.20	●	●		
250-6.2D18	2.50	5.35	15.0	6.2	6.6	0.20	●	●		
300-6.2D18	3.00	5.35	15.0	6.2	6.6	0.20	●	●		
350-6.2D18	3.50	5.35	15.0	6.2	6.6	0.20	●	●		
400-6.2D18	4.00	5.35	15.0	6.2	6.6	0.20	●	●		
	050-R0.25D06	0.50	1.80	5.2	1.0	1.2	0.25	●	●	
	100-R0.50D06	1.00	1.80	5.2	1.0	1.2	0.50	●	●	
	120-R0.60D06	1.20	1.80	5.2	1.0	1.2	0.60	●	●	
	150-R0.75D06	1.50	1.80	5.2	1.0	1.2	0.75	●	●	
	100-R0.50D14	1.00	3.97	11.0	3.0	4.5	0.50	●	●	
	150-R0.75D14	1.50	3.97	11.0	3.5	4.5	0.75	●	●	
	200-R1.00D14	2.00	3.97	11.0	4.0	4.5	1.00	●	●	
	250-R1.25D14	2.50	3.97	11.0	4.0	4.5	1.25	●	●	
	300-R1.50D14	3.00	3.97	11.0	4.0	4.5	1.50	●	●	
	350-R1.75D14	3.50	3.97	11.0	4.0	4.5	1.75	●	●	
	100-R0.50D18	1.00	5.35	15.0	3.0	6.6	0.50	●	●	
	140-R0.70D18	1.40	5.35	15.0	4.5	6.6	0.70	●	●	
	150-R0.75D18	1.50	5.35	15.0	4.5	6.6	0.75	●	●	
	200-R1.00D18	2.00	5.35	15.0	5.5	6.6	1.00	●	●	
	250-R1.25D18	2.50	5.35	15.0	6.2	6.6	1.25	●	●	
	300-R1.50D18	3.00	5.35	15.0	6.2	6.6	1.50	●	●	
	350-R1.75D18	3.50	5.35	15.0	6.2	6.6	1.75	●	●	
	400-R2.00D18	4.00	5.35	15.0	6.2	6.6	2.00	●	●	

## MIFHR



Face & internal grooving holder, for 2 corner inserts

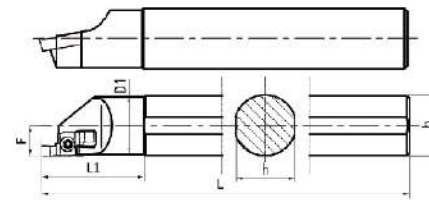
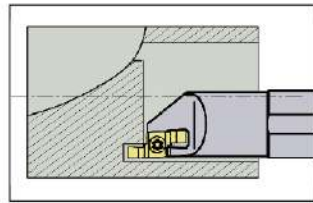
Designation	Stock	Size								Applicable Insert	Spare parts			
		W	D	d1	d	l	L	H	F		R	screw	Wrench	
MIFHR	1218C-6	●	1.4	4	6	12	18	100	11	5.5	3.8	MIFR-6	L055SSTX2.5-3.6P	TPF-08
	1020-25C-8	●	1.4	5	8	10	25	100	9	4.5	3.8	MIFR-8	L055SSTX2.5-3.6P	TPF-08
	1220-25C-8	●	1.4	5	8	12	25	100	11	5.5	3.8	MIFR-8	L055SSTX2.5-3.6P	TPF-08
	1635C-9	●	2.4	6	9	16	35	120	15	7.5	4.6	MIFR-9	L0860SSTX4.0-5.7P	TPF-15
	2046C-15	●	4.7	8.5	15	20	46	150	18	9.0	11.3	MIFR-15	L0860SSTX4.0-5.7P	TPF-15

## Inserts

Shape	Designation	Size						Coated		Configuration
		w	L	T	DAXN	DAXX	r <sub>e</sub>	TPM8020	TPM8125	
MIFR6	1506-4.5	1.50	19	4.5	6.0	11.5	0.10	●	●	
	2006-4.5	2.00	19	4.5	6.0	16.0	0.20	●	●	
MIFR8	2008-5.5	2.00	21	5.5	8.0	16.0	0.20	●	●	
	2508-5.5	2.50	21	5.5	8.0	21.0	0.20	●	●	
MIFR9	2510-11.2	2.50	39	11.2	10.0	30.0	0.20	●	●	
	3010-11.2	3.00	39	11.2	10.0	30.0	0.20	●	●	
	3510-11.2	3.50	39	11.2	10.0	-	0.20	●	●	
MIFR15	3015-16.5	3.00	49	16.5	15.0	60.0	0.20	●	●	
	3515-16.5	3.50	49	16.5	15.0	-	0.20	●	●	
MIFR6	1506-R0.75-4.5	1.50	19	4.5	6.0	11.5	0.75	●	●	
	2006-R1.00-4.5	2.00	19	4.5	6.0	16.0	1.00	●	●	
MIFR8	2008-R1.00-5.5	2.00	21	5.5	8.0	-	1.00	●	●	
	2508-R1.25-5.5	2.50	21	5.5	8.0	-	1.25	●	●	
MIFR9	2510-R1.25-11.2	2.50	39	11.2	10.0	-	1.25	●	●	
	3010-R1.50-11.2	3.00	39	11.2	10.0	34.0	1.50	●	●	
MIFR15	3015-R1.50-16.5	3.00	49	16.5	15.0	-	1.50	●	●	



## SGIVR/L



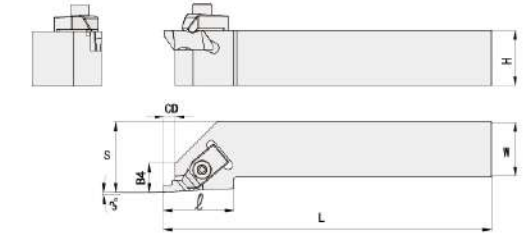
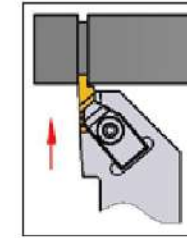
Face & internal grooving holder, for 2 corner inserts

Designation	Stock		Size								Applicable Insert	Spare parts	
	R	L	Dmin	d	L	ℓ	L	H	S	T-max		screw	Wrench
SGIVR/L 1816-D	●	○	18	16	16	50	160	15	9.5	4.5	HNFGFR/L Right-hand insert matches right-hand holder	M4.0x8	T-15
2420-D	●	○	24	19	20	50	160	19	13.5	4.5			
3025-D	●	○	30	24	25	60	200	24	16.5	4.5			
3632-D	●	○	36	31	32	70	250	31	19.0	4.5			

## Inserts

Shape	Designation	Size										Coated		Configuration
		Dmin	w	L	A	d	H	B	C	r <sub>e</sub>	TTIM45	TTIS30		
	HNFGFR/L	1016-2.5	18	1.0	18	9.3	4.4	4.8	2.5	2.6	0.05		●	
		1518-3.5	18	1.5	18	9.3	4.4	4.8	3.5	3.6	0.10		●	
		2018-4.5	18	2.0	18	9.3	4.4	4.8	4.5	4.6	0.10		●	
		2518-4.5	18	2.5	18	9.3	4.4	4.8	4.5	4.6	0.10		●	
		3018-4.5	18	3.0	18	9.3	4.4	4.8	4.5	4.6	0.10		●	
		3518-4.5	18	3.5	18	9.3	4.4	4.8	4.5	4.6	0.10		●	
	HNFGFR/L	4018-4.5	18	4.0	18	9.3	4.4	4.8	4.5	4.6	0.10		●	
		1018-R0.50-2.5	18	1.0	18	9.3	4.4	4.8	2.5	2.6	1.50		●	
		1518-R0.75-3.5	18	1.5	18	9.3	4.4	4.8	3.5	3.6	0.75		●	
		2018-R1.00-4.5	18	2.0	18	9.3	4.4	4.8	4.5	4.6	1.00		●	
		2518-R1.25-4.5	18	2.5	18	9.3	4.4	4.8	4.5	4.6	1.25		●	
		3018-R1.50-4.5	18	3.0	18	9.3	4.4	4.8	4.5	4.6	1.50		●	
4018-R2.00-4.5	18	4.0	18	9.3	4.4	4.8	4.5	4.6	2.00		●			

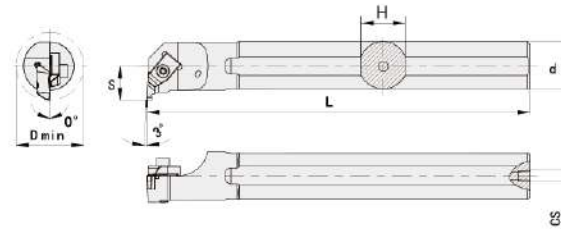
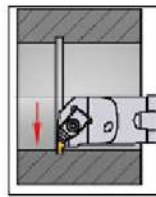
## XNSR/L



External grooving and profiling holder, for top clamping design

Designation	Stock		Dimension (mm)							Insert	Spare parts		
	R	L	H	W	L	ℓ	S	CD	B4		Clamp	screw	Wrench
XNSR/L 1616-H2			16	16	100	19	20	3.5	9	XN□□2R/L	CM74	PTX0525	HW40L
2020-K2			20	20	125	19	25	3.5	9				
2525-M2			25	25	150	19	32	3.5	9				
2020-K3			20	20	125	32	25	5.3	13	XN□□3R/L	CM72LP	PTX0520	HW40L
2525-M3			25	25	150	32	32	5.3	13				
3225-P3			32	25	170	32	32	5.3	13				
3232-P3			32	32	170	32	40	5.3	13				

## XNAR/L



Internal grooving and profiling holder, for top clamping design

Designation	Stock		Dimension (mm)					Insert	Spare parts			
	R	L	Dmin	d	H	L	S		CS	Clamp	screw	Wrench
A20Q-XNAR/L2			26	20	18	180	13	1/8-27NPT	XN□□2R/L	CM74	PTX0412	HW30L
A25R-XNAR/L2			34	25	23	200	17	1/4-18NPT				
A25R-XNAR/L3			34	25	23	200	17	1/4-18NPT	XN□□3R/L	CM72LP	PTX0520	HW40L
A32S-XNAR/L3			44	32	30	250	22	1/4-18NPT				
A40T-XNAR/L3			54	40	37	300	27	1/4-18NPT				

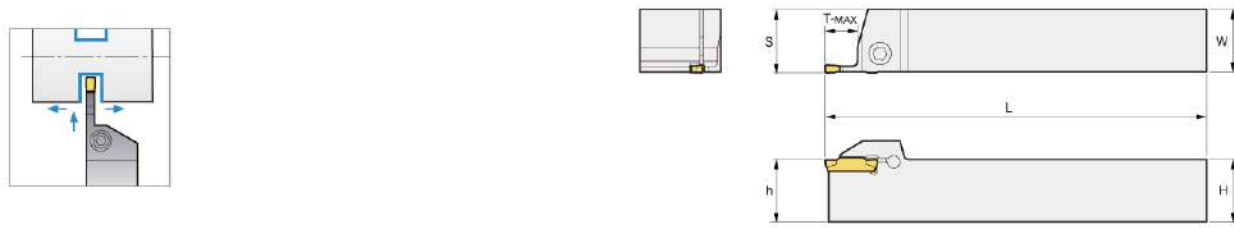
## Inserts

Shape	Designation	Size							Coated		Configuration	
		W	re	L	H	La	D	S	TPM8020	TPM8125		
	XNGP	2M050R/L	0.50	0.09	13.030	3.81	0.64	8.74	5.56		●	
		2M100R/L	1.00	0.09	13.030	3.81	1.27	8.74	5.56		●	
		2M150R/L	1.50	0.19	13.030	3.81	2.79	8.74	5.56		●	
		2M170R/L	1.70	0.19	13.030	3.81	2.79	8.74	5.56		●	
		2M200R/L	2.00	0.19	13.030	3.81	2.79	8.74	5.56		●	
		2M220R/L	2.20	0.19	13.030	3.81	2.79	8.74	5.56		●	
		2M250R/L	2.50	0.19	13.030	3.81	2.79	8.74	5.56		●	
		3M100R/L	1.00	0.19	22.709	4.95	1.91	16.10	8.74		●	
		3M150R/L	1.50	0.19	22.709	4.95	2.39	16.10	8.74		●	
		3M200R/L	2.00	0.19	22.709	4.95	2.39	16.10	8.74		●	
		3M250R/L	2.50	0.19	22.709	4.95	3.81	16.10	8.74		●	
		3M300R/L	3.00	0.19	22.709	4.95	3.81	16.10	8.74		●	
		3M350R/L	3.50	0.32	22.709	4.95	3.81	16.10	8.74		●	
		3M400R/L	4.00	0.32	22.709	4.95	3.81	16.10	8.74		●	
3M450R/L	4.50	0.32	22.709	4.95	3.81	16.10	8.74		●			
	XNRP	2M050R/L	1.00	0.50	13.030	3.81	1.27	8.74	5.56		●	
		2M075R/L	1.50	0.75	13.030	3.81	2.79	8.74	5.56		●	
		2M100R/L	2.00	1.00	13.030	3.81	2.79	8.74	5.56		●	
		2M125R/L	2.50	1.25	13.030	3.81	2.79	8.74	5.56		●	
		2M150R/L	3.00	1.50	13.030	3.81	2.79	8.74	5.56		●	
		2M175R/L	3.50	1.75	13.030	3.81	2.79	8.74	5.56		●	
		3M100R/L	2.00	1.00	22.709	4.95	2.39	16.10	8.74		●	
		3M125R/L	2.50	1.25	22.709	4.95	3.81	16.10	8.74		●	
		3M150R/L	3.00	1.50	22.709	4.95	3.81	16.10	8.74		●	
		3M175R/L	3.50	1.75	22.709	4.95	3.81	16.10	8.74		●	
		3M200R/L	4.00	2.00	22.709	4.95	3.81	16.10	8.74		●	
		3M225R/L	4.50	2.25	22.709	4.95	3.81	16.10	8.74		●	

Shape	Designation	Size							Coated		Configuration	
		E	re	L	External (mm)	Internal (mm)	External (tpi)	Internal (tpi)	TPM8020	TPM8125		
	XNTP	2R/L	1.91	0.10	5.56	0.70-3.00	1.25-3.50	8-36	7-20			
		3R/L	2.49	0.17	8.74	1.25-4.00	2.00-5.00	4-20	5-12			
		3004R/L	2.49	0.10	8.74	1.25-4.00	2.00-5.00	5-36	5-12			



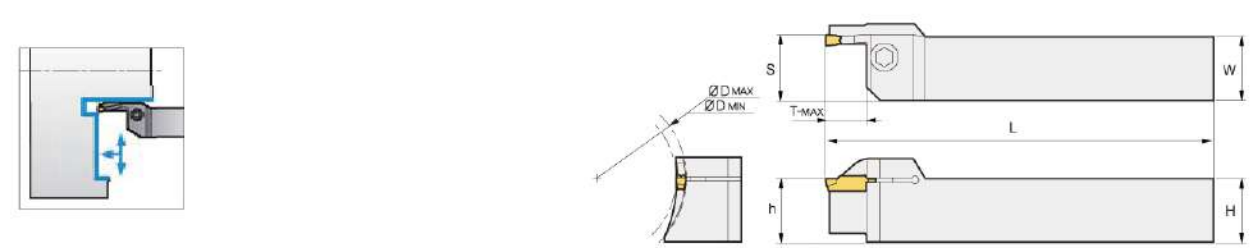
## MGEHR/L



External grooving holder, for grooving, turning reliefing, parting off, profiling machining.

Designation	Stock		Dimension (mm)					Applicable Insert	Spare parts	
	R	L	H=h	W	L	S	T-max		screw	Wrench
MGEHR/L 1616-1.5	●	●	16	16	100	16.2	14	MGMN150-G	PTX0512	HW40L
2020-1.5	●	●	20	20	125	20.2	14			
2525-1.5	●	●	25	25	150	25.2	14			
1212-2	●	●	12	12	100	14.25	14	MGMN200-G MGMN200-M MRMN200-M	PTX0516	HW40L
1616-2	●	●	16	16	100	16.25	14			
2020-2	●	●	20	20	125	20.25	14			
2525-2	●	●	25	25	150	25.25	14	MGMN250-G MGMN250-M	PTX0516	HW40L
1616-2.5	●	●	16	16	100	16.30	16			
2020-2.5	●	●	20	20	125	20.30	16			
2525-2.5	●	●	25	25	150	25.30	16	MGMN300-G MGMN300-M MRMN300-M	PTX0516	HW40L
1616-3	●	●	16	16	100	16.35	18			
2020-3	●	●	20	20	125	20.40	18			
2020-3-T10	●	●	20	20	125	20.40	10			
2525-3	●	●	25	25	150	25.40	18			
2525-3-T10	●	●	25	25	150	25.40	10			
3232-3	●	●	32	32	170	32.40	18			
3232-3-T10	●	●	32	32	170	32.40	10			
2020-4	●	●	20	20	125	20.40	18			
2020-4-T10	●	●	20	20	125	20.40	10			
2525-4	●	●	25	25	150	25.40	18	MGMN400-G MGMN400-M MRMN400-M	PTX0620	HW50L
2525-4-T10	●	●	25	25	150	25.40	10			
3232-4	●	●	32	32	170	32.40	18			
3232-4-T10	●	●	32	32	170	32.40	10			
2020-5	●	●	20	20	125	20.50	23	MGMN500-G MGMN500-M MRMN500-M	PTX0620	HW50L
2020-5-T15	●	●	20	20	125	20.50	15			
2525-5	●	●	25	25	150	25.50	23			
2525-5-T15	●	●	25	25	150	25.50	15			
3232-5	●	●	32	32	170	32.50	23	MGMN600-G MGMN600-M MRMN600-M	PTX0620	HW50L
3232-5-T15	●	●	32	32	170	32.50	15			
2020-6	●	●	20	20	125	20.60	23			
2020-6-T15	●	●	20	20	125	20.60	15			
2525-6	●	●	25	25	150	25.60	23	MGMN800-G MGMN800-M MRMN800-M	PTX0620	HW50L
2525-6-T15	●	●	25	25	150	25.60	15			
3232-6	●	●	32	32	170	32.60	23			
3232-6-T15	●	●	32	32	170	32.60	15			
2525-8	●	●	25	25	150	26.10	28	MGMN800-G MGMN800-M MRMN800-M	PTX0620	HW50L
2525-8-T15	●	●	25	25	150	26.10	15			
3232-8	●	●	32	32	170	33.10	28			
3232-8-T15	●	●	32	32	170	33.10	15			
2525-6A			25	25	150	25.60	23	MRGN600-A	PTX0620	HW50L
2525-6A-T15			25	25	150	25.60	15			
3232-6A			32	32	170	32.60	23			
3232-6A-T15			32	32	170	32.60	15	MRGN800-A	PTX0620	HW50L
2525-8A			25	25	150	26.10	28			
2525-8A-T15			25	25	150	26.10	15			
3232-8A			32	32	170	33.10	28			
3232-8A-T15			32	32	170	33.10	15			

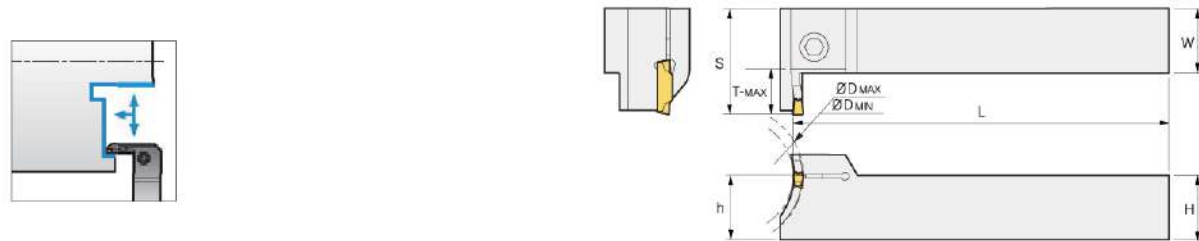
## MGFHR/L



External facing grooving holder

Designation	Stock		Dimension (mm)							Insert	Spare parts	
	R	L	H=h	W	L	S	T-max	Dmin	Dmax		screw	Wrench
MGFHR/L 320-24/35-T10	●	●	20	20	125	20.5	10	24	35	MGMN300 MGGN300 MRMN300	PTX0620	HW50L
320-34/50-T10	●	●	20	20	125	20.5	10	34	50			
320-44/62-T15	●	●	20	20	125	20.5	15	44	62			
320-62/120-T15	●	●	20	20	125	20.5	15	62	120			
320-112/200-T15	●	●	20	20	125	20.5	15	112	200			
325-24/35-T10	●	●	25	25	150	25.5	10	24	35			
325-34/50-T10	●	●	25	25	150	25.5	10	34	50			
325-44/62-T15	●	●	25	25	150	25.5	15	44	62			
325-62/120-T15	●	●	25	25	150	25.5	15	62	120			
325-112/200-T15	●	●	25	25	150	25.5	15	112	200			
420-34/50-T15	●	●	20	20	125	20.6	15	34	50	MGMN400 MGGN400 MRMN400	PTX0620	HW50L
420-44/62-T15	●	●	20	20	125	20.6	15	44	62			
420-62/120-T15	●	●	20	20	125	20.6	15	62	120			
420-112/200-T15	●	●	20	20	125	20.6	15	112	200			
425-34/50-T15	●	●	25	25	150	25.6	15	34	50			
425-44/62-T15	●	●	25	25	150	25.6	15	44	62			
425-62/120-T15	●	●	25	25	150	25.6	15	62	120			
425-112/200-T15	●	●	25	25	150	25.6	15	112	200			
425-200-T20			25	25	150	25.6	20	200	∞			
525-50/80-T15			25	25	150	25.6	15	50	80			
525-50/80-T25			25	25	150	25.6	25	50	80	MGMN500 MRMN500	PTX0620	HW50L
525-70/110-T15			25	25	150	25.6	15	70	110			
525-70/110-T25			25	25	150	25.6	25	70	110			
525-100/150-T25			25	25	150	25.6	25	100	150			
525--140/200-T25			25	25	150	25.6	25	140	200			
525-200-T25			25	25	150	25.6	25	200	∞			

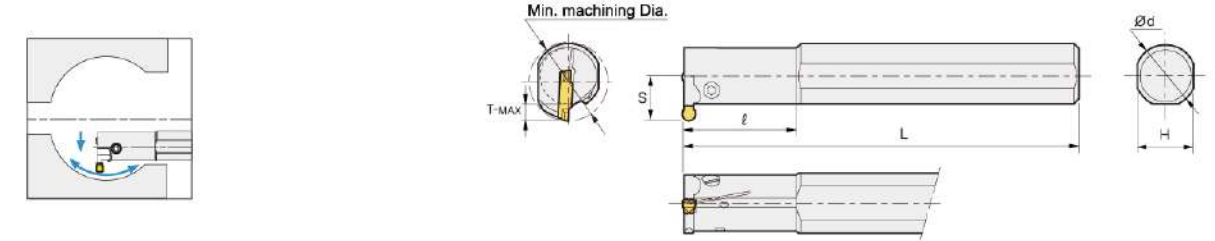
## MGFVR/L



External facing grooving holder

Designation	Stock		Dimension (mm)							Insert	Spare parts	
	R	L	H=h	W	L	S	T-max	Dmin	Dmax		screw	Wrench
<b>MGFVR/L</b> 325-24/35-T10			25	25	150	36	10	24	35	MGMN300 MGGN300 MRMN300	PTX0620	HW50L
325-34/50-T10			25	25	150	36	10	34	50			
325-44//62-T10			25	25	150	36	10	44	62			
325-62/120-T15			25	25	150	36	15	62	120			
425-44/62-T15			25	25	150	41	15	44	62	MGMN400 MGGN400 MRMN400		
425-62/120-T15			25	25	150	41	15	62	120			
425-112/200-T15			25	25	150	41	15	112	200	MGMN500 MRMN500		
525-50/80-T20			25	25	150	46	20	50	80			
525-70/110-T20			25	25	150	46	20	70	110			
525-100/150-T20			25	25	150	46	20	100	150			
525-140/200-T20			25	25	150	46	20	140	200			
525-200-T20			25	25	150	46	20	200	∞			

## MGIVR/L



Internal grooving holder, for grooving, turning, profiling machining.

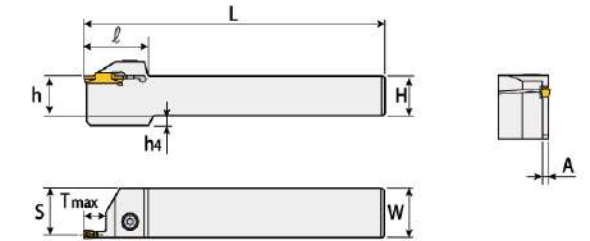
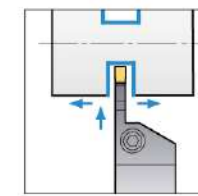
Designation	Stock		Dimension (mm)							Applicable inserts	Spare parts	
	R	L	φDmin	φd	L	I	H	S	T-max		screw	Wrench
<b>MGIVR/L</b> 2016-1.5	●	●	20	16	125	35	15	11.3	3.5	MGMN150-G	PTX0410	HW30L
2520-1.5	●	●	25	20	150	45	18	13.1	3.5		PTX0412	HW30L
2925-1.5	●	●	29	25	200	45	23	16.2	3.5			
2016-2	●	●	20	16	125	35	15	12.4	4.5	MGMN200-G MGMN200-M MRMN200-M	PTX0410	HW30L
2520-2	●	●	25	20	150	45	18	14.0	4.5		PTX0412	HW30L
2925-2	●	●	29	25	200	45	23	17.2	4.5			
2016-2.5	●	●	20	16	125	35	15	12.5	4.5	MGMN250-G MGMN250-M	PTX0410	HW30L
2520-2.5	●	●	25	20	150	45	18	15.1	4.5		PTX0412	HW30L
2925-2.5	●	●	29	25	200	45	23	18.2	4.5			
2520-3	●	●	25	20	150	45	18	15.6	5	MGMN300-G MGMN300-M MRMN300-M	PTX0412	HW30L
3125-3	●	●	31	25	200	45	23	18.9	6		PTX0412	HW30L
3732-3	●	●	37	32	250	65	30	21.5	6		PTX0516	HW40L
2520-4	●	●	25	20	150	45	18	15.6	6	MGMN400-G MGMN400-M MRMN400-M	PTX0520	HW40L
3125-4	●	●	31	25	200	45	23	18.9	6		PTX0412	HW30L
3732-4	●	●	37	32	250	65	30	21.5	6		PTX0516	HW40L
3125-5	●	●	31	25	200	45	23	19.4	8	MGMN500-G MGMN500-M MRMN500-M	PTX0520	HW40L
3732-5	●	●	37	32	250	65	30	21.5	8		PTX0516	HW40L
3125-6	●	●	31	25	200	45	23	19.4	8			
3732-6	●	●	37	32	250	65	30	21.5	8	MGMN600-G MGMN600-M MRMN600-M	PTX0520	HW40L
3732-8	●	●	37	32	250	65	30	23.4	10		PTX0516	HW40L
4540-8	●	●	45	40	300	70	37	27.2	10		PTX0520	HW40L
3125-6A			31	25	200	45	23	19.4	6	MRGN600-A	PTX0516	HW40L
3732-6A			37	32	250	65	30	21.5	6		PTX0520	HW40L
3732-8A			37	32	250	65	30	23.4	10			
4540-8A			45	40	300	70	37	27.2	10	MRGN800-A	PTX0520	HW40L



## Inserts

Shape	Designation	Size					Coated							Configuration					
		MGMN	ra±0.050	L	h	d	TCP9120	TCP9225	TCP9340	TCK5215	TPM8125	TPM8225	TPM930		TPK01				
	MGMN	150-G	1.50	0.15	16.0	3.50	1.20	○					●						
		200-G	2.00	0.20	16.0	3.50	1.60	●	●	●	●	●	●	●	●				
		250-G	2.50	0.20	18.5	3.85	2.00												
		300-G	3.00	0.30	21.0	4.80	2.35												
		400-G	4.00	0.30	21.0	4.80	3.30					○							
		500-G	5.00	0.50	26.0	5.80	4.10												
	MGMN	200-M	2.00	0.20	16.0	3.50	1.60											●	
		250-M	2.50	0.20	18.5	3.85	2.00	●	●	●	●	●	●	●	●	●	●	●	
		300-M	3.00	0.40	21.0	4.80	2.35	●	●	●	●	●	●	●	●	●	●	●	
		400-M	4.00	0.40	21.0	4.80	3.30	●	●	●	●	●	●	●	●	●	●	●	
		500-M	5.00	0.80	26.0	5.80	4.10	●	●	●	●	●	●	●	●	●	●	●	
		600-M	6.00	0.80	26.0	5.80	5.00	●	●	●	●	●	●	●	●	●	●	●	
	MGMN	800-M	8.00	0.80	31.0	6.50	6.00											●	
		200-H	2.00	0.20	16.0	3.50	1.60	●											
		250-H	2.50	0.20	18.5	3.85	2.00	●											
		300-H	3.00	0.40	21.0	4.80	2.35	●											
		400-H	4.00	0.40	21.0	4.80	3.30	●											
	MGMN	500-H	5.00	0.80	26.0	5.80	4.10	●											
		200-L	2.00	0.20	16.5	3.50	1.60	●											
		250-L	2.50	0.20	18.5	3.85	2.00	●											
		300-L	3.00	0.20	21.0	4.80	2.35	●											
		400-L	4.00	0.30	21.0	4.80	3.30	●											
	MGMN	500-L	5.00	0.30	26.0	5.80	4.10	●											
		150-T	1.50	0.15	16.0	3.50	1.20												
		200-T	2.00	0.20	16.0	3.50	1.60												
		250-T	2.50	0.20	18.5	4.80	2.00												
		300-T	3.00	0.40	21.0	4.80	2.35												
	MGMN	400-T	4.00	0.40	21.0	4.80	3.30												
		500-T	5.00	0.80	26.0	5.80	4.10												
		200-M	2.00	1.00	16.0	3.50	1.50	●											
		300-M	3.00	1.50	21.0	4.80	2.35	●											
		400-M	4.00	2.00	21.0	4.80	3.30	●											
	MRMN	500-M	5.00	2.50	26.0	5.80	4.10	●											
		600-M	6.00	3.00	26.0	5.80	5.00	●											
		800-M	8.00	4.00	31.0	6.50	6.00												
		300-A	3.00	1.50	21.0	4.80	2.35												
	MRGA	400-A	4.00	2.00	21.0	4.80	3.30												
		500-A	5.00	2.50	26.0	5.80	4.10												
		600-A	6.00	3.00	26.0	5.80	5.00												
		800-A	8.00	4.00	31.0	6.50	6.00												

## TTER/L

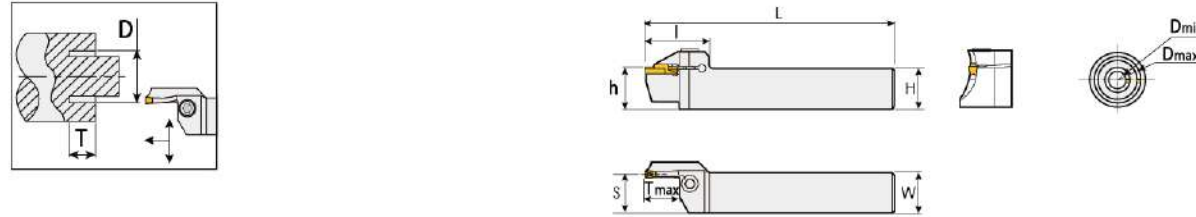


External grooving holder, for grooving, turning, profiling machining.

Designation	Stock		Dimension (mm)							Insert	Spare parts		
	R	L	H=h	W	L	S	ℓ	A	h4		T-max	screw	Wrench
TTER/L 1616-2T08	●		16	16	110	15.1	33.0	1.8	4	8	TD□2	PTX0516	HW40L
2020-2T08	●		20	20	125	19.1	33.0	1.8	-	8		PTX0520	HW40L
2525-2T08	●		25	25	150	24.1	33.0	1.8	-	8		PTX0525	HW40L
1616-2	●		16	16	110	15.1	32.0	1.8	4	12		PTX0516	HW40L
2020-2	●		20	20	125	19.1	32.0	1.8	-	12		PTX0520	HW40L
2525-2	●		25	25	150	24.1	32.0	1.8	-	12		PTX0525	HW40L
1616-2T17	●		16	16	110	15.1	37.0	1.8	4	17		PTX0516	HW40L
2020-2T17	●		20	20	125	19.1	37.0	1.8	-	17		PTX0520	HW40L
2525-2T17	●		25	25	150	24.1	37.0	1.8	-	17		PTX0525	HW40L
1616-3T09	●		16	16	110	15.1	32.0	2.4	4	9	TD□3	PTX0516	HW40L
2020-3T09	●		20	20	125	19.1	32.0	2.4	-	9		PTX0520	HW40L
2525-3T09	●		25	25	150	24.1	32.0	2.4	-	9		PTX0525	HW40L
1616-3	●		16	16	110	15.1	32.0	2.4	4	12		PTX0516	HW40L
2020-3	●		20	20	125	19.1	32.0	2.4	-	12		PTX0520	HW40L
2525-3	●		25	25	150	24.1	32.0	2.4	-	12		PTX0525	HW40L
1616-3T20	●		16	16	110	15.1	38.5	2.4	4	20		PTX0516	HW40L
2020-3T20	●		20	20	125	19.1	38.5	2.4	-	20		PTX0520	HW40L
2525-3T20	●		25	25	150	24.1	38.5	2.4	-	20		PTX0525	HW40L
1616-4T10	●		16	16	110	15.1	32.0	3.0	4	10	TD□4	PTX0616	HW50L
2020-4T10	●		20	20	125	19.1	32.0	3.0	-	10		PTX0620	HW50L
2525-4T10	●		25	25	150	24.1	32.0	3.0	-	10		PTX0625	HW50L
1616-4	●		16	16	110	15.1	33.0	3.0	4	15		PTX0616	HW50L
2020-4	●		20	20	125	19.1	33.0	3.0	-	15		PTX0620	HW50L
2525-4	●		25	25	150	24.1	33.0	3.0	-	15		PTX0625	HW50L
1616-4T25	●		16	16	110	15.1	45.0	3.0	4	25		PTX0616	HW50L
2020-4T25	●		20	20	125	19.1	45.0	3.0	-	25		PTX0620	HW50L
2525-4T25	●		25	25	150	24.1	45.0	3.0	-	25		PTX0625	HW50L
2020-5T12			20	20	125	19.1	37.0	4.0	-	12	TD□5	PTX0620	HW50L
2525-5T12			25	25	150	24.1	37.0	4.0	-	12		PTX0625	HW50L
2020-5			20	20	125	19.1	37.0	4.0	-	20		PTX0620	HW50L
2525-5			25	25	150	24.1	37.0	4.0	-	20		PTX0625	HW50L
2525-5T32			25	25	150	24.1	56.0	4.0	-	32		PTX0625	HW50L



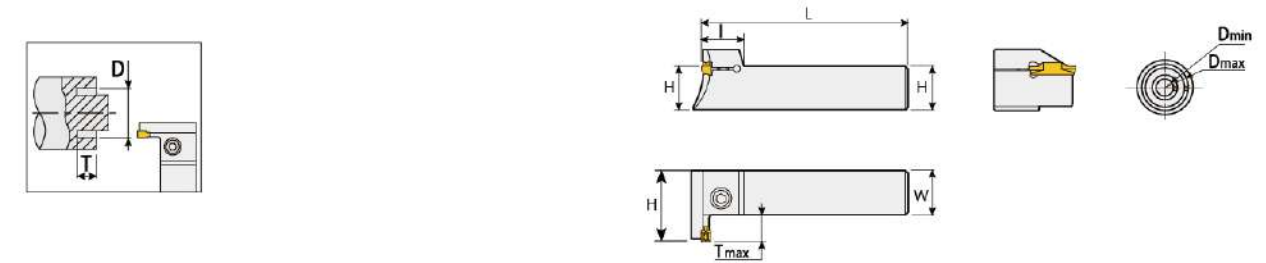
## TFR/L



External deep face grooving and turning, for double-sided inserts

Designation	Stock		Dimension (mm)							Insert	Spare parts		
	R	L	H=h	W	ℓ	L	S	Dmin	Dmax		T-max	screw	Wrench
TFR/L 320-21/30-T10			20	20	31	140	19.0	21	30	10	TD□3	PTX0620	HW50L
320-24/35-T10			20	20	31	140	19.0	24	35	10			
320-29/40-T10			20	20	31	140	19.0	29	40	10			
320-34/50-T10			20	20	31	140	19.0	34	50	10			
320-44/70-T15			20	20	35	140	19.0	44	70	15			
320-64/100-T15			20	20	35	140	19.0	64	100	15			
325-24/35-T10			25	25	38	150	24.0	24	35	10			
325-29/40-T10			25	25	38	150	24.0	29	40	10			
325-34/50-T10			25	25	38	150	24.0	34	50	10			
325-44/70-T15			25	25	38	150	24.0	44	70	15			
325-64/100-T15			25	25	38	150	24.0	64	100	15			
420-19/30-T10			20	20	31	140	18.6	19	30	10	TD□4	PTX0620	HW50L
420-22/36-T10			20	20	31	140	18.6	22	36	10			
420-28/42-T16			20	20	36	140	18.6	28	42	16			
420-34/50-T16			20	20	36	140	18.6	34	50	16			
420-42/70-T16			20	20	36	140	18.6	42	70	16			
420-62/120-T16			20	20	36	140	18.6	62	120	16			
420-112/200-T16			20	20	36	140	18.6	112	200	16			
425-22/36-T10			25	25	39	150	23.6	22	36	10			
425-28/42-T20			25	25	39	150	23.6	28	42	20			
425-34/50-T20			25	25	39	150	23.6	34	50	20			
425-42/70-T20			25	25	39	150	23.6	42	70	20			
425-62/120-T20			25	25	39	150	23.6	62	120	20			
425-112/200-T20			25	25	39	150	23.6	112	200	20			
425-200-T20			25	25	39	150	23.6	200	∞	20			
525-50/80-T15			25	25	41	150	23.1	50	80	15	TD□5	PTX0825	HW60L
525-50/80-T25			25	25	49	150	23.1	50	80	25			
525-70/110-T15			25	25	41	150	23.1	70	110	15			
525-70/110-T25			25	25	49	150	23.1	70	110	25			
525-100/150-T25			25	25	49	150	23.1	100	150	25			
525-140/200-T25			25	25	49	150	23.1	140	200	25			
525-200-T25			25	25	49	150	23.1	200	∞	25			

## TTFPR/L

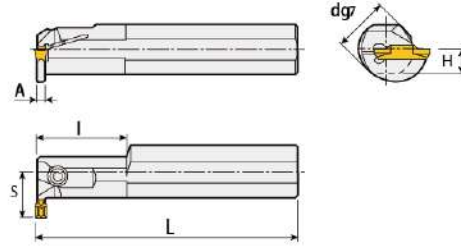
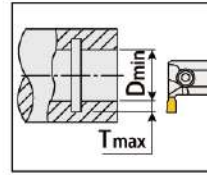


External deep face grooving and turning, for double-sided inserts

Designation	Stock		Dimension (mm)							Insert	Spare parts		
	R	L	H=h	W	ℓ	L	S	Dmin	Dmax		T-max	screw	Wrench
TTFPR/L 325-24/35-T10			25	25	18.0	150	36	24	35	10	TD□4	PTX0525	HW40L
325-29/40-T10			25	25	18.0	150	36	29	40	10			
325-34/50-T10			25	25	18.0	150	36	34	50	10			
325-44/60-T15			25	25	18.0	150	41	44	60	15			
325-54/85-T15			25	25	18.0	150	41	54	85	15			
425-22/40-T12			25	25	18.5	150	41	22	40	12	TD□4	PTX0625	HW50L
425-32/50-T15			25	25	18.5	150	41	32	50	15			
425-42/60-T15			25	25	18.5	150	41	42	60	15			
425-52/85-T15			25	25	18.5	150	41	52	85	15	TD□5	PTX0825	HW60L
525-50/80-T20			25	25	22.0	150	46	50	80	20			
525-70/110-T20			25	25	22.0	150	46	70	110	20			
525-100/150-T20			25	25	22.0	150	46	100	150	20			
525-140/200-T20			25	25	22.0	150	46	140	200	20			
525-200-T20			25	25	22.0	150	46	200	∞	20			



## TTIR/L



### Internal turning and grooving holder, for double-sided inserts

Designation	Stock		Dimension (mm)							Insert	Spare parts		
	R	L	Dmin	d	L	ℓ	S	H	A		T-max	screw	Wrench
TTIR/L 16-2	●		25	16	125	-	16.5	7.5	1.80	8.5	TD□2	PTX0510	HW40L
20-2	●		25	20	160	40	15.8	9.0	1.60	6.0		PTX0512	HW40L
25-2	●		25	25	200	40	17.5	11.5	1.60	5.0		PTX0516	HW40L
32-2	●		31	32	250	60	20.8	14.0	1.50	4.7		PTX0516	HW40L
32-2-T08	●		36	32	250	40	24.8	14.0	1.80	8.0		PTX0516	HW40L
20-3	●		25	20	160	40	15.8	9.0	2.10	6.0	TD□3	PTX0512	HW40L
25-3	●		25	25	200	40	17.5	11.5	2.10	5.1		PTX0516	HW40L
25-3-T08	●		32	25	200	40	21.5	11.5	2.40	8.0		PTX0516	HW40L
32-3	●		31	32	250	60	20.8	14.0	2.10	4.7		PTX0516	HW40L
32-3-T10	●		40	32	250	60	27.0	15.0	2.40	10.0		PTX0516	HW40L
40-3-T12	●		50	40	300	65	33.0	19.0	2.40	12.0	TD□4	PTX0516	HW40L
20-4	●		25	20	160	40	15.8	9.0	2.90	6.0		PTX0512	HW40L
25-4	●		25	25	200	40	17.5	11.5	2.90	5.2		PTX0516	HW40L
25-4-T08	●		32	25	200	40	21.5	11.5	3.00	8.0		PTX0516	HW40L
32-4	●		31	32	250	60	20.8	14.0	2.90	4.7		PTX0516	HW40L
32-4-T10	●		40	32	250	60	27.0	15.0	3.00	10.0	TD□5	PTX0516	HW40L
40-4-T12	●		50	40	300	65	33.0	19.0	3.00	12.0		PTX0516	HW40L
25-5			31	25	200	40	17.3	11.5	3.90	5.2		PTX0616	HW50L
32-5			31	32	250	60	20.8	14.0	3.90	4.7		PTX0620	HW50L
32-5-T10			40	32	250	60	27.0	15.0	3.85	10.0		PTX0620	HW50L
40-5-T12			50	40	300	65	33.0	19.0	3.85	12.0	PTX0625	HW50L	

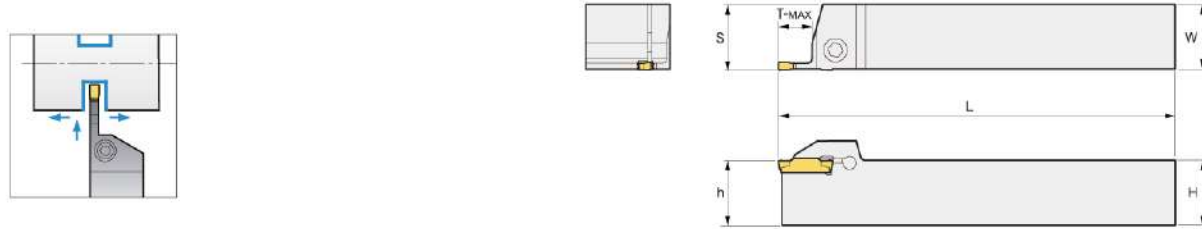
## Inserts

Shape	Designation	Size						Coated				Configuration	
		W±0.020	re±0.050	L	h	d	α°	TCP9120	TPM8125	TPM930	TPK01		
	TDC	2	2.00	0.2	20.0	4.7	1.7	-	●	●			
		3	3.00	0.2	20.0	4.7	2.4	-	●	●			
		4	4.00	0.3	20.0	4.7	3.0	-	●	●			
		5	5.00	0.3	25.0	5.2	4.0	-	●	●			
	TDJ	2	2.00	0.2	20.0	4.7	1.7	-	●	●			
		3	3.00	0.2	20.0	4.7	2.4	-	●	●			
		4	4.00	0.3	20.0	4.7	3.0	-	●	●			
		5	5.00	0.3	25.0	5.2	4.0	-					
	TDT	2.00-E	2.00	0.2	20.0	4.7	1.7	-					
		3.00-E	3.00	0.2	20.0	4.7	2.2	-	●	●			
		4.00-E	4.00	0.4	20.0	4.7	3.0	-	●	●			
		5.00-E	5.00	0.4	25.0	5.2	4.0	-	●	●			

## Inserts

Shape	Designation	Size						Coated				Configuration		
		W±0.020	re±0.050	L	h	d	α°	TCP9120	TPM8125	TPM930	TPK01			
	TDJ	2R-6D	2.00	0.2	20.0	4.7	1.7	6		●				
		2L-6D	2.00	0.2	20.0	4.7	1.7	6		●				
		2R-15D	2.00	0.2	20.0	4.7	1.7	15		●				
		2L-15D	2.00	0.2	20.0	4.7	1.7	15		●				
		3R-6D	3.00	0.2	20.0	4.7	2.4	6		●				
		3L-6D	3.00	0.2	20.0	4.7	2.4	6		●				
		3R-15D	3.00	0.2	20.0	4.7	2.4	15		●				
		3L-15D	3.00	0.2	20.0	4.7	2.4	15		●				
		4R-6D	4.00	0.3	20.0	4.7	3.0	6		●				
		4L-6D	4.00	0.3	20.0	4.7	3.0	6		●				
		4R-15D	4.00	0.3	20.0	4.7	3.0	15		●				
		4L-15D	4.00	0.3	20.0	4.7	3.0	15		●				

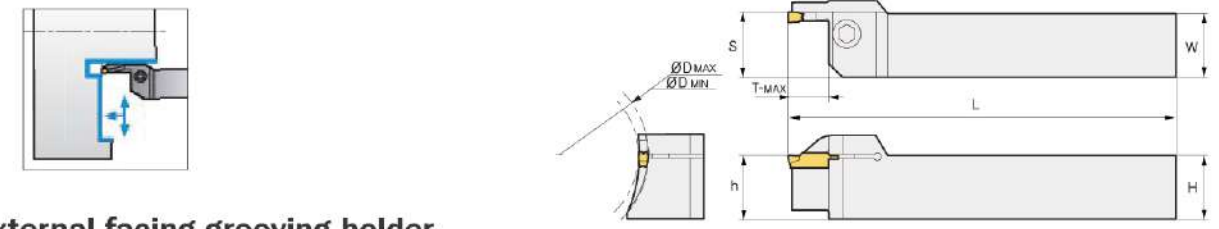
## QE□□



Internal turning and grooving holder, for double-sided inserts

Designation	Stock		Dimension (mm)					Insert	Spare parts	
	R	L	H=h	W	L	S	T-max		screw	Wrench
<b>QEED</b> 1616-R/L10	●		16	16	100	15.0	10	Z□ED□□	PTX0520	HW40L
1616-R/L17	●		16	16	100	15.0	17			
2020-R/L10	●		20	20	125	19.0	10		PTX0620	HW50L
2020-R/L17	●		20	20	125	19.0	17			
2525-R/L10	●		25	25	150	24.0	10		PTX0520	HW40L
2525-R/L17	●		25	25	150	24.0	17			
<b>QEFD</b> 1616-R/L10	●		16	16	100	14.8	10	Z□FD□□	PTX0520	HW40L
1616-R/L17	●		16	16	100	14.8	17			
2020-R/L10	●		20	20	125	18.8	10		PTX0620	HW50L
2020-R/L17	●		20	20	125	18.8	17			
2525-R/L10	●		25	25	150	23.8	10		PTX0620	HW50L
2525-R/L17	●		25	25	150	23.8	17			
<b>QEGD</b> 2020-R/L13	●		20	20	125	18.5	13	Z□GD□□	PTX0620	HW50L
2020-R/L22	●		20	20	125	18.5	22			
2525-R/L13	●		25	25	150	23.5	13			
2525-R/L22	●		25	25	150	23.5	22			
3232-R/L13	●		32	32	170	30.5	13			
3232-R/L22	●		32	32	170	30.5	22			
<b>QEHD</b> 2525-R/L13	●		25	25	150	23.0	13	Z□HD□□	PTX0620	HW50L
2525-R/L22	●		25	25	150	23.0	22			
3232-R/L13	●		32	32	170	30.0	13			
3232-R/L22	●		32	32	170	30.0	22			
<b>QEKD</b> 2525-R/L13	●		25	25	150	22.6	13	Z□KD□□	PTX0620	HW50L
2525-R/L22	●		25	25	150	22.6	22			
3232-R/L13	●		32	32	170	29.6	13			
3232-R/L22	●		32	32	170	29.6	22	Z□HS□□	PTX0620	HW50L
<b>QEHS</b> 2525-N30	●		25	25	150	12.5	30			
3232-N30	●		32	32	170	16.0	30	Z□HS□□	PTX0620	HW50L
<b>QEKS</b> 2525-N30	●		25	25	150	12.5	30			
3232-N30	●		32	32	170	16.0	30			

## QF□□-H

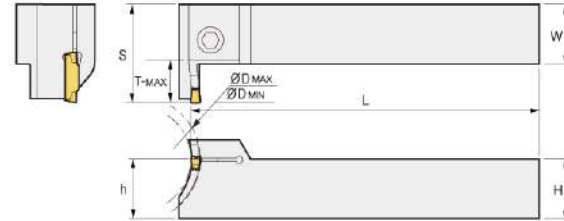


External facing grooving holder

Designation	Stock		Dimension (mm)						Applicable Insert	Spare parts		
	R	L	H=h	W	L	S	T-max	Dmin		Dmax	screw	Wrench
<b>QFFD</b> 2020R/L7-48H			20	20	125	21.0	7	48	66	Z□FD□□		
2020R/L7-60H			20	20	125	21.0	7	60	80			
2020R/L7-74H			20	20	125	21.0	7	74	110			
2020R/L7-100H			20	20	125	21.0	7	100	150			
2020R/L10-48H			20	20	125	21.0	10	48	66			
2020R/L10-60H			20	20	125	21.0	10	60	80			
2020R/L10-74H			20	20	125	21.0	10	74	110			
2020R/L10-100H			20	20	125	21.0	10	100	150			
2525R/L10-48H			25	25	150	26.0	10	48	66			
2525R/L10-60H			25	25	150	26.0	10	60	80			
2525R/L10-74H			25	25	150	26.0	10	74	110			
2525R/L17-48H			25	25	150	26.0	17	48	66			
2525R/L17-60H			25	25	150	26.0	17	60	80			
2525R/L17-74H			25	25	150	26.0	17	74	110			
2525R/L17-100H			25	25	150	26.0	17	100	150			
<b>QFGD</b> 2020R/L10-52H			20	20	125	19.0	10	52	72	Z□GD□□	PTX0620	HW50L
2020R/L10-64H			20	20	125	19.0	10	64	100			
2020R/L10-90H			20	20	125	19.0	10	90	140			
2020R/L10-130H			20	20	125	19.0	10	130	230			
2020R/L15-52H			20	20	125	19.0	15	52	72			
2020R/L15-64H			20	20	125	19.0	15	64	100			
2020R/L15-90H			20	20	125	19.0	15	90	140			
2020R/L15-130H			20	20	125	19.0	15	130	230			
2525R/L13-52H			25	25	150	24.0	13	52	72			
2525R/L13-64H			25	25	150	24.0	13	64	100			
2525R/L13-90H			25	25	150	24.0	13	90	140			
2525R/L13-130H			25	25	150	24.0	13	130	230			
2525R/L22-52H			25	25	150	24.0	22	52	72			
2525R/L22-64H			25	25	150	24.0	22	64	100			
2525R/L22-90H			25	25	150	24.0	22	90	140			
2525R/L22-130H			25	25	150	24.0	22	130	230			
<b>QFHD</b> 2525R/L13-58H			25	25	150	23.5	13	58	96	Z□HD□□		
2525R/L13-86H			25	25	150	23.5	13	86	140			
2525R/L13-130H			25	25	150	23.5	13	130	200			
2525R/L13-185H			25	25	150	23.5	13	185	400			
2525R/L22-58H			25	25	150	23.5	22	58	96			
2525R/L22-86H			25	25	150	23.5	22	86	140			
2525R/L22-130H			25	25	150	23.5	22	130	200			
2525R/L22-185H			25	25	150	23.5	22	185	400			
<b>QFKD</b> 2525R/L13-60H			25	25	150	23.0	13	60	100	Z□KD□□		
2525R/L13-88H			25	25	150	23.0	13	88	180			
2525R/L13-160H			25	25	150	23.0	13	160	400			
2525R/L22-60H			25	25	150	23.0	22	60	100			
2525R/L22-88H			25	25	150	23.0	22	88	180			
2525R/L22-160H			25	25	150	23.0	22	160	400			



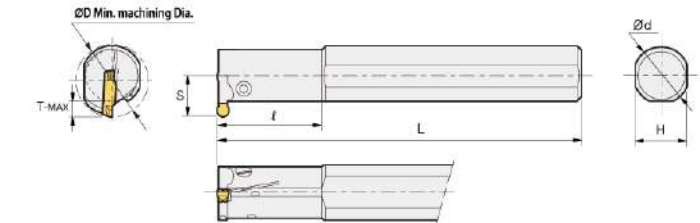
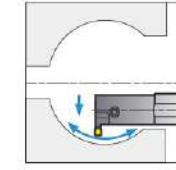
## QF□□-L



### External facing grooving holder

Designation	Stock		Dimension (mm)							Applicable Insert	Spare parts	
	R	L	H=h	W	L	S	T-max	Dmin	Dmax		screw	Wrench
<b>QFFD</b> 2525R/L10-48L			25	25	150	36.5	10	48	66	Z□FD□□	PTX0620	HW50L
2525R/L10-60L			25	25	150	36.5	10	60	80			
2525R/L10-74L			25	25	150	36.5	10	74	110			
2525R/L10-100L			25	25	150	36.5	10	100	150			
2525R/L17-48L			25	25	150	43.5	17	48	66			
2525R/L17-60L			25	25	150	43.5	17	60	80			
2525R/L17-74L			25	25	150	43.5	17	74	110			
2525R/L17-100L			25	25	150	43.5	17	100	150			
<b>QFGD</b> 2525R/L13-52L			25	25	150	39.5	13	52	72	Z□GD□□	PTX0620	HW50L
2525R/L13-64L			25	25	150	39.5	13	64	100			
2525R/L13-90L			25	25	150	39.5	13	90	140			
2525R/L13-130L			25	25	150	39.5	13	130	230			
2525R/L22-52L			25	25	150	48.5	22	52	72			
2525R/L22-64L			25	25	150	48.5	22	64	100			
2525R/L22-90L			25	25	150	48.5	22	90	140			
2525R/L22-130L			25	25	150	48.5	22	130	230			
<b>QFHD</b> 2525R/L13-58L			25	25	150	39.5	13	58	96	Z□HD□□	PTX0620	HW50L
2525R/L13-86L			25	25	150	39.5	13	86	140			
2525R/L13-130L			25	25	150	39.5	13	130	200			
2525R/L13-185L			25	25	150	39.5	13	185	400			
2525R/L22-58L			25	25	150	48.5	22	58	96			
2525R/L22-86L			25	25	150	48.5	22	86	140			
2525R/L22-130L			25	25	150	48.5	22	130	200			
2525R/L22-185L			25	25	150	48.5	22	185	400			
<b>QFKD</b> 2525R/L13-60L			25	25	150	39.5	13	60	100	Z□KD□□	PTX0620	HW50L
2525R/L13-88L			25	25	150	39.5	13	88	180			
2525R/L13-160L			25	25	150	39.5	13	160	400			
2525R/L22-60L			25	25	150	48.5	22	60	100			
2525R/L22-88L			25	25	150	48.5	22	88	180			
2525R/L22-160L			25	25	150	48.5	22	160	400			

## C-QE□□



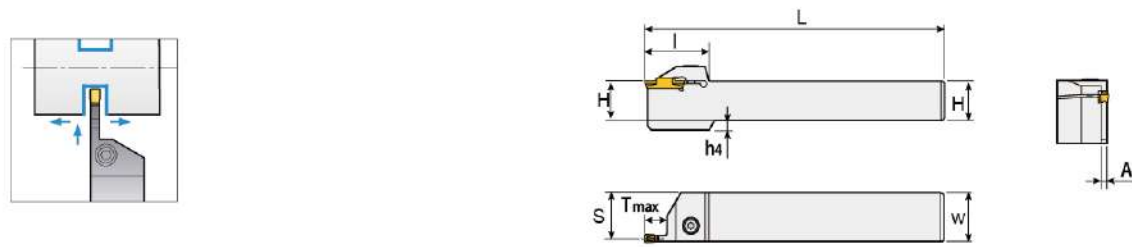
### Internal grooving holder, for grooving, turning, profiling machining.

Designation	Stock		Dimension (mm)							Applicable Insert	Spare parts	
	R	L	Dmin	d	L	ℓ	S	H	T-max		screw	Wrench
C20Q-QEDR/L05-27			27	20	180	45	15.2	18.0	5	Z□ED□□	PTX0412	HW30L
C25R-QEDR/L07-33			33	25	200	45	20.3	23.0	7		PTX0516	HW40L
C32S-QEDR/L09-42			42	32	250	65	25.3	30.0	9		PTX0620	HW50L
C20Q-QFDR/L05-27			27	20	180	45	15.2	18.0	5	Z□FD□□	PTX0412	HW30L
C25R-QFDR/L07-33			33	25	200	45	20.3	23.0	7		PTX0516	HW40L
C32S-QFDR/L09-42			42	32	250	65	25.3	30.0	9		PTX0620	HW50L
C25R-QGDR/L08-35			35	25	200	45	21.5	23.0	8	Z□GD□□	PTX0516	HW40L
C32S-QGDR/L11-44			44	32	250	65	27.5	30.0	11		PTX0620	HW50L
C40T-QGDR/L13-54			54	40	300	70	33.5	37.0	13			
C25R-QHDR/L08-35			35	25	200	45	21.5	23.0	8	Z□HD□□	PTX0516	HW40L
C32S-QHDR/L11-44			44	32	250	65	27.5	30.0	11		PTX0620	HW50L
C40T-QHDR/L13-54			54	40	300	70	33.5	37.0	13			
C25R-QKDR/L08-35			35	25	200	45	21.5	23.0	8	Z□KD□□	PTX0516	HW40L
C32S-QKDR/L11-44			44	32	250	65	27.5	30.0	11		PTX0620	HW50L
C40T-QKDR/L13-54			54	40	300	70	33.5	37.0	13			

### Inserts

Shape	Designation	Size			Coated						Configuration
		W±0.010	re±0.10	L	TCP9120	TCP9225	TCP9340	TCK5215	TPM8125	TPM8225	
	<b>ZTED</b> 02503-MG	2.50	0.3	17.0	●	●	●	●	●	●	
	<b>ZTFD</b> 0303-MG	3.00	0.3	17.0	●	●	●	●	●	●	
	<b>ZTGD</b> 0404-MG	4.00	0.4	22.0	●	●	●	●	●	●	
	<b>ZTHD</b> 0504-MG	5.00	0.4	22.0	●	●	●	●	●	●	
	<b>ZTKD</b> 0608-MG	6.00	0.8	22.0	●	●	●	●	●	●	

## MDELR/L



External turning and grooving holder, for double-sided inserts

Designation	Stock		Dimension (mm)								Insert	Spare parts	
	R	L	H=h	W	L	S	ℓ	A	h4	T-max		screw	Wrench
MDELR/L 1212-3T12			12	12	125	10.8	30.0	2.4	4.0	12	DCPR3□□□	PTX0516	HW40L
1616-3T12			16	16	125	14.8	30.0	2.4	4.0	12		PTX0516	HW40L
1616-3T20			16	16	135	14.8	30.0	2.4	-	20		PTX0616	HW50L
2020-3T12			20	20	135	18.8	29.0	2.4	-	12		PTX0516	HW40L
2020-3T20			20	20	140	18.8	36.4	2.4	-	20		PTX0616	HW50L
2525-3T12			25	25	150	23.8	29.0	2.4	-	12		PTX0516	HW40L
2525-3T20			25	25	150	23.8	36.4	2.4	-	20		PTX0620	HW40L
3232-3T20			32	32	170	30.8	36.4	2.4	-	20		PTX0620	HW50L
1616-4T12			16	16	125	14.4	29.0	3.2	-	12		DCPR4□□□	PTX0516
1616-4T20			16	16	135	14.4	38.0	3.2	4.0	20	PTX0620		HW50L
2020-4T12			20	20	135	18.4	29.0	3.2	-	12	PTX0516		HW40L
2020-4T25			20	20	140	18.4	42.0	3.2	-	25	PTX0620		HW50L
2525-4T12			25	25	150	23.4	29.0	3.2	-	12	PTX0516		HW40L
2525-4T25			25	25	150	23.4	42.0	3.2	-	25	PTX0620		HW50L
3232-4T25			32	32	170	30.4	43.0	3.2	-	25	PTX0620	HW50L	
2020-5T12			20	20	135	17.9	29.0	4.2	-	12	DCPR5□□□	PTX0616	HW50L
2020-5T25			20	20	140	17.9	42.0	4.2	-	25		PTX0620	HW50L
2525-5T12			25	25	150	22.9	29.0	4.2	-	12		PTX0616	HW50L
2525-5T25			25	25	150	22.9	42.0	4.2	-	25		PTX0620	HW50L
3232-5T25			32	32	170	29.9	43.0	4.2	-	25		PTX0620	HW50L
2525-6T12			25	25	150	22.4	29.0	5.2	-	12	DCPR6□□□	PTX0620	HW50L
2525-6T30			25	25	150	22.4	51.4	5.2	-	30		PTX0620	HW50L
3232-6T30			32	32	170	29.4	51.4	5.2	-	30		PTX0620	HW50L

## MDELIR/L



Internal turning and grooving holder, for double-sided inserts

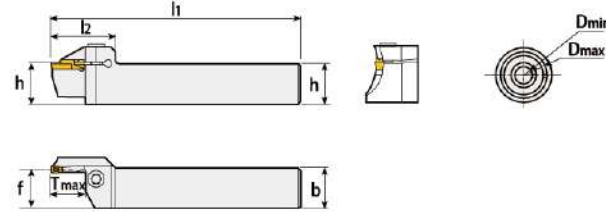
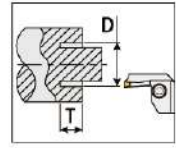
Designation	Stock		Dimension (mm)							Insert	Spare parts		
	R	L	Dmin	d	L	ℓ	S	H	A		T-max	screw	Wrench
MDELIR/L 20-3T05			26	20	160	40.0	15.2	9.00	2.40	5	DCPR3□□□	PTX0512	HW40L
25-3T05			31	25	200	40	17.7	11.50	2.40	5		PTX0516	HW40L
25-4T10			43	25	200	40	22.7	11.50	3.20	10		PTX0516	HW40L
32-4T10			43	32	250	60	26.2	15.00	3.20	10	DCPR4□□□	PTX0516	HW40L
40-4T12			53	40	300	65	32.2	19.00	3.20	12		PTX0516	HW40L
25-5T10			43	25	200	40	22.7	11.50	4.20	10		PTX0616	HW50L
32-5T10			43	32	250	60	26.2	15.00	4.20	10	DCPR5□□□	PTX0620	HW50L
40-5T12			53	40	300	65	32.2	19.00	4.20	12		PTX0620	HW50L
25-6T10			43	25	200	40	22.7	11.50	5.20	10		PTX0616	HW50L
32-6T10			43	32	250	60	26.2	15.00	5.20	10	DCPR6□□□	PTX0620	HW50L
40-6T12			53	40	300	65	32.2	19.00	5.20	12		PTX0620	HW50L

## Inserts

Shape	Designation	Size				Coated					Configuration
		W±0.010	re±0.10	L	d	TCP9225	TCP9340	TCK5215	TPM8125	TPM8225	
DCPR-GM	DCPR 3003-GM	3.0	0.3	16.0	2.3			●	●	●	
	4002-GM	4.0	0.2	19.0	2.8			●	●	●	
	4004-GM	4.0	0.4	19.0	2.8			●	●	●	
	5005-GM	5.0	0.5	19.0	3.3						
	6005-GM	6.0	0.5	19.0	4.2				●		
	6008-GM	6.0	0.8	19.0	4.2						
	DCPL 3003-GM	3.0	0.3	16.0	2.3						
	4002-GM	4.0	0.2	19.0	2.8				●		
4004-GM	4.0	0.4	19.0	2.8			●	●	●		
5005-GM	5.0	0.5	19.0	3.3							
6005-GM	6.0	0.5	19.0	4.2							
6008-GM	6.0	0.8	19.0	4.2							



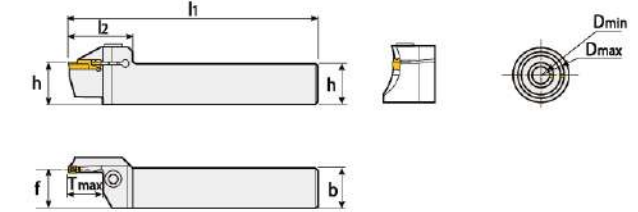
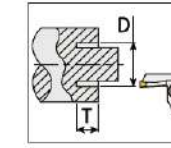
## MDFHR/L



### External deep face grooving and turning, for double-sided inserts

Designation	Stock		Dimension (mm)							Insert	Spare parts			
	R	L	H=h	W	ℓ	L	S	Dmin	Dmax		Tmax	screw	Wrench	
MDFHR/L 1212-12/16-3T06			12	12	19.0	120	11.0	12	16	6	PTX0514	HW40L		
1212-16/25-3T06			12	12	19.0	120	11.0	16	25	6				
1616-12/16-3T06			16	16	19.0	120	15.0	12	16	6				
1616-16/25-3T06			16	16	19.0	120	15.0	16	25	6				
2020-12/16-3T06			20	20	19.0	120	20.0	12	16	6				
2020-16/25-3T06			20	20	19.0	120	20.0	16	25	6				
2525-12/16-3T06			25	25	19.0	120	25.0	12	16	6				
2525-16/25-3T06			25	25	19.0	120	25.0	16	25	6				
2020-25/30-3T12			20	20	38.0	140	20.5	25	30	12			DCPR/L3□□□-GH	
2020-30/38-3T12			20	20	38.0	140	20.5	30	38	12				
2020-38/48-3T12			20	20	38.0	140	20.5	38	48	12				
2020-48/60-3T12			20	20	38.0	140	20.5	48	60	12				
2020-60/75-3T22			20	20	40.0	140	20.5	60	75	22				
2020-75/100-3T25			20	20	43.0	140	20.5	75	100	25				
2525-25/30-3T12			25	25	38.0	150	25.5	25	30	12				
2525-30/38-3T12			25	25	38.0	150	25.5	30	38	12				
2525-38/48-3T12			25	25	38.0	150	25.5	38	48	12				
2525-48/60-3T22			25	25	40.0	150	25.5	48	60	22				
2525-60/75-3T22			25	25	40.0	150	25.5	60	75	22	PTX0616	HWS0L		
2525-75/100-3T25			25	25	43.0	150	25.5	75	100	25				
2020-25/29-4T12			20	20	39.0	140	20.6	25	29	12				
2020-29/34-4T12			20	20	39.0	140	20.6	29	34	12				
2020-34/40-4T20			20	20	39.0	140	20.6	34	40	20				
2020-40/48-4T25			20	20	44.0	140	20.6	40	48	25				
2020-48/60-4T25			20	20	44.0	140	20.6	48	60	25				
2020-60/75-4T25			20	20	44.0	140	20.6	60	75	25				
2020-75/100-4T25			20	20	44.0	140	20.6	75	100	25				
2525-25/29-4T12			25	25	39.0	150	25.6	25	29	12				
2525-29/34-4T12			25	25	39.0	150	25.6	29	34	12	DCPR/L4□□□-GM DCPR/L4□□□-GH			
2525-34/40-4T20			25	25	39.0	150	25.6	34	40	20				
2525-40/48-4T25			25	25	44.0	150	25.6	40	48	25				
2525-48/60-4T25			25	25	44.0	150	25.6	48	60	25				
2525-60/75-4T25			25	25	44.0	150	25.6	60	75	25				

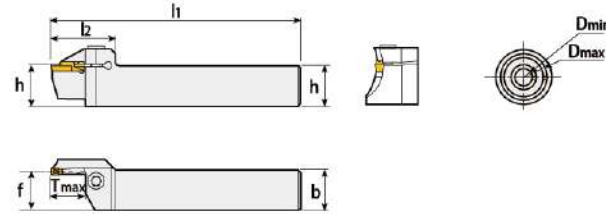
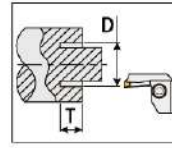
## MDFHR/L



### External deep face grooving and turning, for double-sided inserts

Designation	Stock		Dimension (mm)							Insert	Spare parts		
	R	L	H=h	W	ℓ	L	S	Dmin	Dmax		Tmax	screw	Wrench
MDFHR/L 2525-75/100-4T25			25	25	44.0	150	25.6	75	100	25	DCPR/L4□□□-GM	PTX0616	HWS0L
2525-100/140-4T25			25	25	44.0	150	25.6	100	140	25			
2525-140/240-4T25			25	25	44.0	150	25.6	140	240	25			
2525-240/800-4T25			25	25	44.0	150	25.6	240	800	25	DCPR/L5□□□-GM DCPR/L5□□□-GH		
2020-25/30-5T10			20	20	38.0	140	21.0	25	30	10			
2020-28/31-5T15			20	20	34.0	140	21.0	28	31	15			
2020-31/35-5T15			20	20	34.0	140	21.0	31	35	15	DCPR/L5□□□-GH		
2020-35/40-5T20			20	20	39.0	140	21.0	35	40	20			

## MDFHR/L



### External deep face grooving and turning, for double-sided inserts

Designation	Stock		Dimension (mm)								Insert	Spare parts				
	R	L	H=h	W	ℓ	L	S	Dmin	Dmax	Tmax		screw	Wrench			
MDFHR/L 2020-40/45-5T20			20	20	39.0	140	21.0	40	45	20	DCPR/L5□□□-GM DCPR/L5□□□-GH	PTX0616	HW50L			
2020-45/55-5T25			20	20	44.0	140	21.0	45	55	25						
2020-55/70-5T25			20	20	44.0	140	21.0	55	70	25						
2020-70/95-5T28			20	20	47.0	150	21.0	70	95	28						
2525-25/30-5T10			25	25	38.0	150	26.0	25	30	10						
2525-28/31-5T15			25	25	34.0	150	26.0	28	31	15						
2525-31/35-5T15			25	25	34.0	150	26.0	31	35	15						
2525-35/40-5T20			25	25	39.0	150	26.0	35	40	20						
2525-40/45-5T20			25	25	39.0	150	26.0	40	45	20						
2525-45/55-5T25			25	25	44.0	150	26.0	45	55	25						
2525-55/70-5T25			25	25	44.0	150	26.0	55	70	25						
2525-70/95-5T32			25	25	51.0	150	26.0	70	95	32						
2525-95/130-5T32			25	25	51.0	150	26.0	95	130	32						
2525-130/180-5T32			25	25	51.0	150	26.0	130	180	32						
2525-180/800-5T32			25	25	51.0	150	26.0	180	800	32						
2525-52/75-5T14			25	25	32.5	150	23.5	52	75	14						
2525-75/110-5T14			25	25	32.5	150	23.5	75	110	14						
2525-110/200-5T14			25	25	32.5	150	23.5	110	200	14						
2525-200/800-5T20			25	25	32.5	150	23.5	200	800	20						
2020-26/30-6T10			20	20	39.0	140	21.4	26	30	10				DCPR/L6□□□-GM DCPR/L6□□□-GH	PTX0616	HW50L
2020-30/38-6T15			20	20	36.0	140	21.4	30	38	15						
2020-38/50-6T20			20	20	39.0	140	21.4	38	50	20						
2020-50/75-6T25			20	20	44.0	140	21.4	50	75	25						
2525-30/38-6T15			25	25	36.0	150	26.4	30	38	15						
2525-38/50-6T20			25	25	39.0	150	26.4	38	50	20						
2525-50/65-6T20			25	25	37.5	150	23.0	50	65	20						
2525-65/100-6T20			25	25	37.5	150	23.0	65	100	20						
2525-100/200-6T20			25	25	40.0	150	23.0	100	200	20						
2525-200-6T20			25	25	37.5	150	23.0	200	∞	20						
2525-50/70-6T25			25	25	44.0	150	26.4	50	70	25						
2525-70/100-6T32			25	25	51.0	150	26.4	70	100	32						
2525-100/180-6T32			25	25	51.0	150	26.4	100	180	32						
2525-180/400-6T32			25	25	51.0	150	26.4	180	400	32						
2525-400-6T32			25	25	51.0	150	26.4	400	∞	32						

## Inserts

Shape	Designation	Size				Coated					Configuration
		W±0.010	re±0.10	L	d	TCP9225	TCP9340	TCK5215	TPM8125	TPM8225	
DCPR/L-GM	DCPR 3003-GM	3.0	0.3	16.0	2.3			●	●	●	
	4002-GM	4.0	0.2	19.0	2.8			●	●	●	
	4004-GM	4.0	0.4	19.0	2.8			●	●	●	
	5005-GM	5.0	0.5	19.0	3.3						
	6005-GM	6.0	0.5	19.0	4.2				●		
	6008-GM	6.0	0.8	19.0	4.2						
	DCPL 3003-GM	3.0	0.3	16.0	2.3						
	4002-GM	4.0	0.2	19.0	2.8				●		
	4004-GM	4.0	0.4	19.0	2.8			●	●	●	
	5005-GM	5.0	0.5	19.0	3.3						
6005-GM	6.0	0.5	19.0	4.2							
6008-GM	6.0	0.8	19.0	4.2							
DCPR/L-GH	DCPR 3003-GH	3.0	0.3	19.0	2.1				●		
	4004-GH	4.0	0.4	19.0	2.8						
	5004-GH	5.0	0.4	19.0	3.4				●		
	6004-GH	6.0	0.4	19.0	4.0			●	●	●	
	DCPL 3003-GH	3.0	0.3	19.0	2.1						
	4004-GH	4.0	0.4	19.0	2.8						
	5004-GH	5.0	0.4	19.0	3.4						
	6004-GH	6.0	0.4	19.0	4.0			●	●	●	



## Mini Milling Cutter Code System

MG
22
12
-
B400
T45

### 1 Type of operation

MG
22
12
-
B400
T45

MG: Mini Grooving  
 MC: Mini Chamfer  
 ME: Mini Threading

### 2 Min.boring dia

MG
22
12
B400
T45

### 3 Connector size

MG
22
12
B400
T45

### 4 Grooving width Threading Pitch Chamfer angle

MG
22
12
B400
T45

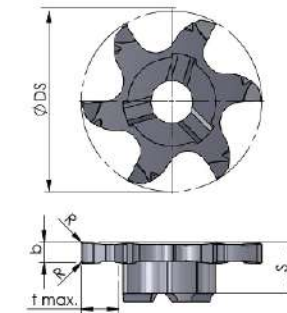
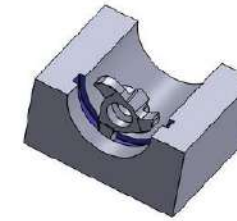
B: Square Groove  
 R: Round Groove

### 5 Max. Processing length

MG
22
12
B400
T45

## Groove Milling by circular interpolation

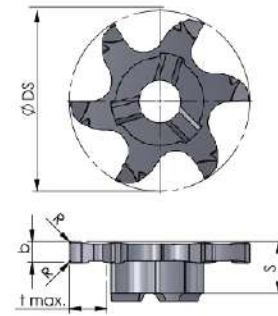
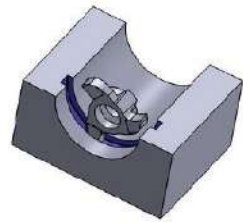
for groove milling general use



Designation	b±0.02	Ds	R	S	tmax	Dmin	Connector	No of Teeth
MG 1006-B050T08	0.50	9.7	-	3.5	0.8	10.0	6	3
1006-B070T11	0.70	9.7	-	3.5	1.1	10.0	6	3
1006-B100T15	1.00	9.7	0.10	3.5	1.5	10.0	6	3
1006-B150T15	1.50	9.7	0.20	3.5	1.5	10.0	6	3
1006-B200T15	2.00	9.7	0.20	3.5	1.5	10.0	6	3
1006-B250T15	2.50	9.7	0.20	3.5	1.5	10.0	6	3
1206-B100T25	1.00	11.7	-	3.5	2.5	12.0	6	3
1206-B150T25	1.50	11.7	-	3.5	2.5	12.0	6	3
1206-B200T25	2.00	11.7	0.20	3.5	2.5	12.0	6	3
1206-B250T25	2.50	11.7	0.20	3.5	2.5	12.0	6	3
1608-B100T35	1.00	15.7	-	5.5	3.5	16.0	8	6
1608-B150T35	1.50	15.7	-	5.5	3.5	16.0	8	6
1608-B200T35	2.00	15.7	0.20	5.5	3.5	16.0	8	6
1608-B250T35	2.50	15.7	0.20	5.5	3.5	16.0	8	6
1608-B300T35	3.00	15.7	0.20	5.5	3.5	16.0	8	6
1608-B400T35	4.00	15.7	0.20	5.5	3.5	16.0	8	6
1809-B120T40	1.20	17.7	-	5.5	4.0	18.0	9	6
1809-B150T40	1.50	17.7	-	5.5	4.0	18.0	9	6
1809-B200T40	2.00	17.7	0.20	5.5	4.0	18.0	9	6
1809-B250T40	2.50	17.7	0.20	5.5	4.0	18.0	9	6
1809-B300T40	3.00	17.7	0.20	5.5	4.0	18.0	9	6
1809-B350T40	3.50	17.7	0.20	5.5	4.0	18.0	9	6
1809-B400T40	4.00	17.7	0.20	5.5	4.0	18.0	9	6
2212-B150T45	1.50	21.7	-	5.9	4.5	22.0	12	6
2212-B200T45	2.00	21.7	0.20	5.9	4.5	22.0	12	6
2212-B250T45	2.50	21.7	0.20	5.9	4.5	22.0	12	6
2212-B300T45	3.00	21.7	0.20	5.9	4.5	22.0	12	6
2212-B350T45	3.50	21.7	0.20	5.9	4.5	22.0	12	6
2212-B400T45	4.00	21.7	0.20	5.9	4.5	22.0	12	6
2212-B500T45*	5.00	21.7	0.20	5.2	4.5	22.0	12	6
2212-B600T45*	6.00	21.7	0.20	5.2	4.5	22.0	12	6
2412-B150T55	1.50	23.7	-	5.9	5.5	24.0	12	6
2412-B200T55	2.00	23.7	0.20	5.9	5.5	24.0	12	6
2412-B250T55	2.50	23.7	0.20	5.9	5.5	24.0	12	6
2412-B300T55	3.00	23.7	0.20	5.9	5.5	24.0	12	6
2412-B400T55	4.00	23.7	0.20	5.9	5.5	24.0	12	6

## Groove Milling by circular interpolation

for groove milling general use

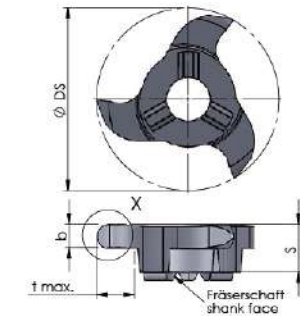
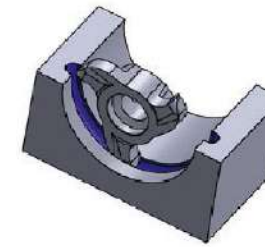


Designation	b±0.02	Ds	R	S	tmax	Dmin	Connector	No of Teeth
<b>MG</b> 2412-B500T55*	5.00	23.7	0.20	5.2	5.5	24.0	12	6
2412-B600T55*	6.00	23.7	0.20	5.2	5.5	24.0	12	6
2514-B150T50	1.50	24.7	-	5.9	5.0	25.0	14	6
2514-B200T50	2.00	24.7	0.20	5.9	5.0	25.0	14	6
2514-B250T50	2.50	24.7	0.20	5.9	5.0	25.0	14	6
2514-B300T50	3.00	24.7	0.20	5.9	5.0	25.0	14	6
2514-B400T50	4.00	24.7	0.20	5.9	5.0	25.0	14	6
2514-B500T50*	5.00	24.7	0.20	5.2	5.0	25.0	14	6
2514-B600T50*	6.00	24.7	0.20	5.2	5.0	25.0	14	6
2512-B150T60	1.50	24.7	-	5.9	6.0	25.0	12	6
2512-B200T60	2.00	24.7	0.20	5.9	6.0	25.0	12	6
2512-B250T60	2.50	24.7	0.20	5.9	6.0	25.0	12	6
2512-B300T60	3.00	24.7	0.20	5.9	6.0	25.0	12	6
2512-B400T60	4.00	24.7	0.20	5.9	6.0	25.0	12	6
2614-B200T55	2.00	25.7	-	5.9	5.5	26.0	14	6
2614-B250T55	2.50	25.7	0.20	5.9	5.5	26.0	14	6
2614-B300T55	3.00	25.7	0.20	5.9	5.5	26.0	14	6
2614-B400T55	4.00	25.7	0.20	5.9	5.5	26.0	14	6
2614-B500T55*	5.00	25.7	0.20	5.2	5.5	26.0	14	6
2614-B600T55*	6.00	25.7	0.20	5.2	5.5	26.0	14	6
2814-B200T65	2.00	27.7	-	5.9	6.5	28.0	14	6
2814-B250T65	2.50	27.7	0.20	5.9	6.5	28.0	14	6
2814-B300T65	3.00	27.7	0.20	5.9	6.5	28.0	14	6
2814-B350T65	3.50	27.7	0.20	5.9	6.5	28.0	14	6
2814-B400T65	4.00	27.7	0.20	5.9	6.5	28.0	14	6
2814-B500T65*	5.00	27.7	0.20	5.2	6.5	28.0	14	6
2814-B600T65*	6.00	27.7	0.20	5.2	6.5	28.0	14	6
2812-B200T75	2.00	27.7	-	5.9	7.5	28.0	12	6
2812-B250T75	2.50	27.7	0.20	5.9	7.5	28.0	12	6
2812-B300T75	3.00	27.7	0.20	5.9	7.5	28.0	12	6
2812-B350T75	3.50	27.7	0.20	5.9	7.5	28.0	12	6
2812-B400T75	4.00	27.7	0.20	5.9	7.5	28.0	12	6

The product with "\*" has a sub-cutting groove, note compared with the Fig1 type, that insert will be reduced by about 1.5mm after be installed on the holder.  
Additional sizes available by request.

## Groove Milling by circular interpolation

for Full Radius



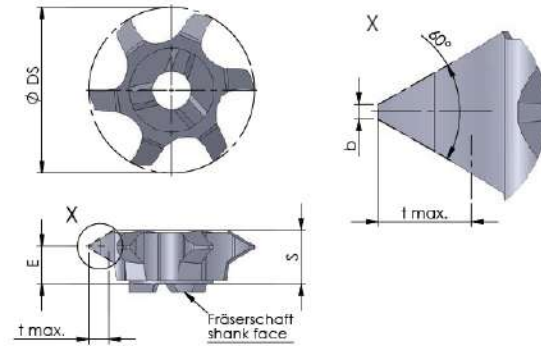
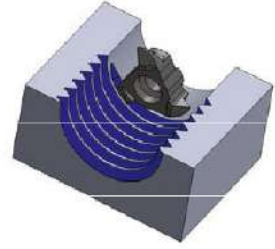
Designation	b±0.02	Ds	R	S	tmax	Dmin	Connector	No of Teeth
<b>MG</b> 1006-R075T15	1.20	9.7	0.75	3.5	1.5	10.0	6	3
1006-R100T15	2.00	9.7	1.00	3.5	1.5	10.0	6	3
1006-R125T15	2.50	9.7	1.25	3.5	1.5	10.0	6	3
1006-R150T15	3.00	9.7	1.50	3.5	1.5	10.0	6	3
1206-R075T25	1.50	11.7	0.75	3.5	2.5	12.0	6	3
1206-R100T25	2.00	11.7	1.00	3.5	2.5	12.0	6	3
1206-R125T25	2.50	11.7	1.25	3.5	2.5	12.0	6	3
1206-R150T25	3.00	11.7	1.50	3.5	2.5	12.0	6	3
1608-R075T35	1.50	15.7	0.75	5.5	3.5	16.0	8	6
1608-R100T35	2.00	15.7	1.00	5.5	3.5	16.0	6	6
1608-R125T35	2.50	15.7	1.25	5.5	3.5	16.0	8	6
1809-R075T40	1.50	17.7	0.75	5.5	4.0	18.0	9	6
1809-R100T40	2.00	17.7	1.00	5.5	4.0	18.0	9	6
1809-R125T40	2.50	17.7	1.25	5.5	4.0	18.0	9	6
1809-R150T40	3.00	17.7	1.50	5.5	4.0	18.0	9	6
2212-R100T45	2.00	21.7	1.00	5.9	4.5	22.0	12	6
2212-R125T45	2.50	21.7	1.25	5.9	4.5	22.0	12	6
2212-R150T45	3.00	21.7	1.50	5.9	4.5	22.0	12	6
2212-R200T45	4.00	21.7	2.00	5.9	4.5	22.0	12	6
2514-R100T50	2.00	24.7	1.00	5.9	5.0	25.0	14	6
2514-R125T50	2.50	24.7	1.25	5.9	5.0	25.0	14	6
2514-R150T50	3.00	24.7	1.50	5.9	5.0	25.0	14	6
2514-R200T50	4.00	24.7	2.00	5.9	5.0	25.0	14	6
2814-R125T65	2.50	27.7	1.25	5.9	6.5	28.0	14	6
2814-R150T65	3.00	27.7	1.50	5.9	6.5	28.0	14	6
2814-R200T65	4.00	27.7	2.00	5.9	6.5	28.0	14	6

Additional sizes available by request.



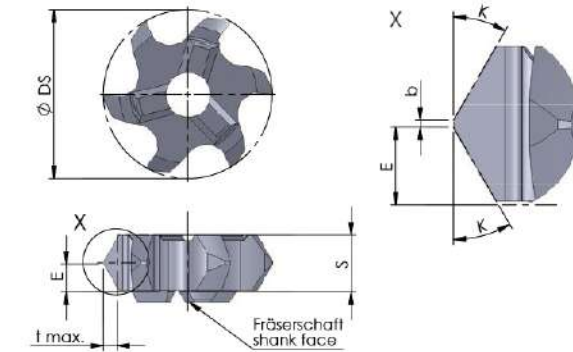
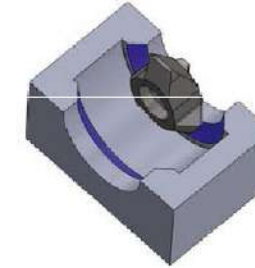
## Thread Milling by Circular

for mPartial profile, internal



## Groove Milling by circular interpolation

for forward & backward chamfering



Designation	Pitch		Ds	S	b	E	tmax	a	Dmin	Connector	No of Teeth
	Pitch	TPI									
<b>MI</b> 1006-050860	0.5-0.8	56-28	9.7	3.5	0.06	2.9	1.00	60°	10	6	3
1006-102560	1.0-2.5	24-12	9.7	3.5	0.12	2.2	1.60	60°	10	6	3
1206-050860	0.5-0.8	56-28	11.7	3.5	0.06	2.9	1.00	60°	12	6	3
1206-102560	1.0-2.5	24-12	11.7	3.5	0.12	2.2	1.60	60°	12	6	3
1609-103060	1.0-3.0	24-8	15.7	5.5	0.12	4.0	1.70	60°	16	9	6
1809-254060	2.5-4.0	10-6	17.7	5.2	0.30	3.5	2.70	60°	18	9	6
2212-102560	1.0-2.5	24-12	21.7	5.9	0.12	4.5	1.60	60°	22	12	6
2012-103060	1.0-3.0	24-8	19.7	2.9	0.12	4.4	1.70	60°	20	12	6
2212-254060	2.5-4.0	10-6	21.7	5.2	0.30	3.9	2.70	60°	22	12	6
2814-102060	1.0-3.0	24-8	27.7	5.9	0.12	4.6	1.20	60°	28	14	6
2814-255060*	2.5-5.0	10-5	27.7	5.2	0.37	4.0	2.93	60°	28	14	6
2814-406060	4.0-6.0	6-4	27.7	5.9	0.50	3.6	4.60	60°	28	14	6
1006-191455	-	19-14	9.7	3.5	-	-	-	55°	10	6	3
1206-281955	-	28-19	11.7	3.5	-	-	-	55°	12	6	3
1206-141155	-	14-11	11.7	3.5	-	-	-	55°	12	6	3
1809-140855	-	14-8	15.7	5.5	-	-	-	55°	18	9	6
2514-070555	-	7-5	21.7	5.9	-	-	-	55°	25	14	6

Additional sizes available by request.

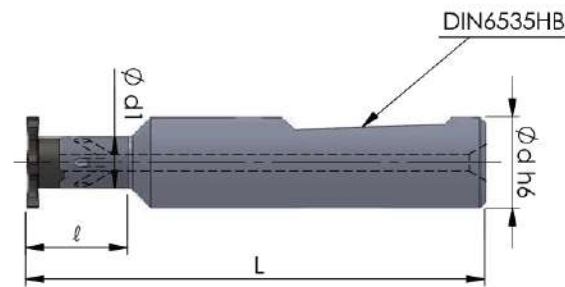
Designation	K	Ds	S	b	E	tmax	Dmin	Connector	No of Teeth
<b>MC</b> 1006-A90	45°	9.7	3.5	1.5	1.5	1.5	10.0	6	3
1609-A90	45°	15.7	5.5	2.0	2.3	2.0	16.0	9	6
2212-A90	45°	21.7	5.2	3.0	3.2	2.0	22.0	12	6
2614-A90	45°	25.7	5.2	3.0	3.2	2.0	26.0	14	6

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

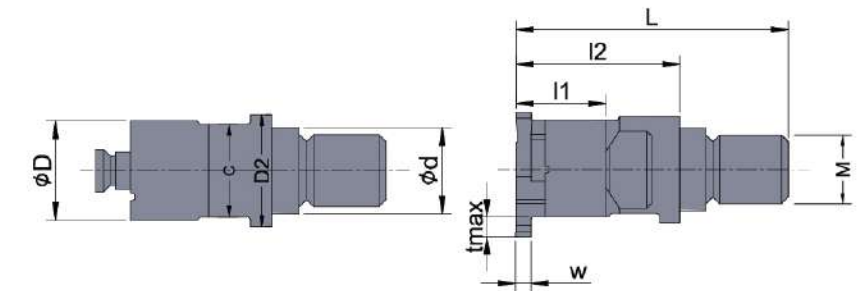
## Mini Milling Body

Groove Milling by circular interpolation



Designation	Stock		Dimensions(mm)				Insert	Spare parts	
	R	L	d	d1	ℓ	L		screw	Wrench
MC H12-15-06S	●		12	6	15	70	M□-06	L0560SSTX2.2-3.0P	TPF-06
H12-18-08S	●		12	8	18	80	M□-08	L0960SSTX4.0-5.7P	TPF-15
H16-18-08S	●		16	8	18	80	M□-08	L0960SSTX4.0-5.7P	TPF-15
H16-20-09S	●		16	9	20	80	M□-09	L0960SSTX4.0-5.7P	TPF-15
H16-25-12S	●		16	12	25	90	M□-12	L1260SSTX5.0-7.0P	TPF-20
H20-35-14S	●		20	14	35	100	M□-14	L1260SSTX5.0-7.0P	TPF-20
E12-21-06C	●		12	6	21	80	M□-06	L0560SSTX2.2-3.0P	TPF-06
E12-30-06C	●		12	6	30	90	M□-06	L0560SSTX2.2-3.0P	TPF-06
E12-42-06C	●		12	6	42	100	M□-06	L0560SSTX2.2-3.0P	TPF-06
E12-29-08C	●		12	8	29	90	M□-08	L0960SSTX4.0-5.7P	TPF-15
E12-42-08C	●		12	8	42	100	M□-08	L0960SSTX4.0-5.7P	TPF-15
E12-56-08C	●		12	8	56	120	M□-08	L0960SSTX4.0-5.7P	TPF-15
E16-32-09C	●		16	9	32	90	M□-09	L0960SSTX4.0-5.7P	TPF-15
E16-45-09C	●		16	9	45	110	M□-09	L0960SSTX4.0-5.7P	TPF-15
E16-64-09C	●		16	9	64	120	M□-09	L0960SSTX4.0-5.7P	TPF-15
E16-42-12C	●		16	12	42	100	M□-12	L1260SSTX5.0-7.0P	TPF-20
E16-60-12C	●		16	12	60	120	M□-12	L1260SSTX5.0-7.0P	TPF-20
E16-85-12C	●		16	12	85	150	M□-12	L1260SSTX5.0-7.0P	TPF-20
E16-42-14C	●		16	14	42	100	M□-14	L1260SSTX5.0-7.0P	TPF-20
E16-60-14C	●		16	14	60	120	M□-14	L1260SSTX5.0-7.0P	TPF-20
E16-85-14C	●		16	14	85	150	M□-14	L1260SSTX5.0-7.0P	TPF-20

## Mini Milling Modular

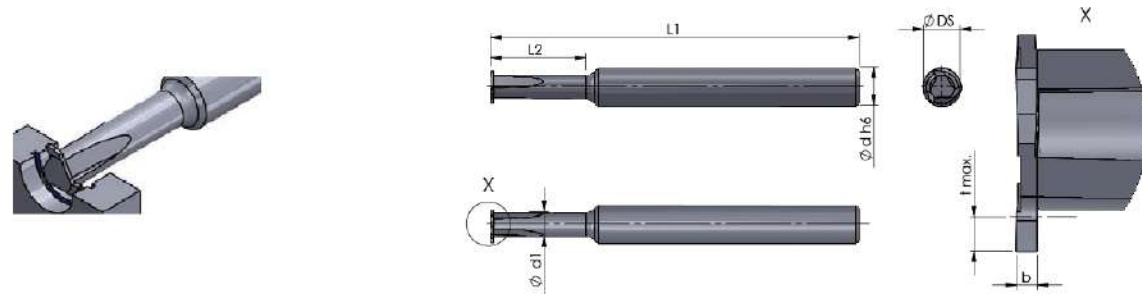


Designation	Stock		Dimensions(mm)							Insert	Spare parts		
	R	L	D	d	ℓ1	ℓ2	L	D2	C		M	screw	Wrench
MC 0606-M03			6	3.5	13	13	23	6	5	M3	M□-□06	L0560SSTX2.2-3.0P	TPF-06
0808-M04			8	4.5	16	16	28	8	7	M4	M□-□08	L0960SSTX4.0-5.7P	TPF-15
0909-M05			9	5.5	16	16	30	9	8	M5	M□-□09	L0960SSTX4.0-5.7P	TPF-15
1212-M06			12	6.5	19	19	34	12	11	M6	M□-□12	L1260SSTX5.0-7.0P	TPF-20
1414-M08			14	8.5	19	19	36	14	13	M8	M□-□14	L1260SSTX5.0-7.0P	TPF-20
1606-M08			16	8.5	11	25	42	16	13	M8	M□-□06	L0560SSTX2.2-3.0P	TPF-06
1608-M08			16	8.5	14	25	42	16	13	M8	M□-□08	L0960SSTX4.0-5.7P	TPF-15
1609-M08			16	8.5	14	25	42	16	13	M8	M□-□09	L0960SSTX4.0-5.7P	TPF-15
1612-M08			16	8.5	15	25	42	16	13	M8	M□-□12	L1260SSTX5.0-7.0P	TPF-20
1614-M08			16	8.5	15	25	42	16	13	M8	M□-□14	L1260SSTX5.0-7.0P	TPF-20



## Micro Groove Milling by circular interpolation

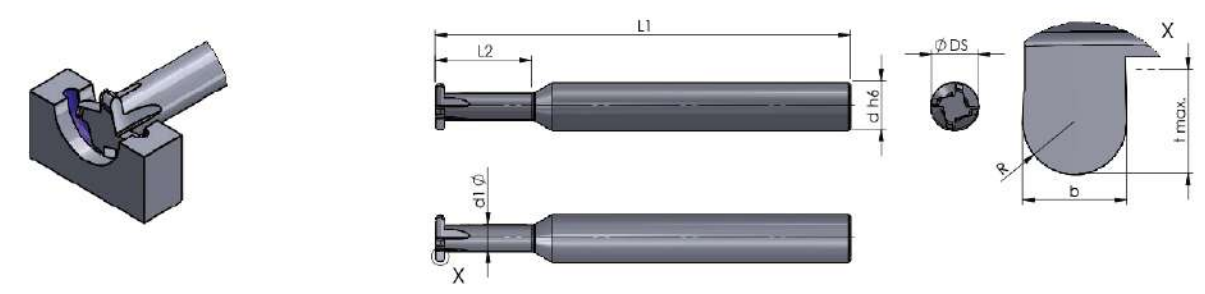
for groove milling general use



Designation	$b \pm 0.02$	$D_s$	$d_1$	$d$	$t_{max}$	$L_1$	$L_2$	$D_{min}$	No of Teeth
<b>MG</b> 0404D04B050T05	0.50	4.00	2.80	4.00	0.5	50	4	4	4
0404D04B100T05	1.00	4.00	2.80	4.00	0.5	50	4	4	4
0505D08B150T10	1.50	5.00	2.80	5.00	1.0	50	8	5	4
0606D04B100T10	1.00	6.00	3.70	6.00	1.0	50	4	6	4
0606D06B100T10	1.00	6.00	3.70	6.00	1.0	63	6	6	4
0606D06B150T10	1.50	6.00	3.70	6.00	1.0	63	6	6	4
0808D08B150T15	1.50	8.00	4.60	8.00	1.5	63	8	8	4
0808D08B200T15	2.00	8.00	4.60	8.00	1.5	63	8	8	4
0808D16B150T15	1.50	8.00	4.60	8.00	1.5	63	16	8	4
0808D16B200T15	2.00	8.00	4.60	8.00	1.5	63	16	8	4
1010D20B100T20	1.00	10.00	5.50	10.00	2.0	77	20	10	4
1010D20B150T20	1.50	10.00	5.50	10.00	2.0	77	20	10	4
1010D20B200T20	2.00	10.00	5.50	10.00	2.0	77	20	10	4
1010D20B250T20	2.50	10.00	5.50	10.00	2.0	77	20	10	4
1010D20B300T20	3.00	10.00	5.50	10.00	2.0	77	20	10	4

## Micro Groove Milling by circular interpolation

for groove milling general use



Designation	$b \pm 0.02$	$D_s$	$d_1$	$d$	$t_{max}$	$L_1$	$L_2$	$D_{min}$	No of Teeth
<b>MG</b> 0404D04R050T05	1.00	4.00	2.80	4.00	0.5	50	4	4	4
0606D04R050T10	1.00	6.00	3.70	6.00	1.0	50	4	6	4
0606D06R050T10	1.00	6.00	3.70	6.00	1.0	63	6	6	4
0606D06R075T10	1.50	6.00	3.70	6.00	1.0	63	6	6	4
0808D08R075T15	1.50	8.00	4.60	8.00	1.5	63	8	8	4
0808D08R100T15	2.00	8.00	4.60	8.00	1.5	63	8	8	4
0808D16R075T15	1.50	8.00	4.60	8.00	1.5	63	16	8	4
0808D16R100T15	2.00	8.00	4.60	8.00	1.5	63	16	8	4
1010D20R050T20	1.00	10.00	5.50	10.00	2.0	77	20	10	4
1010D20R075T20	1.50	10.00	5.50	10.00	2.0	77	20	10	4
1010D20R100T20	2.00	10.00	5.50	10.00	2.0	77	20	10	4
1010D20R125T20	2.50	10.00	5.50	10.00	2.0	77	20	10	4
1010D20R150T20	3.00	10.00	5.50	10.00	2.0	77	20	10	4







**S P K R 12**  
① ② ③ ④ ⑤

### 1 Insert shape

S P K N 12 03 ED S R -MX

A C D H L O  
R S T V W

### 2 Relief angle

S P K N 12 03 ED S R -MX

A B C D E  
F G N P

### 3 Tolerance

S P K N 12 03 ED S R -MX

d: Incribed circle  
t: Thickness  
m: Refer to figure

Tolerance on C,E,H,M,O,P,R,S,T,W Insert Shape (exceptional case)

Class	d	m	t	Tolerance on d			Tolerance on m		
				J,K,L,M,N	U	N,M	U	U	
A	±0.025	±0.005	±0.025	6.35	±0.05				±0.13
C	±0.025	±0.013	±0.025	9.525	±0.05				±0.13
H	±0.013	±0.013	±0.025	12.7		±0.13	±0.13	±0.20	
E	±0.025	±0.025	±0.025	19.05	±0.10		±0.15	±0.27	
G	±0.025	±0.025	±0.13	25.4	±0.13	±0.25			
J	±0.05~±0.15	±0.005	±0.025	Tolerance on D Insert Shape (exceptional case)					
K	±0.05~±0.15	±0.013	±0.025	d	Tolerance on d	Tolerance on m			
L	±0.05~±0.15	±0.025	±0.025	6.35	±0.05	±0.11			
M	±0.05~±0.15	±0.025	±0.025	9.525	±0.05	±0.11			
N	±0.05~±0.15	±0.025	±0.025	12.7		±0.15			
P	±0.05~±0.15	±0.025	±0.025			±0.10			
U	±0.05~±0.15	±0.025	±0.13	19.05	±0.10				

### 4 Cross section type

S P K N 12 03 ED S R -MX

A B C F  
G H J M  
N Q R T  
U W X

C' Sink 70°~90° C' Sink 70°~90°  
C' Sink 70°~90° C' Sink 70°~90°  
C' Sink 40°~60° C' Sink 40°~60°  
C' Sink 40°~60° C' Sink 40°~60°  
Special type

### 5 Cutting-edge length, diameter of inscribed circle

S P K N 12 03 ED S R -MX

Metric system

Inch system

rhombic insert indicate cutting-edge length instead of inscribed circle.

Cross over chart for "Metric" and "Inch" system

Symbol	06	09	11	16	22	27	33	44
△								
○	03	05	06	09	12	15	19	25
▽	04	06	07	11	15	19	23	31
□	03	05	06	09	12	16	19	25
Inscribed circle								
Inch system	5	7						

**03 ED S R - MX**  
⑥ ⑦ ⑧ ⑨ ⑩

### 6 Height of cutting-edge

S P K N 12 03 ED S R -MX

Symbol	Height of cutting-edge (t)	
	Metric	Inch
01	1 (2)	1.59 1/16
T0	1.125	1.79
T1	1.2	5/64
02	1.5 (3)	3/32
T2	1.75	7/64
03	2	
T3	2.5	3.97 5/32
04	3	4.76 3/16
05	3.5	5.56 7/32
06	4	6.35 1/4
07	5	7.94 5/16
09	6	9.52
11	7	11.11 7/16
12		12.70 1/2

( ) Symbol for small size insert

### 7 Nose radius (Nose R)

S P K N 12 03 ED S R -MX

r	Symbol		r	Symbol	
	mm	Inch		mm	Inch
00	0	0.0	12	3	1.2 3/64
02	0.2		15	4	1.5
04	1	0.4 1/64	16	4	1.6 4/64
05	0.5		24	6	2.4 6/64
	2	2/64	32		3.2
10	1.0		40		4.0

Parallel land kr	Relief angle *	
A - 45°	A - 3°	F - 25°
D - 60°	B - 5°	G - 30°
E - 75°	C - 7°	N - 0°
P - 90°	D - 15°	P - 11°
Z - Special	E - 20°	

### 8 Edge preparation

S P K N 12 03 ED S R -MX

F E  
T S

### 9 Hand

S P K N 12 03 ED S R -MX

R L  
N

### 10 Chip breaker for milling

S P K N 12 03 ED S R -MX

See catalogue for details



# Milling Cutter

Workpiece	Machining Type																				
	P	M	K	N	S	H	●	●	●	●											
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Interrupted cutting											
Inserts	Designation	CVD Coated					PVD Coated					Dimensions(mm)						Geometries			
		TCP9330	TCP9340	TCP9350	TC K5215	TC K5315	TC K5225	TC K5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W		S	BS	r
	070204R								●	○					4.300	7.000	2.45	-	0.4	2.00	
	070208R								●	○					4.300	7.000	2.45	-	0.8	2.00	
	113502PDRF-G2													●	11.300	6.200	3.60	1.20	0.2	2.80	
	113504PDRF-G2													●	11.300	6.200	3.60	1.20	0.4	2.80	
	113508PDRF-G2													●	11.300	6.200	3.60	1.20	0.8	2.80	
	1604PDRF-G2													●	17.000	9.260	4.76	1.40	0.8	4.40	
	11T304FR-AL													●	12.240	6.500	3.60	-	0.4	2.80	
	11T308FR-AL													●	12.240	6.500	3.60	-	0.8	2.80	
	160402FR-AL													●	16.880	9.800	4.76	-	0.2	4.40	
	160404FR-AL													●	16.880	9.800	4.76	-	0.4	4.40	
	160408FR-AL													●	16.880	9.800	4.76	-	0.8	4.40	
	160416FR-AL													●	16.880	9.800	4.76	-	1.6	4.40	
	1003PDR	●	●	●	●			●	●	●	●			10.900	6.700	3.50	1.20	0.5	2.85		
	11T304-GM	●	○	○	○			○	●	●	○			12.240	6.500	3.60	-	0.4	2.80		
	11T308-GM	●	●	○	○			○	●	●	○			12.240	6.500	3.60	-	0.8	2.80		
	160408-GM	○	●	●	●			●	●	●	●			17.877	9.330	5.76	-	0.8	4.40		
	1135PDR-H2	●		●	○	●	○		●	●				11.000	6.350	3.50	1.20	0.8	2.80		
	1604PDR-H2	●		●	○	●	○		●	●				16.500	9.525	4.76	1.70	0.8	4.40		
	160416PDR-H2								●	●				16.310	9.330	4.76	-	1.6	4.40		
	160420PDR-H2								●	●				16.310	9.330	4.76	-	2.0	4.40		
	160430PDR-H2								●	●				16.310	9.330	4.76	-	3.0	4.40		
	1135PDR-M2	●		●	○	●	○		●	●				11.000	6.350	3.50	1.20	0.8	2.80		
	1604PDR-M2	●		●	○	●	○		●	●				16.500	9.525	4.76	1.70	0.8	4.40		

Workpiece	Machining Type																				
	P	M	K	N	S	H	●	●	●	●											
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Interrupted cutting											
Inserts	Designation	CVD Coated					PVD Coated					Dimensions(mm)						Geometries			
		TCP9330	TCP9340	TCP9350	TC K5215	TC K5315	TC K5225	TC K5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W		S	BS	r
	1135PDER-XM	●		●	○	●	○		●	●					11.150	6.200	3.50	1.20	0.8	2.80	
	1604PDER-XM	●		●	○	●	○		●	●					17.300	9.350	4.76	1.70	0.8	4.40	
	100508-GR									●					10.300	10.030	5.40	-	0.8	4.70	
	120508-GR									●					12.700	11.000	5.60	-	0.8	4.70	
	160608-GR										●				16.000	12.000	6.40	-	0.8	5.90	
	11T310R-GM									●	●				11.900	6.200	3.96	-	1.0	3.45	
	060210R-GM									●	●				6.260	4.190	2.19	1.70	1.0	2.10	
	0603TN-8									●	●				10.000	6.350	3.18	-	8.0	-	
	0604ANSN-GM														10.500	-	4.76	0.09	-	3.70	
	0906ANSN-GM	●		●	●	●	●		●	●		●	●		16.500	-	6.35	0.12	-	4.90	
	0906ANSN-GR	●		●	●	●	●		●	●		●	●		16.500	-	6.35	0.20	-	4.90	
	120508R-GM												●	●	12.000	9.500	5.96	-	0.8	4.50	
	160708R-GM												●	●	16.600	13.200	7.50	-	0.8	5.70	



# Milling Cutter

Workpiece	Machining Type																				
	P	M	K	N	S	H	●	●	●	●											
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Interrupted cutting											
Inserts	Designation	CVD Coated					PVD Coated					Dimensions(mm)						Geometries			
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W		S	BS	r
	130608ER-GH														13.800	6.650	13.05	-	0.8	4.50	
	130612ER-GH														13.800	6.650	13.05	-	1.2	4.50	
	150708ER-GH														15.000	7.620	16.38	-	0.8	5.80	
	150712ER-GH														15.000	7.620	16.38	-	1.2	5.80	
	060310ER-GM								●	●					9.000	6.390	3.73	-	1.0	3.00	
	090415ER-GM								●	●					11.900	9.180	4.80	-	1.5	4.00	
	110408SRE-GM	●	●					●	●						12.000	6.600	4.83	0.90	0.8	3.50	
	15T608SRE-GM	●	●					●	●						16.900	10.000	6.96	1.80	0.8	4.50	
	060304EL							●	●						10.090	6.350	3.18	-	0.4	2.80	
	060308EL							●	●						10.060	6.350	3.18	-	0.8	2.80	
	060320EL							●	●						9.960	6.350	3.18	-	2.0	2.80	
	060304EL-0.5								●	●					10.090	6.350	3.18	0.50	0.4	2.80	
	060308EL-1.5								●	●					10.060	6.350	3.18	1.50	0.8	2.80	
	060304-GM	●	○	●	○		○	●	●						6.350	6.350	3.18	-	0.4	2.80	
	080305-GM	●	○	●	○		○	●	●						8.300	8.300	3.18	-	0.5	3.40	
	120408-GM	●	○	●	○		○	●	●						12.700	12.700	4.76	-	0.8	5.56	
	050408TN-GM							●	●						5.260	12.700	4.76	1.20	0.8	4.30	
	060508-GH							●	●						6.580	15.875	5.56	-	0.8	5.60	

Workpiece	Machining Type																					
	P	M	K	N	S	H	●	●	●	●												
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Interrupted cutting												
Inserts	Designation	CVD Coated					PVD Coated					Dimensions(mm)						Geometries				
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W		S	BS	r	d1
	050408-GM								●							5.260	12.700	4.86	-	0.8	4.30	
	060408-GM								●							6.580	15.875	4.76	-	0.8	4.40	
	08T508-GM									●						8.390	20.200	5.77	-	0.8	5.30	
	D08								●							9.500	8.000	2.00	-	4.0	-	
	D10								●							11.500	10.000	2.50	-	5.0	-	
	D12									●						12.000	12.000	2.50	-	6.0	-	
	D16										●					14.000	16.000	3.00	-	8.0	-	
	D20											●				16.000	20.000	3.00	-	10.0	-	
	D30												●			25.000	30.000	5.00	-	15.0	-	
	090530SR											●	●			9.000	13.500	5.47	-	3.0	5.50	
	0905ZEER-GM											●	●			9.000	13.500	5.47	2.00	-	5.50	
	090530ER-GM											●	●			9.000	13.500	5.47	-	3.0	5.50	
	0905XNER-GM											●	●			14.600	12.200	5.56	2.00	-	4.70	



# Milling Cutter

Workpiece	Machining Type											Geometries									
	P	M	K	N	S	H	●	●	●	●	●										
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Continuous cutting	General cutting			Interrupted cutting							
Inserts	Designation	CVD Coated					PVD Coated					Dimensions(mm)									
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS	r	d1
	1003MOT							●	●						-	10.000	3.18	-	-	3.90	
	12T3MOT							●	●						-	12.000	3.97	-	-	3.90	
	0501MOEN							●							-	5.000	1.59	-	-	2.00	
	0702MOEN							●							-	7.000	2.38	-	-	2.80	
	08T2MOTN	●	○	○	○	○	●	●							-	8.000	2.78	-	-	2.80	
	10T3MOTN	●	○	○	○	○	●	●							-	10.000	3.97	-	-	3.90	
	1204MOTN	●	○	○	○	○	●	●							-	12.000	4.76	-	-	4.50	
	1604MOTN	●	○	○	○	○	●	●							-	16.000	4.76	-	-	5.00	
	1003MOTN							●	●						-	10.000	3.18	-	-	3.90	
	12T3MOTN							●	●						-	12.000	3.97	-	-	3.90	
	08T2MO	○	○	○	○	○	●	●							-	8.000	2.78	-	-	2.90	
	10T3MO	○	○	○	○	○	●	●							-	10.000	3.97	-	-	4.00	
	1204MO	○	○	○	○	○	●	●							-	12.000	4.76	-	-	5.00	
	1606MO	○	○	○	○	○	●	●							-	16.000	6.35	-	-	5.50	
	2006MO							●	●						-	20.000	6.35	-	-	5.50	
	08T2MOE-JS	●	○	○	○	○	●	●							-	8.000	2.78	-	-	2.90	
	10T3MOE-JS	●	○	○	○	○	●	●							-	10.000	3.97	-	-	4.00	
	1204MOE-JS	●	○	○	○	○	●	●							-	12.000	4.76	-	-	5.00	
	1606MOE-JS	●	○	○	○	○	●	●							-	16.000	6.35	-	-	5.50	

Workpiece	Machining Type											Geometries									
	P	M	K	N	S	H	●	●	●	●	●										
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Continuous cutting	General cutting			Interrupted cutting							
Inserts	Designation	CVD Coated					PVD Coated					Dimensions(mm)									
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS	r	d1
	1203AESN-D3							●	●						-	12.700	3.18	2.08	-	-	
	1504AESN-D3							●	●						-	15.875	4.76	2.10	-	-	
	1203AESN-G2							●	●						-	12.700	3.18	2.08	-	-	
	1504AESN-G2							●	●						-	15.875	4.76	2.10	-	-	
	120408-GM							●	●						12.700	12.700	4.76	-	0.8	4.40	
	09T312-SM							●	●						9.525	9.525	3.97	-	1.2	4.00	
	120412-SM							●	●						12.700	12.700	4.76	-	1.2	4.40	
	120512-GH							●	●						12.700	12.700	5.65	-	1.2	4.30	
	150512-GH							●	●						15.950	15.950	5.65	-	1.2	5.50	
	09T3075N							●	●						9.000	9.000	3.50	-	0.7	3.50	



# Milling Cutter

Workpiece	Machining Type										
	P	M	K	N	S	H	●	●	●	●	●
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Continuous cutting	General cutting
Steel	P	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	CVD Coated								PVD Coated				Dimensions(mm)						Geometries		
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS		r	d1
	1204AFTN									●						-	12.700	4.76	2.66	-	5.56	
	1504AFTN															-	15.875	4.76	2.80	-	5.50	
	1203AFTN	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	12.700	3.18	2.36	-	-	
	1504AFTN	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	15.875	4.76	2.40	-	-	
	1203AGTN	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	12.700	3.18	2.11	-	-	
	1504AGTN	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	15.875	4.76	2.64	-	-	
	1203AFTN-D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	12.700	3.18	1.80	-	-	
	1504AFTN-D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	15.875	4.76	1.60	-	-	
	1203AGTN-D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	12.700	3.18	2.11	-	-	
	1504AGTN-D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	15.875	4.76	2.64	-	-	
	1504EEER-D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	15.875	4.76	2.64	-	-	
	12T3-FM	●	●	●	○	●	●	●	●	●	●	●	●	●	●	13.400	13.400	3.97	2.55	-	4.10	
	09T308PER-PM	●	○	○	●	●	●	●	●	●	●	●	●	●	9.525	9.525	4.01	-	0.8	3.30		
	13T308PER-PM	●	○	○	●	●	●	●	●	●	●	●	●	●	9.525	9.525	4.01	-	0.8	3.30		
	12T3-SM	●	●	●	○	●	●	●	●	●	●	●	●	●	13.400	13.400	3.97	2.55	-	4.10		

Workpiece	Machining Type										
	P	M	K	N	S	H	●	●	●	●	●
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Continuous cutting	General cutting
Steel	P	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	CVD Coated								PVD Coated				Dimensions(mm)						Geometries		
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS		r	d1
	1203AFSN	○	●	●	○	●	●	●	●	●	●	●	●	●	●	-	12.700	3.18	1.40	1.0	-	
	1504AFSN	○	●	●	○	●	●	●	●	●	●	●	●	●	●	-	15.875	4.76	1.40	1.0	-	
	1203AFTN	●	●	●	●	●	●	●	●	●	○	●	●	●	●	12.700	12.700	3.18	1.80	-	-	
	1504AFTN	●	●	●	●	●	●	●	●	●	○	●	●	●	●	15.875	15.875	4.76	1.60	-	-	
	1203AFTN-D	●	●	●	●	●	●	●	●	●	○	●	●	●	●	12.700	12.700	3.18	1.80	-	-	
	1504AFTN-D	●	●	●	●	●	●	●	●	●	○	●	●	●	●	15.875	15.875	4.76	1.60	-	-	
	1204AFTN	○	○	●	●	●	●	●	●	●	●	●	●	●	12.700	12.700	4.76	2.60	-	5.50		
	1204AFTN									●					12.700	12.700	4.76	2.60	-	5.50		
	1204AFFN													●	12.700	12.700	4.76	2.60	-	5.50		
	1205ANN-GM	●	○	○	●	●	●	●	●	●	○	●	●	●	12.700	12.700	5.54	1.50	-	5.80		
	120512-GM	○	○	○	●	●	○	○	●	○	○	●	○	○	12.700	12.700	5.54	-	1.2	5.80		
	1506ANR-GM											●			15.000	15.000	5.60	1.30	0.9	5.50		



# Milling Cutter

Workpiece	Machining Type									
	P	M	K	N	S	H	●	●	●	●
Steel	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	CVD Coated								PVD Coated				Dimensions(mm)						Geometries		
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS		r	d1
	1506ANR-GR									●						15.000	15.000	5.60	1.30	0.9	5.50	
	1907ANR-GR			●						●						19.000	19.000	7.00	1.67	1.2	7.20	
	1206ENTN-GM	●	●		○	○	○	○	●	●						13.500	13.500	7.00	2.20	0.4	5.30	
	120612-GM	●							●	●						13.500	13.500	6.80	-	1.2	5.30	
	120616-GM								●	●						13.500	13.500	6.80	-	1.6	5.30	
	1202								●							12.700	12.700	2.30	-	-	5.20	
	1203								●							12.700	12.700	3.00	-	-	5.20	
	12T3								●							12.700	12.700	3.50	-	-	5.00	
	1204								●							12.700	12.700	4.00	-	-	5.00	
	12T4								●							12.700	12.700	4.50	-	-	5.00	
	1203EDR-1			●											●	10.200	12.700	3.18	-	-	-	
	1203EDL-1			●											●	10.200	12.700	3.18	-	-	-	
	1504EDR-1			●											●	10.200	15.875	4.76	-	-	-	
	1504EDL-1			●											●	10.200	15.875	4.76	-	-	-	

Workpiece	Machining Type									
	P	M	K	N	S	H	●	●	●	●
Steel	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	CVD Coated								PVD Coated				Dimensions(mm)						Geometries		
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS		r	d1
	1203EDR	○	●	●	●	●	●	●	●	●					●	12.700	12.700	3.18	1.40	-	-	
	1203EDL	○	●	●	●	○	○	○	○	○	○				●	12.700	12.700	3.18	1.40	-	-	
	1504EDR	○	●	●	●	○	○	○	○	○	○				●	15.875	15.875	4.76	1.40	-	-	
	1504EDL	○	●	●	●	○	○	○	○	○	○				●	15.875	15.875	4.76	1.40	-	-	
	1203EDSR	○	●	●	○	○	○	○	○	○	○				●	12.700	12.700	3.18	1.40	-	-	
	1203EDSL														●	12.700	12.700	3.18	1.40	-	-	
	1504EDSR	○	●	●	○	○	○	○	○	○	○				●	15.875	15.875	4.76	1.40	-	-	
	1504EDSL														●	15.875	15.875	4.76	1.40	-	-	
	1203EDTR	○	●	●	○	○	○	○	○	○	○				●	12.700	12.700	3.18	1.40	-	-	
	1203EDTL														●	12.700	12.700	3.18	1.40	-	-	
1504EDTR	○	●	●	○	○	○	○	○	○	○				●	15.875	15.875	4.76	1.40	-	-		
1504EDTL														●	15.875	15.875	4.76	1.40	-	-		
	1203EDR-D	○	●	●	●	○	○	○	○	○					●	12.700	12.700	3.18	1.40	-	-	
	1203EDL-D	○	●	●	○	○	○	○	○	○					●	12.700	12.700	3.18	1.40	-	-	
	1504EDR-D	○	●	●	○	○	○	○	○	○					●	15.875	15.875	4.76	1.40	-	-	
	1504EDL-D	○	●	●	○	○	○	○	○	○					●	15.875	15.875	4.76	1.40	-	-	
	1203EDSR-D	○	●	●	○	○	○	○	○	○					●	12.700	12.700	3.18	1.40	-	-	
	1203EDSL-D														●	12.700	12.700	3.18	1.40	-	-	
	1504EDSR-D	○	●	●	○	○	○	○	○	○					●	15.875	15.875	4.76	1.40	-	-	
	1504EDSL-D														●	15.875	15.875	4.76	1.40	-	-	
1203EDTR-D	○	●	●	○	○	○	○	○	○					●	12.700	12.700	3.18	1.40	-	-		
1203EDTL-D														●	12.700	12.700	3.18	1.40	-	-		
1504EDTR-D	○	●	●	○	○	○	○	○	○					●	15.875	15.875	4.76	1.40	-	-		
1504EDTL-D														●	15.875	15.875	4.76	1.40	-	-		
	1203EDR														●	12.700	12.700	3.18	1.40	-	-	
	1203EDL														●	12.700	12.700	3.18	1.40	-	-	
	1504EDR														●	15.875	15.875	4.76	1.40	-	-	
	1504EDL														●	15.875	15.875	4.76	1.40	-	-	
	060204-Z		●								●	●	●		●	6.000	6.000	2.38	-	0.4	2.61	
	090408-Z		●								●	●	●		●	9.800	9.800	4.30	-	0.8	4.05	
	110408-Z		●								●	●	●		●	11.500	11.500	4.80	-	0.8	4.45	

TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE

TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE



# Milling Cutter

Workpiece	Machining Type										
	P	M	K	N	S	H					
Steel	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	CVD Coated								PVD Coated				Dimensions(mm)						Geometries	
		TCP9330	TCP9340	TCP9350	TC K5215	TC K5315	TC K5225	TC K5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS		r
	090304														9.525	9.525	3.18	-	0.4	-	
	090308														9.525	9.525	3.18	-	0.8	-	
	120304	●	●	●	●	●	●	●	●	●	●	●	●	●	12.700	12.700	3.18	-	0.4	-	
	120308	●	●	●	●	●	●	●	●	●	●	●	●	●	12.700	12.700	3.18	-	0.8	-	
	120312	●	●	●	●	●	●	●	●	●	●	●	●	●	12.700	12.700	3.18	-	1.2	-	
	120408			●	○					●	●				12.700	12.700	4.76	-	0.8	5.50	
	120412			●	○					●	●				12.700	12.700	4.76	-	1.2	5.50	
	120416			●	○					●	●				12.700	12.700	4.76	-	1.6	5.50	
	120420			●	○					●	●				12.700	12.700	4.76	-	2.0	5.50	
	120430			●	○					●	●				12.700	12.700	4.76	-	3.0	5.50	
	120408-HM									●					12.700	12.700	4.76	-	0.8	5.50	

Workpiece	Machining Type										
	P	M	K	N	S	H					
Steel	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●	●	●	●	●	●

Inserts	Designation	CVD Coated								PVD Coated				Dimensions(mm)						Geometries	
		TCP9330	TCP9340	TCP9350	TC K5215	TC K5315	TC K5225	TC K5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S	BS		r
	090204-AR														9.600	5.560	2.50	-	0.4	2.60	
	13T304-AR														13.400	7.900	3.97	-	0.4	4.05	
	16T304-AR														16.500	9.525	3.97	-	0.4	4.45	
	16T308-AR														16.500	9.525	3.97	-	0.8	4.45	
	1603PDTR		●	●											16.500	9.525	3.18	1.00	-	-	
	1603PDSKR	●	●	●											16.500	9.525	3.18	1.00	-	-	
	2204PDTR	●	●	●	●						●				22.000	15.875	4.76	0.70	-	-	
	2204PDSKR	●	●	●	●						●				22.000	15.875	4.76	0.70	-	-	
	1603PDTR-D			●						●	●				16.500	9.525	3.18	1.00	-	-	
	1603PDSKR-D			●						●	●				16.500	9.525	3.18	1.00	-	-	
	2204PDTR-D			●						●	●				22.000	15.875	4.76	0.70	-	-	
	2204PDSKR-D			●						●	●				22.000	15.875	4.76	0.70	-	-	
	100404R-M														9.830	6.900	4.00	1.30	0.4	3.20	
	110408R-M														9.830	6.900	4.00	1.30	0.8	3.20	
	150508R-M														14.850	10.700	5.00	1.60	0.8	4.50	
	090204														9.630	5.560	2.38	-	0.4	-	
	110304														11.000	6.350	3.18	-	0.4	-	
	110308														11.000	6.350	3.18	-	0.8	-	
	160304	●				●			●	●					16.500	9.525	3.18	-	0.4	-	
	160308	●				●			●	●					16.500	9.525	3.18	-	0.8	-	
	160312														16.500	9.525	3.18	-	1.2	-	
	220412	●	●								●	●			22.000	12.700	4.76	-	1.2	-	
	090204														9.630	5.560	2.38	-	0.4	-	
	110304														11.000	6.350	3.18	-	0.4	-	
	110308														11.000	6.350	3.18	-	0.8	-	
	160304	●									●	●			16.500	9.525	3.18	-	0.4	-	
	160308	●	●								●	●			16.500	9.525	3.18	-	0.8	-	
	160312														16.500	9.525	3.18	-	1.2	-	
	220412	●	●								●	●			22.000	12.700	4.76	-	1.2	-	



# Milling Cutter

Workpiece	Machining Type																					
	P	M	K	N	S	H	●	●	●	●	●											
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Continuous cutting	General cutting	Interrupted cutting										
Inserts	Designation	CVD Coated							PVD Coated				Dimensions(mm)						Geometries			
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S		BS	r	d1
	040304R-GM															4.000	6.700	3.30	0.80	0.4	3.25	
	040308R-GM															4.000	6.700	3.30	0.40	0.8	3.25	
	080608R-GM	○	●	●	●	●	●	●	●	●	●	●	●	●	●	7.500	12.500	6.45	1.40	0.8	4.60	
	080612R-GM	○	●	●	●	●	●	●	●	●	●	●	●	●	●	7.500	12.480	6.45	1.00	1.2	4.60	
	080608R-GH	○	●	●	●	●	●	●	●	●	●	●	●	●	●	7.500	12.480	6.45	1.30	0.8	4.60	
	080612R-GH	○	●	●	●	●	●	●	●	●	●	●	●	●	●	7.500	12.480	6.45	0.90	1.2	4.60	
	080608EN-GM	●	●	●	○	○	●	●							8.700	14.020	6.65	1.30	0.8	6.20		
	170404ER							●							17.120	9.525	4.00	-	0.4	5.00		
	310404ER							●							30.150	12.700	4.50	-	0.4	5.50		
	060210SN							●	●						6.500	6.500	2.38	-	1.0	2.95		
	10T310SN							●	●						10.000	10.000	3.97	-	1.0	3.95		
	100420R-GM							●	●						10.300	10.300	4.58	-	2.0	4.60		
	140520R-GM							●	●						14.140	14.140	5.56	-	2.0	5.80		
	140520R-LD							●	●						14.760	14.760	5.56	1.60	2.0	5.80		

Workpiece	Machining Type																					
	P	M	K	N	S	H	●	●	●	●	●											
	Steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy, Titanium alloy	Hardened steel	Continuous cutting	General cutting	Interrupted cutting	Continuous cutting	General cutting	Interrupted cutting										
Inserts	Designation	CVD Coated							PVD Coated				Dimensions(mm)						Geometries			
		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	TPK01	L	W	S		BS	r	d1
	070508-GM			●				●	●							7.000	14.500	5.80	-	0.8	-	
	0605ANR-MLW															6.000	13.700	6.20	1.00	1.0	4.90	
	0705ANN-GM			●				●	●							7.000	14.500	5.40	1.10	0.8	4.00	
	0906ANTN-MM	●	●	●				●	●							9.000	18.500	6.35	1.00	1.0	6.00	
	060308R-GM							●	●							6.600	6.600	4.67	-	0.8	3.25	



## Cutters for face milling

		HRM	FM01	FM01.11	FM02	MFA	
Type							
Page							
A.A		90°	90°	90°	75°	90°	
Max.cutting depth (mm)		9.0	15.5	39.0	6.0	14.0	
Diameter range (mm)		Ø40-Ø250	Ø40-Ø250	Ø50-Ø100	Ø80-Ø100	Ø40-Ø200	
Available insert		LN.U...	APT...	APT11T3...	APT...	LN.T...	
Application	Facing		•	•	•	•	
	Shouldering		•	•	•	•	
	Slotting		•	•	•	•	
	Plunge milling						
	Helical Milling		•	•	•		
	Ramping		•	•	•		
	Pocketing						
	Chamfering						
	Copying			•	•		•

## Cutters for face milling

		MFA13N	ASPV06R	TFXND	ELN11R	ELS
Type						
Page						
A.A		90°	90°	90°	90°	-
Max.cutting depth (mm)		70.0	3.0	7.5	1.0	2.0
Diameter range (mm)		Ø50-Ø100	Ø40-Ø63	Ø50-Ø250	Ø40-Ø63	Ø50-Ø160
Available insert		LN.U...	MPHW0603..	WN.X0806..	EN.U11T310	XOMT...
Application	Facing			•	•	•
	Shouldering		•	•	•	•
	Slotting			•	•	•
	Plunge milling					
	Helical Milling				•	
	Ramping				•	
	Pocketing					
	Chamfering			•		
	Copying			•	•	

## Cutters for face milling

		EMR	TRS	TRD	KM12	TWSX45
Type						
Page						
A.A		-	-	-	45°	45°
Max.cutting depth (mm)		6.0	8.0	6.0	6.0	9.0
Diameter range (mm)		Ø50-Ø200	Ø50-Ø200	Ø50-Ø160	Ø50-Ø250	Ø50-Ø250
Available insert		RPM...	RDM...	RD.X...	SE.1204..	SN.X...
Application	Facing		•	•	•	•
	Shouldering					
	Slotting					
	Plunge milling					
	Helical Milling		•	•	•	
	Ramping		•	•	•	•
	Pocketing					
	Chamfering					•
	Copying		•	•	•	

## Cutters for face milling

		TWSX75	TWSX88	SEPD	SSPD	SFPD
Type						
Page						
A.A		75°	88°	45°	60°	19°
Max.cutting depth (mm)		9.5	12.0	4.5	5.5	2
Diameter range (mm)		Ø50-Ø250	Ø50-Ø200	Ø50-Ø160	Ø50-Ø160	Ø50-Ø125
Available insert		SN.X1206..	SN.X1206	PD.0905..	PD.0905..	PD.0905..
Application	Facing		•	•	•	•
	Shouldering					
	Slotting					
	Plunge milling					
	Helical Milling					
	Ramping					
	Pocketing					
	Chamfering					
	Copying					

















## Cutters for face milling

		MFPN66	MFHN45	TFXN45	MFXN45	SOD45
Type						
Page						
A.A		66°	45°	45°	45°	45°
Max.cutting depth (mm)		8.0	5.0	4.0	4.4	4
Diameter range (mm)		Ø50-Ø250	Ø50-Ø200	Ø63-Ø200	Ø40-Ø160	Ø40-Ø200
Available insert		PN.U0905..	HN.X...	XN.F0705..	XN.U0705..	OD.T0605..
Application	Facing		•	•	•	•
	Shouldering					
	Slotting					
	Plunge milling					
	Helical Milling					
	Ramping			•		•
	Pocketing			•		•
	Chamfering			•		•
	Copying					















## Cutters for Molds

		HRM03R	FM01	FM01.11	MEA	MEA13N
Type						
Page						
A.A		90°	90°	90°	90°	90°
Max.cutting depth (mm)		9.0	15.5	58.0	12.5	59
Diameter range (mm)		Ø25-Ø40	Ø12-Ø40	Ø20-Ø40	Ø25-Ø50	Ø40-Ø50
Available insert		LN.U1205..	APT	APT11T3..	LN.T1306..	LN.T1306..
Application	Facing		•	•	•	•
	Shouldering		•	•	•	•
	Slotting		•	•	•	
	Plunge milling		•	•		
	Helical Milling		•	•	•	
	Ramping		•	•	•	
	Pocketing					
	Chamfering					
	Copying					

## Cutters for Molds

		ASPV06R	AMS07	ASR20	ELT06R	ELN11R
Type						
Page						
A.A		90°	90°	-	-	-
Max.cutting depth (mm)		3.0	5.0	2.0	0.5	1
Diameter range (mm)		□16-□40	□8-□21	□16-□33	□8-□16	□16-□40
Available insert		MPHW0603..	JD.T0702..	EPW0603..	EP.T0602..	EN.U11T3..
Application	Facing		•	•	•	•
	Shouldering		•	•		•
	Slotting		•	•	•	•
	Plunge milling					
	Helical Milling			•	•	
	Ramping					
	Pocketing					•
	Chamfering					
	Copying			•	•	

## Cutters for Molds

		ELS	EMR	EMRW	TRS	WGR
Type						
Page						
A.A		-	-	-	-	-
Max.cutting depth (mm)		2.0	5.0	6.0	6.0	15.0
Diameter range (mm)		□25-□80	□12-□40	□25-□50	□8-□40	□8-□30
Available insert		XO.T...	RPM...	RPM.1204..	RDM...	P3200
Application	Facing		•	•	•	•
	Shouldering		•			•
	Slotting		•			•
	Plunge milling					
	Helical Milling			•	•	•
	Ramping			•	•	•
	Pocketing		•			
	Chamfering					
	Copying			•	•	•



## Cutters for Molds

		B15-TC	B30-TC	45-TC	B60-TC	B75-TC	
Type							
Page							
A.A		15°	30°	45°	60°	75°	
Max.cutting depth (mm)		14.9	13.4	10.8	7.8	4.0	
Diameter range (mm)		□22-□30	□20-□40	□15-□60	□20-□40	□40	
Available insert		TC...	TC..16T3..	TC...	TC...	TC..16T3..	
Application	Facing						
	Shouldering						
	Slotting						
	Plunge milling						
	Helical Milling						
	Ramping						
	Pocketing						
	Chamfering		•	•	•	•	•
	Copying						

## Cutters for Molds

		B45-SP	B45-AP	SSP30	SSP45	SSP60	
Type							
Page							
A.A		45°	45°	30°	45°	60°	
Max.cutting depth (mm)		-	-	7.6	11.3	11.83	
Diameter range (mm)		□16-□46	□13-□40	□13.8-□22.5	□13.8-□22.5	□13.8-□22.5	
Available insert		SPG...	APT...	TC.X...	TC.X...	TC.X...	
Application	Facing						
	Shouldering						
	Slotting						
	Plunge milling						
	Helical Milling						
	Ramping						
	Pocketing						
	Chamfering		•	•	•	•	•
	Copying						

## Side Cutters

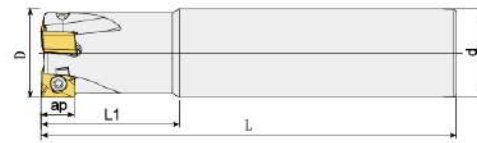
		PT01-J	PT01	PT01-W	PT02-J	PT02
Type						
Page						
A.A		-	-	-	-	-
Max.cutting depth (mm)		20.0	20.0	22.0	8.0	8.0
Diameter range (mm)		□80-□200	□80-□200	□21-□50	□100-□250	□63-□160
Available insert		MPHT...	MPHT...	MPHT...	XSEQ	XSEQ
Application	Facing					
	Shouldering					
	Slotting		•	•	•	•
	Plunge milling					
	Helical Milling					
	Ramping					
	Pocketing					
	Chamfering					
	Copying					

## Side Cutters

		TSCN-J	TSCN	DCW60	DCW55
Type					
Page					
A.A		-	-	60°	55°
Max.cutting depth (mm)		22.0	24.0	-	-
Diameter range (mm)		□80-□250	Φ80-Φ250	Φ25-Φ80	□25-□80
Available insert		CN.X	CN.X	DC...	DC...
Application	Facing				
	Shouldering				
	Slotting		•	•	•
	Plunge milling				
	Helical Milling				
	Ramping				
	Pocketing				
	Chamfering				
	Copying				



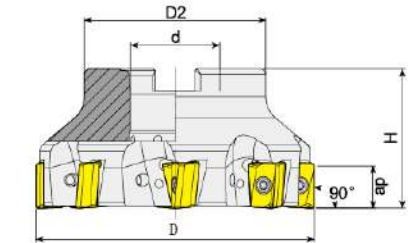
## HRM Type Shoulder Endmill



mm

Designation	No. of Inserts	Dimension(mm)					Adapter	kg	
		D	d	L1	L	ap			
<b>HRM03R</b>	2525-170L-2T	2	25	25	34	170	9.0	S	0.58
	3232-195L-3T	3	32	32	34	195	9.0	S	1.05
	2525-099L-2T-W	2	25	25	42	99	9.0	W	0.30
	3232-103L-3T-W	3	32	32	42	103	9.0	W	0.50
	4032-111L-4T-W	4	40	32	50	111	9.0	W	0.62

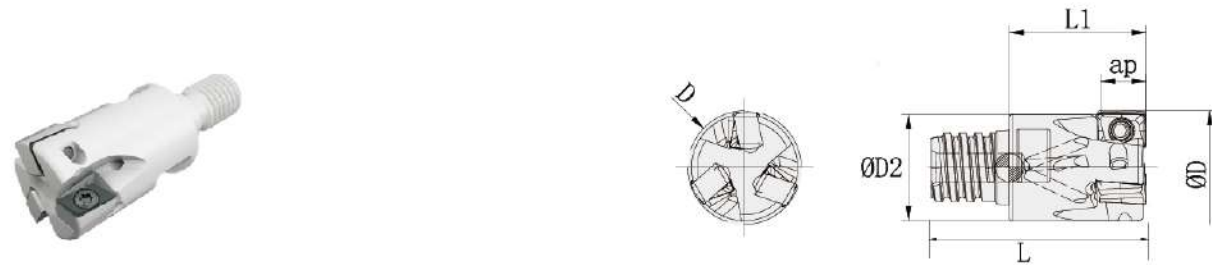
## HRM Type Shell Mill



mm

Designation	No. of Inserts	Dimension(mm)					Arbor	kg	
		D	D2	d	H	ap			
<b>HRM03R</b>	040-16-04T	4	40	35	16	40	9.0	A	0.23
	050-22-04T	4	50	42	22	40	9.0	A	0.35
	050-22-05T	5	50	42	22	40	9.0	A	0.36
	063-22-04T	4	63	49	22	40	9.0	A	0.55
	063-22-06T	6	63	49	22	40	9.0	A	0.50
	080-27-05T	5	80	57	27	50	9.0	B	1.18
	080-27-07T	7	80	57	27	50	9.0	B	1.02
	100-32-06T	6	100	67	32	50	9.0	B	1.78
	100-32-08T	8	100	67	32	50	9.0	B	2.01
	125-40-07T	7	125	87	40	63	9.0	B	3.44
	125-40-09T	9	125	87	40	63	9.0	B	3.38
	<b>HRM04R</b>	063-22-04T	4	63	49	22	40	13.0	A
063-22-05T		5	63	49	22	40	13.0	A	0.46
080-27-04T		4	80	57	27	50	13.0	B	0.98
080-27-06T		6	80	57	27	50	13.0	B	0.89
100-32-05T		5	100	67	32	50	13.0	B	0.98
100-32-07T		7	100	67	32	50	13.0	B	1.84
125-40-06T		6	125	87	40	63	13.0	B	3.44
125-40-08T		8	125	87	40	63	13.0	B	3.33
160-40-08T		8	160	107	40	63	13.0	C	6.19
200-60-10T		10	200	130	60	63	13.0	C	7.00
250-60-12T		12	250	180	60	63	13.0	C	9.36

## HRM Type Milling Modular



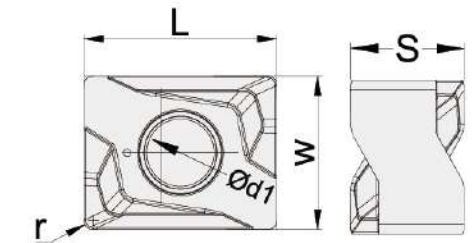
Designation	No. of Inserts	Dimension(mm)							kg
		D	M	D2	L1	ap	WF		
HRM03R	025-M12-2T	2	25	M12	21.0	33	55	9.0	0.12
	032-M16-2T	2	32	M16	29.0	43	66	9.0	0.22
	032-M16-3T	3	32	M16	29.0	43	66	9.0	0.23
	040-M16-3T	3	40	M16	29.0	43	66	9.0	0.30

## Parts

TYPE		
HRM03R	L1060SSTX4.0-5.7P	SF-TPF15
HRM04R	L1250SSTX5.0-7.0P	SF-TPF20

## Available Inserts

### LNGU

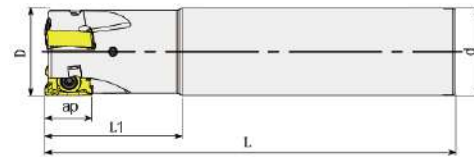


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel (P)	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel (M)	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron (K)	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal (N)	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy (S)	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel (H)	●	●	●	●	●	●	●	●	●	●	●	●	●

Designations	Dimensions(mm)					CVD Coated					PVD Coated								
	L	W	S	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	
LNGU-GM	120508R-GM	12.0	9.5	5.96	0.8	4.5												●	●
	160708R-GM	16.6	13.2	7.50	0.8	5.7												●	●



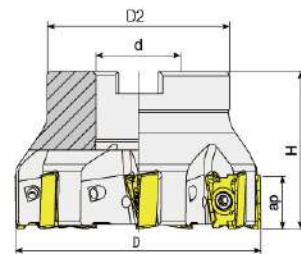
## EPN Type Shoulder Endmill



mm

Designation	No. of Inserts	Dimension(mm)						Adapter	kg
		D	d	L1	L	ap			
<b>EPN03R</b>	1616-150L-2T	2	16	16	25	150	11.0	S	0.23
	1716-150L-2T	2	17	16	25	150	11.0	S	0.24
	2020-150L-3T	3	20	20	28	150	11.0	S	0.35
	2120-150L-3T	3	21	20	28	150	11.0	S	0.36
<b>EPN04R</b>	2525-150L-4T	4	25	25	43	150	11.0	S	0.54
	3232-150L-5T	5	32	32	49	150	11.0	S	0.89
	2525-150L-2T	2	25	25	43	150	15.5	S	0.53
	3232-150L-3T	3	32	32	49	150	15.5	S	0.87
	4032-150L-4T	4	40	32	49	150	15.5	S	0.93

## EPN Type Shell Mill



mm

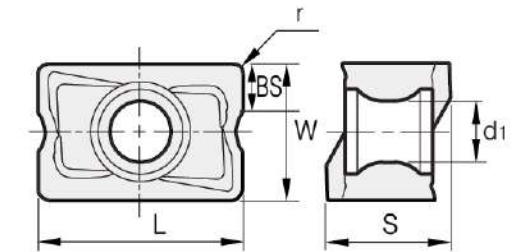
Designation	No. of Inserts	Dimension(mm)						Adapter	kg
		D	d	D2	H	ap			
<b>EPN03R</b>	050-22-07T	7	50	22	42	40	11.00	A	0.36
	063-22-07T	7	63	22	50	40	11.00	A	0.58
<b>EPN04R</b>	080-27-08T	8	80	27	60	50	11.00	B	1.08
	050-22-05T	5	50	22	42	40	15.50	A	0.32
<b>EPN04R</b>	063-22-06T	6	63	22	50	40	15.50	A	0.52
	080-27-07T	7	80	27	60	50	15.50	B	1.05
	100-32-08T	8	100	32	80	50	15.50	B	1.55
	125-40-09T	9	125	40	90	63	15.50	B	3.11
	160-40-12T	12	160	40	110	63	15.50	C	5.51

## Parts

TYPE	Insert screw	Wrench
EPN03R	L0760SSTX3.0-4.0P	TPF-08
EPN04R	L1060SSTX4.0-5.7P	TPF-15

## Available Inserts

### LNMU

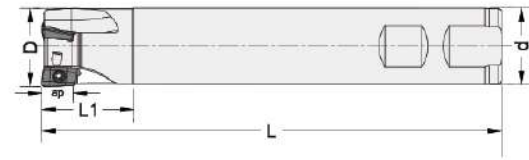


Workpiece	Machining Type										
		●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●							
Stainless steel	M		●								
Cast iron	K	●									
Non-ferrous metal	N		●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S							●	●	●	●
Hardened steel	H								●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)							CVD Coated				PVD Coated							
	L	W	S	BS	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>APKT-GM</b>	110408SRE-GM	12.0	6.6	4.83	0.9	0.8	3.5	●		●				●	●				
	15T608SRE-GM	16.9	10.0	6.96	1.8	0.8	4.5	●		●				●	●				

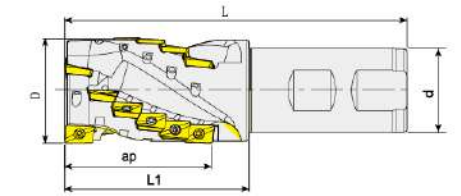
## FM01 Type Shoulder Endmill



mm

Designation	No.of Inserts	Dimension(mm)						Adapter	kg
		D	d	L1	L	ap			
<b>FM01.11</b>	1216-085L-1T	1	12	16	25	85	10.5	S	0.10
	1616-090L-2T	2	16	16	25	90	10.5	S	0.10
	2020-100L-3T	3	20	20	30	100	10.5	S	0.20
	2525-115L-4T	4	25	25	35	115	10.5	S	0.40
	3232-125L-4T	4	32	32	40	125	10.5	S	0.70
<b>FM01.16</b>	2525-115L-2T	2	25	25	35	115	15.5	S	0.40
	3232-125L-3T	3	32	32	40	125	15.5	S	0.70
	4032-130L-4T	4	40	32	42	130	15.5	S	0.70

## FM01 Type Extended Flute Endmill

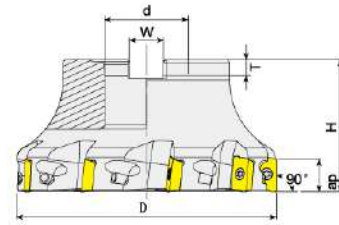


mm

Designation	No.of flutes	No.of Inserts	Dimension(mm)					Adapter	kg	
			D	d	L1	L	ap			
<b>FM01.11</b>	2020-029M-120L-1T	1	3	20	20	45	120	29.4	W	0.32
	2525-039M-130L-2T	2	8	25	25	55	130	38.9	W	0.40
	3232-048M-140L-2T	2	10	32	32	65	140	48.5	W	0.65
	4040-058M-150L-2T	2	14	40	40	75	150	58.0	W	0.75



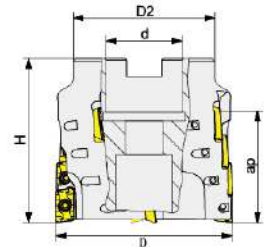
## FM01 Type Shoulder Shell Mill



mm

Designation	No. of Inserts	Dimension(mm)							Arbor	kg
		D	d	H	W	T	ap			
<b>FM01.11</b>	040-16-05T	5	40	16	40	8.4	5.6	11.0	A	0.18
	050-22-06T	6	50	22	40	10.4	6.3	11.0	A	0.30
	063-22-08T	8	63	22	40	10.4	6.3	11.0	A	0.60
	080-27-08T	8	80	27	50	12.4	7.0	11.0	A	1.20
	100-32-10T	10	100	32	50	14.4	8.0	11.0	B	1.70
<b>FM01.16</b>	125-40-10T	10	125	40	63	16.4	9.0	11.0	B	3.42
	040-16-04T	4	40	16	40	8.4	5.6	15.5	A	0.17
	050-22-05T	5	50	22	40	10.4	6.3	15.5	A	0.30
	063-22-06T	6	63	22	40	10.4	6.3	15.5	A	0.50
	080-27-07T	7	80	27	50	12.4	7.0	15.5	A	1.10
	100-32-08T	8	100	32	50	14.4	8.0	15.5	B	1.60
	125-40-10T	10	125	40	63	16.4	9.0	15.5	B	3.20
	160-40-10T	10	160	40	63	16.4	9.0	15.5	B	6.30
	200-60-12T	12	200	60	63	25.7	14.0	15.5	C	8.10
	250-60-12T	12	250	60	63	25.7	14.0	15.5	C	11.20

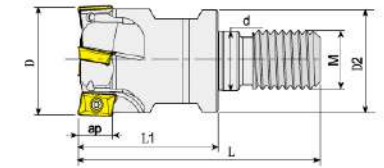
## FM01 Type Extended Flute Shell Mill



mm

Designation	No. of flute	No. of Inserts	Dimension(mm)					Arbor	kg	
			D	d	D2	H	ap			
<b>FM01.11</b>	050-22-39M-04T	1	16	50	22	40	58	39.0	A	0.70
	063-27-39M-04T	2	16	63	27	50	58	39.0	A	0.90
	080-32-39M-05T	2	20	80	32	60	63	39.0	B	1.30
	100-40-39M-06T	2	24	100	40	80	63	39.0	B	2.00



## FM01 Type Should Mill Modular



mm

Designation	No. of Inserts	Dimension(mm)							kg	
		D	M	D2	L1	L	d	ap		
<b>FM01.11</b>	016-M08-2T	2	16	M8	14.5	25	42	8.5	11.0	0.04
	020-M10-2T	2	20	M10	18.0	30	51	10.5	11.0	0.07
	025-M12-3T	3	25	M12	23.0	35	59	12.5	11.0	0.04
	032-M16-4T	4	32	M16	29.0	40	67	17.0	11.0	0.23
	040-M16-5T	5	40	M16	29.0	40	67	17.0	11.0	0.25

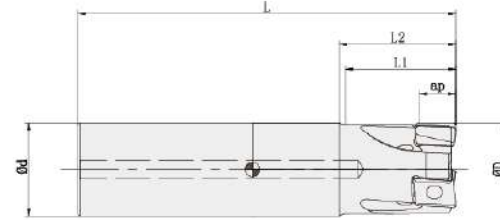
## Parts

TYPE		
	Insert screw	Wrench
FM01.11	L0655SSTX2.5-3.6P	TPF-08
FM01.16	L1060SSTX4.0-5.7P	TPF-15





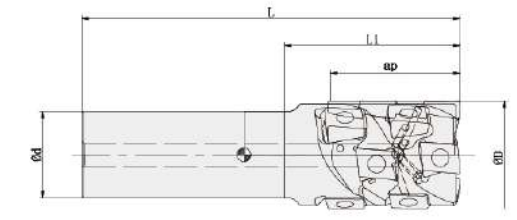
## MEA Type Shoulder Endmill



mm

Designation	No.of Inserts	Dimension(mm)						Adapter	kg	
		D	d	L1	L2	L	ap			
<b>MEA13N</b>	2525-120L-2T	2	25	25	33	35.0	120	12.5	S	0.39
	3232-130L-2T	2	32	32	38	40.0	130	12.5	S	0.72
	4032-130L-3T	3	40	32	-	40.0	120	12.5	S	0.81
	5032-130L-4T	4	50	32	-	36.5	130	12.5	S	0.96

## MEA Type Extended Flute Shoulder Endmill



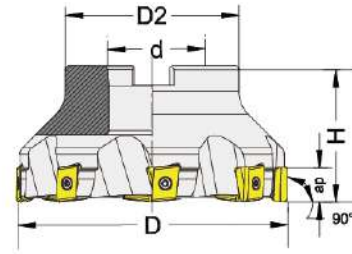
mm

Designation	No.of Inserts	No.of flutes	Dimension(mm)					Adapter	kg	
			D	d	L1	L	ap			
<b>MEA13N</b>	4032-036M-115L-2T	6	2	40	32	50	115	36.0	W	0.68
	4032-048M-125L-3T	12	3	40	32	65	125	48.0	W	0.70
	5040-047M-135L-3T	12	3	50	40	65	135	47.0	W	1.24
	5040-059M-135L-4T	20	4	50	40	65	135	59.0	W	1.21

## Parts

TYPE		
	Insert screw	Wrench
MEA13N	L1060SSTX4.0-5.7P	TPF-15
MEA15N	L1455SSTX5.0-7.2P	TPF-20

## MFA Type Shell Mill



mm

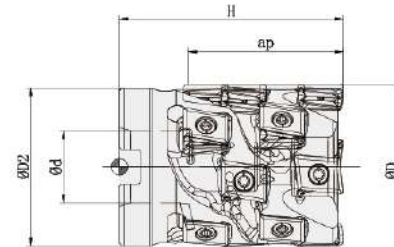
Designation	No. of Inserts	Dimension(mm)					Adapter	kg	
		D	D2	d	H	ap			
<b>MFA08N</b>	040-16-04T	5	40	38	16	40	8.00	A	0.23
	050-22-05T	6	50	48	22	40	8.00	A	0.36
	063-22-06T	6	63	60	22	40	8.00	A	0.60
	063-22-08T	8	63	60	22	40	8.00	A	0.62
<b>MFA13N</b>	080-27-10T	10	80	60	27	50	8.00	B	0.84
	040-16-04T	4	40	38	16	40	12.5	A	0.22
	040-16-05T	5	40	38	16	40	12.5	A	0.22
	050-22-05T	5	50	47	22	40	12.5	A	0.31
	050-22-06T	6	50	47	22	40	12.5	A	0.31
	063-22-06T	6	63	59	22	40	12.5	A	0.55
	063-22-08T	8	63	59	22	40	12.5	A	0.56
	080-27-07T	7	80	70	27	50	12.5	B	0.98
	080-27-10T	10	80	70	27	50	12.5	B	1.00
	100-32-09T	9	100	78	32	50	12.5	B	1.45
<b>MFA16N</b>	100-32-13T	13	100	78	32	50	12.5	B	1.49
	125-40-11T	11	125	82	40	63	12.5	B	2.98
	125-40-16T	16	125	82	40	63	12.5	B	3.04
	160-40-13T	13	160	120	40	63	12.5	B	4.32
<b>MFA16N</b>	050-22-04T	4	50	48	22	40	16.00	A	0.36
	063-22-05T	5	63	60	22	40	16.00	A	0.60
	080-27-05T	5	80	63	27	50	16.00	B	0.84
	080-27-07T	7	80	63	27	50	16.00	B	0.91
	100-32-06T	6	100	80	32	50	16.00	B	1.44
	100-32-08T	8	100	80	32	50	16.00	B	1.50
	125-40-07T	7	125	82	40	63	16.00	B	2.42
	125-40-10T	10	125	82	40	63	16.00	B	2.46
	160-40-12T	12	160	105	40	63	16.00	C	4.28
	200-60-12T	12	200	135	60	63	16.00	C	5.40

## Parts

TYPE		
	Insert screw	Wrench
MFA08N	L0760SSTX3.0-4.0P	FF-TPF08
MFA13N	L1260SSTX4.0-5.7P	FF-TPF15
MFA16N	L1455SSTX5.0-7.2P	FF-TPF20



## MFA Type Extended Flute Shell Mill



mm

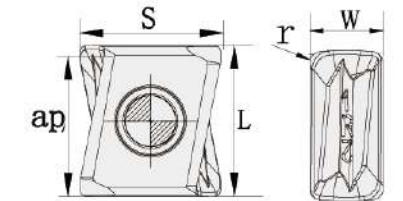
Designation	No. of Inserts	No. of flutes	Dimension(mm)					Adapter	O/kg	
			D	d	D2	H	ap			
<b>MFA13N</b>	050-22-36M-03T	9	3	50	22	48	56	36.0	A	0.43
	050-22-47M-04T	16	4	50	22	48	68	47.0	A	0.54
	063-27-36M-04T	12	4	63	27	58	60	36.0	A	0.79
	063-27-59M-05T	25	5	63	27	58	80	59.0	A	1.09
	080-32-58M-05T	25	5	80	32	74	75	58.0	A	1.73
	080-32-70M-05T	30	5	80	32	74	111	70.0	A	2.65
100-40-59M-06T	30	6	100	40	88	86	59.0	A	3.11	

## Parts

TYPE	Insert screw	Wrench
MFA13N	L1060SSTX4.0-5.7P	FF-TPF15
MFA15N	L1455SSTX5.0-7.2P	FF-TPF20

## Available Inserts

### LNKT

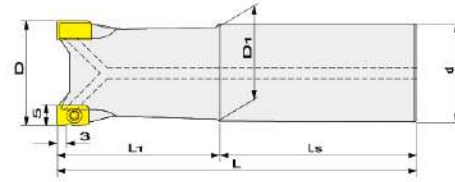


Workpiece	Machining Type	Machining Type										
		●	●	*				●	●	*	●	*
Steel	<b>P</b>	●	●	*				●	●	*	●	*
Stainless steel	<b>M</b>		*					●	●	*	●	*
Cast iron	<b>K</b>	●			●	●	●	●	*	*	●	*
Non-ferrous metal	<b>N</b>							●	●	*	*	*
Heat resistant alloy, Titanium alloy	<b>S</b>										*	*
Hardened steel	<b>H</b>										*	*

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)					CVD Coated					PVD Coated							
	L	W	S	r	ap	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>LNKT-GH</b>	080408ER-GH	8.59	4.24	7.43	0.8	8.0												
	130608ER-GH	13.81	6.65	13.05	0.8	12.5								●				
	130612ER-GH	13.81	6.65	13.05	1.2	12.5												
	160708ER-GH	17.05	7.00	15.83	0.8	16.0												
	160712ER-GH	17.05	7.00	15.83	1.2	16.0												

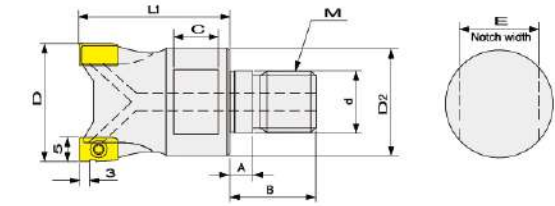
## ASPV Type Endmill



mm

Designation	No.of Inserts	Dimension(mm)						Arbor	kg
		D1	L1	L	LS	d	D1		
<b>ASPV06R</b> 1616-100L-2T	2	16	30	100	70	16	14.5	S	0.12
2020-100L-3T	3	20	30	100	70	20	18.0	S	0.21
2020-150L-3T	3	20	30	150	120	20	18.0	S	0.34
2525-150L-4T	4	25	40	150	110	25	23.0	S	0.35
2525-200L-4T	4	25	40	200	160	25	23.0	S	0.59
3025-150L-4T	4	30	50	150	100	25	28.0	S	0.38
3025-200L-4T	4	30	50	200	150	25	28.0	S	0.62
3232-150L-5T	5	32	50	150	100	32	30.0	S	0.60
3232-200L-5T	5	32	50	200	150	32	30.0	S	1.00
3532-150L-5T	5	35	50	150	100	32	31.0	S	0.70
3532-200L-5T	5	35	50	200	150	32	31.0	S	1.10
4032-150L-6T	6	40	50	150	100	32	31.0	S	0.80
4032-200L-6T	6	40	50	200	150	32	31.0	S	1.20

## ASPV Type Milling Modular

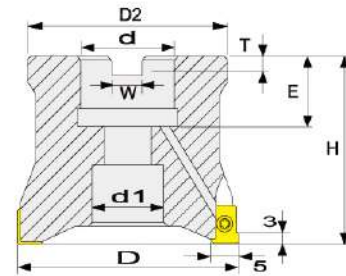


mm

Designation	No.of Inserts	Dimension(mm)									kg
		D	L1	d	M	D2	A	B	C	E	
<b>ASPV06R</b> 016-M08-2T	2	16	25	8.5	M8	12.8	5.5	17	8	10	0.03
017-M08-2T	2	17	25	8.5	M8	14.5	5.5	17	8	10	0.03
020-M10-3T	3	20	30	10.5	M10	17.8	5.5	19	10	15	0.05
021-M10-3T	3	21	30	10.5	M10	17.8	5.5	19	10	15	0.05
025-M12-4T	4	25	35	12.5	M12	20.8	5.5	22	10	17	0.09
026-M12-4T	4	26	35	12.5	M12	20.8	5.5	22	10	17	0.10
032-M16-5T	5	32	40	17.0	M16	28.8	6.0	23	12	22	0.19
035-M16-5T	5	35	40	17.0	M16	28.8	6.0	23	12	22	0.21
042-M16-6T	6	42	40	17.0	M16	28.8	6.0	23	12	22	0.25



## ASPV Type Shell Mill



mm

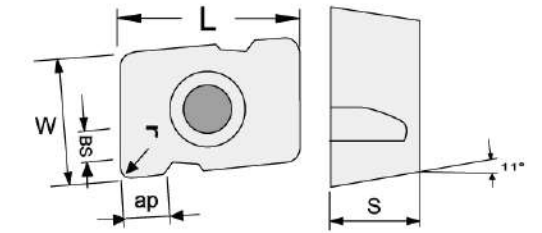
Designation	No. of Inserts	Dimension(mm)									arbor	kg
		D	H	d	d1	D2	W	T	E			
ASPV06R	040-16-06T	6	40	40	16	13.5	38	8.4	5.6	18	A	0.22
	050-22-07T	7	50	50	22	17.0	47	8.4	6.3	20	A	0.34
	063-22-08T	8	63	50	22	17.0	60	10.4	6.3	20	A	0.57

## Parts

TYPE		
ASPV06R	L0655SSTX2.5-3.6P	TPF-08

## Available inserts

### MPHW

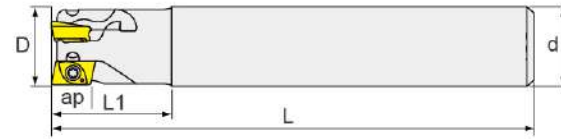


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel (P)	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel (M)	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron (K)	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal (N)	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy (S)	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel (H)	●	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

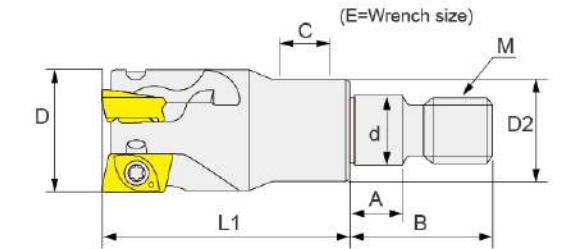
Designations	Dimensions(mm)							CVD Coated					PVD Coated						
	L	W	ap	S	BS	r	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
MPHW	060304EL	10.09	6.35	3.0	3.18	-	0.4								●				
	060308EL	10.06	6.35	3.0	3.18	-	0.8								●				
	060320EL	9.96	6.35	3.0	3.18	-	2.0								●				
	060304EL-0.5	10.09	6.35	3.0	3.18	0.5	0.4								●				
	060308EL-1.5	10.06	6.35	3.0	3.18	1.5	0.8								●				

## ASM Type Mini Shoulder Endmill



Designation	No. of Inserts	Dimension(mm)					Adapter	kg
		D	d	L1	L	ap		
<b>AMS07</b>								
0810-120L-1T	1	8	10	20	120	5.0	S	0.06
1010-120L-2T	2	10	10	20	120	5.0	S	0.09
1212-120L-2T	2	12	12	20	120	5.0	S	0.11
1212-080L-3T	3	12	12	20	80	5.0	S	0.07
1412-120L-2T	2	14	12	20	120	5.0	S	0.12
1616-115L-4T	4	16	16	20	115	5.0	S	0.16
1616-160L-4T	4	16	16	25	160	5.0	S	0.23
1716-160L-4T	4	17	16	25	160	5.0	S	0.23
2020-160L-4T	5	20	20	25	160	5.0	S	0.38
2020-105L-5T	5	20	20	25	140	5.0	S	0.25
2120-160L-4T	4	21	20	25	160	5.0	S	0.38

## ASM Type Mini Shoulder Mill Modular



Designation	No. of Inserts	Dimension(mm)										kg	
		D	M	D2	L1	d	A	B	C	ap			
<b>ASM07</b>													
010-M06-2T	2	10	M6	9.4	20	6.5	5.5	14.5	5.0	5.0	5.0	0.01	
011-M06-2T	2	11	M6	9.8	20	6.5	5.5	14.5	5.0	5.0	5.0	0.01	
012-M06-2T	2	12	M6	9.8	20	6.5	5.5	14.5	5.0	5.0	5.0	0.01	
013-M06-3T	3	13	M6	9.8	20	6.5	5.5	14.5	5.0	5.0	5.0	0.01	
014-M06-3T	3	14	M6	9.8	20	6.5	5.5	14.5	5.0	5.0	5.0	0.01	
016-M08-4T	4	16	M8	12.8	25	8.5	5.5	17.0	8.0	5.0	5.0	0.03	
017-M08-4T	4	17	M8	12.8	25	8.5	5.5	17.0	8.0	5.0	5.0	0.03	
020-M10-5T	5	20	M10	17.8	30	10.5	5.5	19.0	10.0	5.0	5.0	0.06	
021-M10-5T	5	21	M10	17.8	30	10.5	5.5	19.0	10.0	5.0	5.0	0.06	
025-M12-6T	6	25	M12	20.8	30	12.5	5.5	22.0	10.0	5.0	5.0	0.11	
026-M12-6T	6	26	M12	20.8	30	12.5	5.5	22.0	10.0	5.0	5.0	0.11	
032-M16-8T	8	32	M16	28.8	30	17.0	6.0	23.0	12.0	5.0	5.0	0.24	

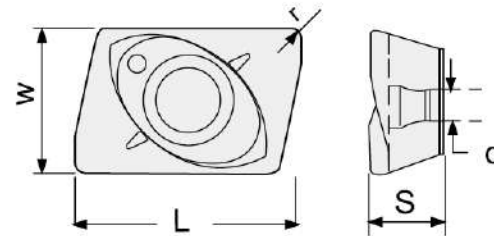
## Parts

TYPE		
	Insert screw	Wrench
ASM07	LS0455SSTX1.8-2.7P	TPF-06



## Available Inserts

### ADMT

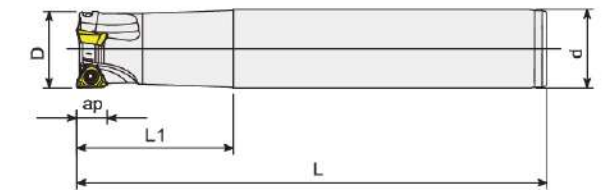


Workpiece	Machining Type	Machining Type																
		●	●	●	●	●	●	●	●	●	●	●	●					
Steel	P	●	●	●														
Stainless steel	M		●															
Cast iron	K	●																
Non-ferrous metal	N		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S																	
Hardened steel	H																	

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)					CVD Coated						PVD Coated						
	W	L	S	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
ADMT	070204R	4.3	7.00	2.45	0.4	2.0								●	○			
	070208R	4.3	7.00	2.45	0.8	2.0								●	○			

## CPE3 Type Shoulder Endmill

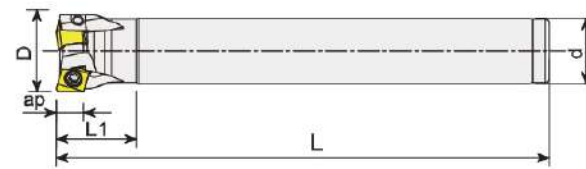


Designation	No. of Inserts	Dimension(mm)					Adapter	kg
		D	d	L1	L	ap		
<b>CPE3</b>	1616-100L-2T-10	2	16	16	20	100	S	0.12
	1616-160L-2T-10	2	16	16	25	160	S	0.22
	2020-160L-2T-10	2	20	20	40	160	S	0.39
	2020-200L-2T-10	2	20	20	30	200	S	0.47
	2120-200L-2T-10	2	21	20	30	200	S	0.47
	2525-160L-3T-10	3	25	25	40	160	S	0.62
	2525-200L-3T-10	3	25	25	40	200	S	0.76
	2625-250L-2T-10	2	26	25	30	250	S	0.93
	3232-250L-3T-10	3	32	32	60	250	S	1.49
	4032-200L-4T-10	4	40	32	40	200	S	1.26





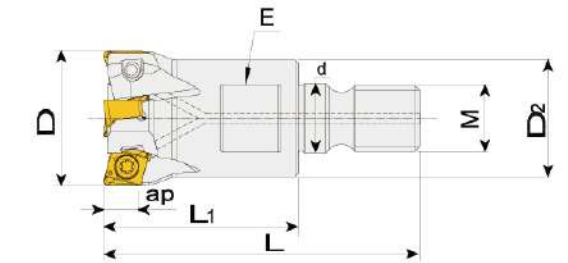
## CNE4 Type Shoulder Endmill



mm

Designation	No.of Inserts	Dimension(mm)					Adapter	kg	
		D	d	L1	L	ap			
<b>CNE4</b>	1616-100L-2T-06	2	16	16	25	100	6.0	S	0.13
	1616-160L-2T-06	2	16	16	25	160	6.0	S	0.21
	1716-160L-2T-06	2	17	16	25	160	6.0	S	0.21
	1716-200L-2T-06	2	17	16	25	200	6.0	S	0.28
	1816-160L-2T-06	2	18	16	25	160	6.0	S	0.21
	2020-100L-3T-06	3	20	20	25	100	6.0	S	0.24
	2020-160L-3T-06	3	20	20	25	160	6.0	S	0.36
	2120-160L-3T-06	3	21	20	25	160	6.0	S	0.36
	2120-200L-3T-06	3	21	20	25	200	6.0	S	0.50
	2525-160L-4T-06	4	25	25	30	160	6.0	S	0.41
	2525-200L-4T-06	4	25	25	30	200	6.0	S	0.71
	2625-160L-4T-06	4	26	25	30	160	6.0	S	0.41
	2625-200L-4T-06	4	26	25	30	200	6.0	S	0.71
	3232-160L-5T-06	5	32	32	35	160	6.0	S	0.72
	3232-200L-5T-06	5	32	32	35	200	6.0	S	1.19
	4032-200L-6T-06	6	40	32	40	200	6.0	S	0.90
	4032-250L-6T-06	6	40	32	40	250	6.0	S	1.49

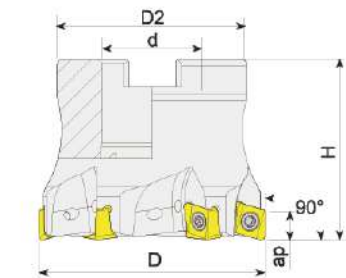
## CNE4 Type Shoulder Mill Modular



mm

Designation	No.of Inserts	Dimension(mm)								kg	
		D	M	D2	d	L1	L	E	ap		
<b>CNE4</b>	016-M08-2T-06	2	16	M8	13	8.5	23	40.5	10	6.0	0.03
	017-M08-2T-06	2	17	M8	13	8.5	23	40.5	10	6.0	0.03
	020-M10-3T-06	3	20	M10	18	10.5	35	55.0	15	6.0	0.07
	021-M10-3T-06	3	21	M10	18	10.5	35	55.0	15	6.0	0.08
	025-M12-4T-06	4	25	M12	21	12.5	35	57.0	17	6.0	0.10
	026-M12-4T-06	4	26	M12	21	12.5	35	57.0	17	6.0	0.12
	032-M16-5T-06	5	32	M16	29	17.0	43	68.0	22	6.0	0.24
	033-M16-5T-06	5	33	M16	29	17.0	43	68.0	22	6.0	0.26
	035-M16-5T-06	5	35	M16	29	17.0	43	68.0	22	6.0	0.27
	040-M16-6T-06	6	40	M16	29	17.0	43	68.0	22	6.0	0.30

## CNE4 Type Shoulder Shell Mill



mm

Designation	No.of Inserts	Dimension(mm)					Arbor	kg	
		D	H	d	D2	ap			
<b>CNE4</b>	040-16-05T-06	5	40	40	16	38	6.0	A	0.30
	050-22-06T-06	6	50	40	22	45	6.0	A	0.40
	063-22-07T-06	7	63	40	22	47	6.0	A	0.60

TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE

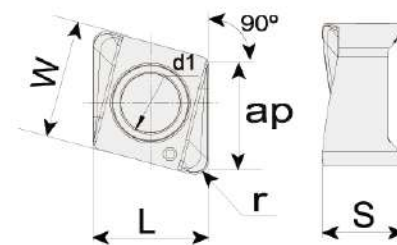
TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE

## Parts

TYPE		
	Insert screw	Wrench
CNE4-06	L0760SSTX3.0-4.0P	TPF-08

## Available inserts

### YNKT

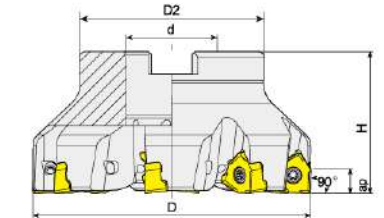


Workpiece	Machining Type	Machining Type											
		●	●	*					●	●	*	*	*
Steel (P)	● ● *	●	●	*					●	●	*	*	*
Stainless steel (M)	●	●	●	*					●	●	*	*	*
Cast iron (K)	●	●	●	●	●	●	●	●	●	●	*	*	*
Non-ferrous metal (N)	●												
Heat resistant alloy, Titanium alloy (S)	●								●	●	*	*	*
Hardened steel (H)	●										*	*	*

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)						CVD Coated					PVD Coated							
	L	W	S	r	d1	ap	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
YNKT-GM	060308R-GM	6.6	6.6	4.67	0.8	3.25	6.0								●	●			

## TFXND Type Shell Mill



Designation	No.of Inserts	Dimension(mm)					arbor	
		D	d	H	ap	D2		
TFXND	90050-22-04T	4	50	50	45	7.5	40	A
	90063-22-06T	6	63	22	45	7.5	47	A
	90080-27-07T	7	80	27	50	7.5	60	B
	90100-32-08T	8	100	32	52	7.5	70	B
	90125-40-10T	10	125	40	60	7.5	87	B
	90160-40-12T	12	160	40	63	7.5	102	C
	90200-60-14T	14	200	60	63	7.5	142	C
	90250-60-16T	16	250	60	63	7.5	142	C

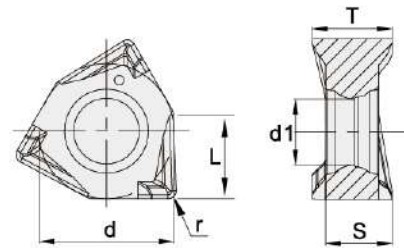
## Parts

TYPE		
	Insert screw	Wrench
TFXND	L1060SSTX4-5.7P	FF-TPF15



## Available inserts

### WNGX

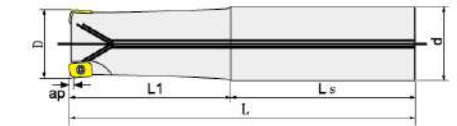


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●		
Steel	P	●	●	●				●	●	●	●	●	●
Stainless steel	M		●					●	●	●	●	●	●
Cast iron	K	●		●	●	●	●	●	●		●	●	●
Non-ferrous metal	N							●	●	●	●		
Heat resistant alloy, Titanium alloy	S							●	●	●	●		
Hardened steel	H									●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)							CVD Coated					PVD Coated						
	L	d	S	r	d1	T	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>WNGX-GM</b>																			
080608R-GM	7.5	12.5	6.45	0.8	4.5	7.9	○	●		●	●	●	●		●	●		○	○
080612R-GM	7.5	12.5	6.45	1.2	4.5	7.9	○	●		●	●	●	●		●	●		○	○
080608R-GH	7.5	12.5	6.45	0.8	4.5	7.9	○	●		●	●	●	●		●	●		○	○
080612R-GH	7.5	12.5	6.45	1.2	4.5	7.9	○	●		●	●	●	●		●	●		○	○

## ASR High Feedrate Endmill

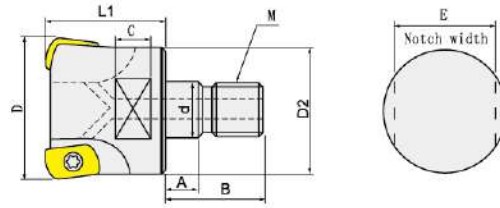


Designation	No. of Inserts	Dimension(mm)							Adapter	kg
		D	d	ap	L1	L	LS			
<b>ASR20</b>										
16-160-C16-2T	2	16	16	2	50	160	110	S	0.21	
17-160-C16-2T	2	17	16	2	30	160	130	S	0.21	
20-160-C20-2T	2	20	20	2	50	160	110	S	0.36	
21-160-C20-2T	2	21	20	2	30	160	130	S	0.36	
25-160-C25-3T	3	25	25	2	50	160	110	S	0.53	
25-200-C25-3T	3	25	25	2	50	200	150	S	0.59	
26-200-C25-3T	3	26	25	2	40	200	160	S	0.59	
32-160-C32-4T	4	32	32	2	75	160	85	S	1.00	
33-160-C32-4T	4	33	32	2	45	160	115	S	1.00	
33-200-C32-4T	4	33	32	2	45	200	155	S	1.10	

## Parts

TYPE	Insert screw	Wrench
ASR20	L0655SSTX2.5-3.6P	TPF-08

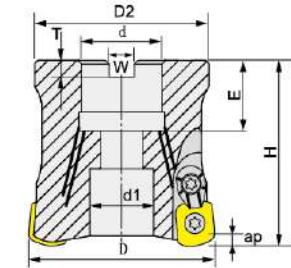
## ASR Type Milling Modular



mm

Designation	No.of Inserts	Dimension(mm)										kg
		D	L1	d	D2	M	A	B	C	E		
<b>ASR20</b> 016-M08-2T	2	16	25	8.5	13	M8	5.5	17	10	10	0.03	
017-M08-2T	2	17	25	8.5	13	M8	5.5	17	10	10	0.03	
020-M10-3T	3	20	30	10.5	18	M10	6.0	19	10	15	0.05	
021-M10-3T	3	21	30	10.5	18	M10	6.0	19	10	15	0.05	
025-M12-4T	4	25	35	12.5	21	M12	7.0	22	10	17	0.09	
026-M12-4T	4	26	35	12.5	21	M12	7.0	22	10	17	0.09	
032-M16-5T	5	32	40	17.0	29	M16	7.0	23	12	22	0.19	
040-M16-6T	6	40	40	17.0	29	M16	7.0	23	12	22	0.26	

## ASR High Feedrate Face Mill



mm

Designation	No.of Inserts	Dimension(mm)										kg
		D	d	W	T	H	D2	E	d1	ap		
<b>ASR20</b> 040-16-04T	4	40	16	8.4	5.6	42	38	18	13.5	2.0	0.22	
050-22-05T	5	50	22	10.4	6.3	50	47	20	17.0	2.0	0.42	
063-22-06T	6	63	22	10.4	6.3	50	60	20	17.0	2.0	0.62	

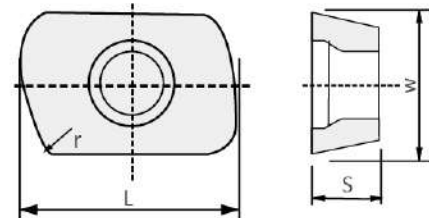
## Parts

TYPE		
	Insert screw	Wrench
ASR20	L0655SSTX2.5-3.6P	TPF-08



## Available inserts

EP

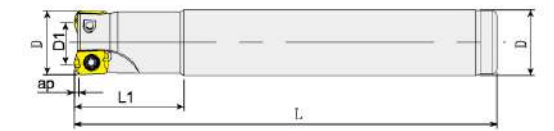


Workpiece	Machining Type	Machining Type												
		●	●	●	●	●	●	●	●	●	●	●	●	
Steel	P	●	●	●						●	●	●	●	●
Stainless steel	M			●						●	●	●	●	●
Cast iron	K	●		●	●	●	●	●	●			●	●	●
Non-ferrous metal	N									●	●	●	●	●
Heat resistant alloy, Titanium alloy	S									●	●	●	●	●
Hardened steel	H											●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

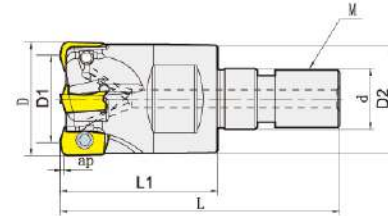
Designations	Dimensions(mm)				CVD Coated						PVD Coated						
	L	W	S	r	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
EPNW	10	6.35	3.18	8.0									●	●			
0603TN-8																	

## ELT Micro Type Endmill



Designation	No. of Inserts	Dimension(mm)							Maximum ramping angle	A.R	Adapter
		D	D1	d	L1	L	ap				
ELT06R	1	8	4.2	10	16	75	0.5	4°	+5°	S	
	2	10	6.2	10	20	80		3°		S	
	3	12	8.2	12	20	80		2°		S	
	3	14	10.2	12	20	80		1.5°		S	
	4	16	12.2	16	25	100		1.2°		S	

## ELT Micro Type Milling Modular



mm

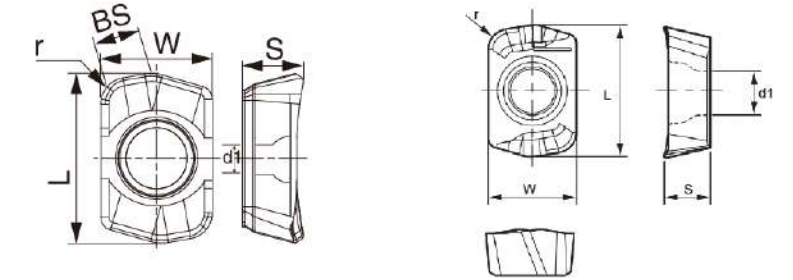
Designation	No. of Inserts	Dimension(mm)										
		D	D1	D2	d	L1	L	M1	ap	Maximum ramping angle	A.R	
ELT06R	008-M06-1T	1	8	4.2	9.2	6.5	17	31.5	M6	0.5	4°	+5°
	010-M06-2T	2	10	6.2	9.2	6.5	17	31.5	M6		3°	
	012-M06-3T	3	12	8.2	11.2	6.5	17	31.5	M6		2°	
	014-M06-3T	3	14	10.2	11.2	6.5	17	31.5	M6		1.5°	
	016-M08-4T	4	16	12.2	14.7	8.5	22	40.0	M8		1.2°	

## Parts

TYPE	Insert screw	Wrench
ELT06R	L0455SSTX1.8-2.7P	TPF-06

## Available inserts

### EPGT



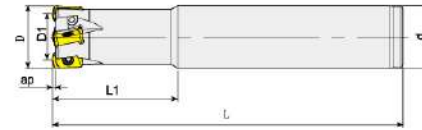
Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●									
Stainless steel	M		●										
Cast iron	K	●											
Non-ferrous metal	N			●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S								●	●	●	●	●
Hardened steel	H										●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)					CVD Coated					PVD Coated							
	L	W	S	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
EPGT-GM	060210R-GM	6.26	4.19	2.19	1.0	2.1								●	●			



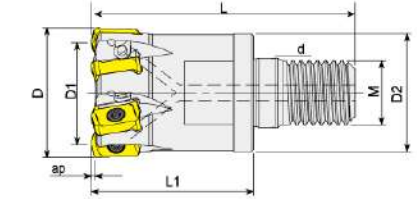
## ELN Type Endmill



mm

Designation	No. of Inserts	Dimension(mm)							Adapter	
		D	D1	d	L	L1	ap	A.R.		
<b>ELN11R</b>	1616-100L-2T	2	16	8	16	100	30	1	-10°	S
	1616-150L-2T	2	16	8	16	150	50			S
	1716-100L-2T	2	17	9	16	100	20			S
	1716-150L-2T	2	17	9	16	150	50			S
	2020-150L-3T	3	20	12	20	150	70			S
	2020-200L-3T	3	20	12	20	200	80			S
	2220-150L-3T	3	22	14	20	150	50			S
	2220-200L-3T	3	22	14	20	200	50			S
	2220-150L-4T	4	22	14	20	150	50			S
	2220-200L-4T	4	22	14	20	200	50			S
	2525-150L-4T	4	25	17	25	150	70			S
	2525-200L-4T	4	25	17	25	200	120			S
	2825-150L-4T	4	28	20	25	150	50			S
	2825-200L-4T	4	28	20	25	200	50			S
	2825-150L-5T	5	28	20	25	150	50			S
	2825-200L-5T	5	28	20	25	200	50			S
	3232-150L-5T	5	32	24	32	150	70			S
	3232-200L-5T	5	32	24	32	200	120			S
	3232-150L-6T	6	32	24	32	150	70			S
	3232-200L-6T	6	32	24	32	200	120			S
	3332-150L-6T	6	33	25	32	150	50			S
	3332-200L-6T	6	33	25	32	200	50			S
	3532-150L-6T	6	35	27	32	150	50			S
	3532-200L-6T	6	35	27	32	200	50			S
	4032-150L-6T	6	40	30	32	150	50			S
	4032-200L-6T	6	40	30	32	200	50			S

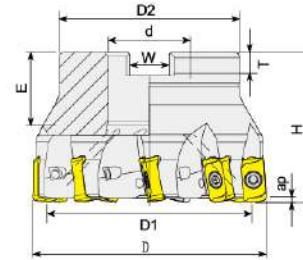
## ELN Type Milling Modular



mm

Designation	No. of Inserts	Dimension(mm)									
		D	D1	D2	d	L	L1	M	ap	A.R.	
<b>ELN11R</b>	016-M08-2T	2	16	8	14.7	8.5	43	25	M8	1	-10°
	017-M08-2T	2	17	9	14.7	8.5	43	25	M8		
	018-M08-2T	2	18	10	14.7	8.5	43	25	M8		
	020-M10-3T	3	20	12	18.7	10.5	49	30	M10		
	020-M10-4T	4	20	12	18.7	10.5	49	30	M10		
	022-M10-3T	3	22	14	18.7	10.5	49	30	M10		
	022-M10-4T	4	22	14	18.7	10.5	49	30	M10		
	025-M12-4T	4	25	17	23.0	12.5	57	35	M12		
	025-M12-5T	5	25	17	23.0	12.5	57	35	M12		
	028-M12-4T	4	28	20	23.0	12.5	57	35	M12		
	028-M12-5T	5	28	20	23.0	12.5	57	35	M12		
	032-M16-5T	5	32	24	30.0	17.0	63	40	M16		
	032-M16-6T	6	32	24	30.0	17.0	63	40	M16		

## ELN Type Shell Mill



mm

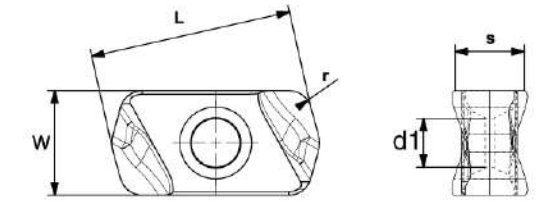
Designation	No. of Inserts	Dimension(mm)											
		D	D1	D2	d	H	E	T	W	ap	A.R.	Arbor	
ELN11R	040-16-05T	5	40	32	38	16	40	19	5.6	8.4	1	-10°	A
	040-16-06T	6	40	32	38	16	40	19	5.6	8.4			A
	050-22-07T	7	50	42	47	22	50	21	6.3	10.4			A
	050-22-08T	8	50	42	47	22	50	21	6.3	10.4			A
	063-22-08T	8	63	55	60	22	50	21	6.3	10.4			A
	063-22-09T	9	63	55	60	22	50	21	6.3	10.4			A

## Parts

TYPE		
ELN11R	Insert screw L0760SSTX3.0-4.0P	Wrench TPF-08

## Available inserts

### ENGU



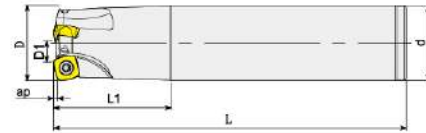
Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●									
Stainless steel	M		●										
Cast iron	K	●											
Non-ferrous metal	N			●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S							●	●	●	●	●	●
Hardened steel	H										●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)					CVD Coated					PVD Coated								
	L	W	S	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	
ENGU-GM	11T310R-GM	11.90	6.20	3.96	1.0	3.45									●	●			



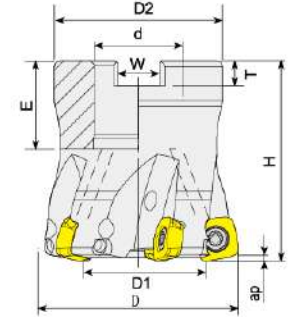
## ELS Type Endmill



mm

Designation	No. of Inserts	Dimension(mm)								Adapter		
		D	D1			d	L1	L	ap		A.R.	
			GM	LD	FL							
<b>ELS10R</b>	2525-150L-2T	2	25	8	12.5	11.5	125	60	150	1.5	-10°	S
	2525-200L-2T	2	25	8	12.5	11.5	25	120	200			S
	2825-150L-2T	2	28	11	15.5	14.5	25	40	150			S
	2825-200L-2T	2	28	11	15.5	14.5	25	40	200			S
	3232-150L-3T	3	32	15	19.5	18.5	32	70	150			S
	3232-200L-3T	3	32	15	19.5	18.5	32	120	200			S
	3532-150L-3T	3	35	18	22.5	21.5	32	50	150			S
	3532-200L-3T	3	35	18	22.5	21.5	32	50	200			S
	4032-150L-4T	4	40	23	27.5	26.5	32	50	150			S
	4032-200L-4T	4	40	23	27.5	26.5	32	50	200			S
	4032-250L-4T	4	40	23	27.5	26.5	32	50	250			S
<b>ELS14R</b>	5042-150L-3T	3	50	27	33.0	32.0	42	50	150			2.0
	6342-150L-4T	4	63	40	46.0	45.0	42	50	150	S		
	8042-150L-5T	5	80	57	63.0	62.0	42	50	150	S		

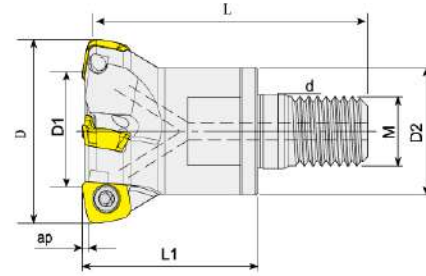
## ELS Type Shell Mill



mm

Designation	No. of Inserts	Dimension(mm)													Arbor
		D	D1			D2	d	H	E	T	W	ap	A.R.		
			GM	LD	FL										
<b>ELS10R</b>	050-22-04T	4	50	33	37.5	36.5	47	22	50	21	6.3	10.4	1.5	+10°	A
	050-22-05T	5	50	33	37.5	36.5	47	22	50	21	6.3	10.4			A
	063-22-05T	5	63	46	50.5	49.5	60	22	50	21	6.3	10.4			A
	063-22-06T	6	63	46	50.5	49.5	60	22	50	21	6.3	10.4			A
	080-27-07T	7	80	63	67.5	66.5	76	27	63	24	7.0	12.4			B
<b>ELS14R</b>	050-22-04T	4	50	27	33	32	47	22	50	21	6.3	10.4			2.0
	063-22-05T	5	63	40	46	45	60	22	50	24	6.3	10.4	A		
	080-27-06T	6	80	57	63	62	76	27	63	24	7.0	12.4	B		
	100-32-07T	7	100	77	83	82	96	32	63	28	8.0	14.4	B		
	125-40-07T	7	125	102	108	107	100	40	63	33	9.0	16.4	B		
	160-40-08T	8	160	137	143	142	100	40	63	32	9.0	16.4	C		

## ELS Type Milling Modular



mm

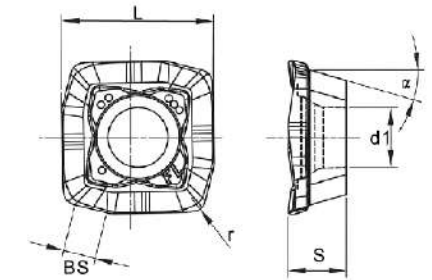
Designation	No. of Inserts	Dimension(mm)										ap	A.R.
		D	D1			D2	d	L1	L	M			
			GM	LD	FL								
ELS10R	025-M12-2T	2	25	8	12.5	11.5	23	12.5	35	57	M12	1.5	+10°
	028-M12-2T	2	28	11	15.5	14.5	23	12.5	35	57	M12		
	032-M16-3T	3	32	15	19.5	18.5	30	17.0	40	63	M16		
	035-M16-3T	3	35	18	22.5	21.5	30	17.0	40	63	M16		
040-M16-4T	4	40	23	27.5	26.5	30	17.0	40	63	M16			

## Parts

TYPE	Insert screw	Wrench
ELS10R	L1060SSTX4.0-5.7P	TPF-15
ELS14R	L1260SSTX5.0-7.0P	TPF-20

## Available inserts

### XOMT



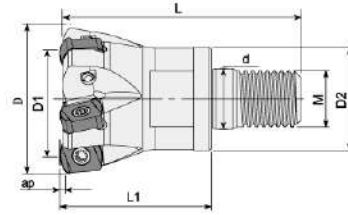
Workpiece	Machining Type													
		●	●	●	●	●	●	●	●	●	●			
Steel	P	●	●	●										
Stainless steel	M		●											
Cast iron	K	●												
Non-ferrous metal	N			●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S													
Hardened steel	H													

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)							CVD Coated					PVD Coated						
	L	S	BS	r	d1	α	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
XOMT-GM	100420R-GM	10.30	4.58	-	2.0	4.6	16°								●	●			
	140520R-GM	14.14	5.56	-	2.0	5.8	16°								●	●			
XOMT-LD	140520R-LD	14.76	5.56	1.6	2.0	5.8	16°								●	●			



## ELX Type Milling Modular



mm

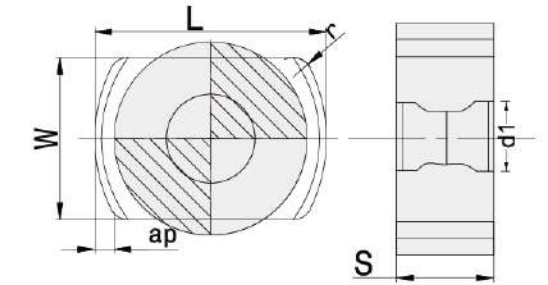
Designation	No. of Inserts	Dimension(mm)							ap
		D	D1	D2	M	L1	L		
ELX06R	016-M08-2T	2	16	9.4	13	M8	25	42.5	0.7
	018-M08-2T	2	18	11.1	13	M8	25	42.5	0.7
	020-M10-3T	3	20	12.4	18	M10	30	50.0	1.0
	025-M12-4T	4	25	17.3	21	M12	35	57.0	1.0
	032-M16-5T	5	32	24.3	29	M16	40	65.0	1.0
ELX09R	035-M16-5T	5	35	27.3	29	M16	43	68.0	1.0
	040-M16-6T	6	40	32.2	29	M16	43	68.0	1.0
	042-M16-6T	6	42	34.2	29	M16	43	68.0	1.0
	025-M12-3T	3	25	14.7	21	M12	35	57.0	1.5
	030-M16-3T	3	30	19.6	29	M16	43	68.0	1.5
	032-M16-4T	4	32	21.6	29	M16	43	68.0	1.5
	040-M16-5T	5	40	29.6	29	M16	43	68.0	1.5
	042-M16-5T	5	42	31.6	29	M16	43	68.0	1.5

## Spare Parts

TYPE		
	Insert screw	Wrench
ELX06R	L0750SSTX3.0-4.0P	TPF-08
ELX09R	L0960SSTX4.0-5.7P	TPF-15

## Available inserts

### LNMX

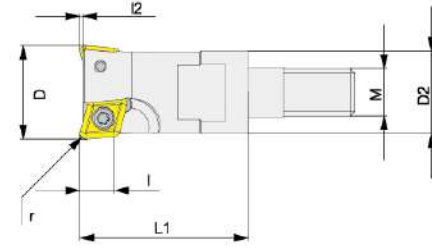


Workpiece	Machining Type										
		●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●							
Stainless steel	M		●								
Cast iron	K	●									
Non-ferrous metal	N										
Heat resistant alloy, Titanium alloy	S										
Hardened steel	H										

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)						CVD Coated				PVD Coated									
	L	W	S	r	d1	ap	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	
LNMX-GM	060310ER-GM	9.0	6.39	3.73	1.0	3.0	1.0								●	●				
	090415ER-GM	11.9	9.18	4.80	1.5	4.0	1.5								●	●				

## XDH Type Milling Modular



mm

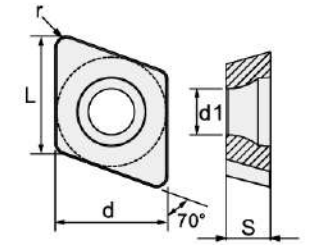
Designation		No. of Inserts	Dimension(mm)						
			D	D2	L1	M	I2	I	r
<b>XDH06</b>	016-M08-2T	2	16	13.8	28.5	M8	1.3	6.5	1.0
	020-M10-3T	3	20	18.0	28.5	M10	1.3	6.5	1.0
	025-M12-4T	4	25	21.0	32.5	M12	1.3	6.5	1.0
	030-M12-5T	5	30	21.0	32.5	M12	1.3	6.5	1.0
<b>XDH10</b>	035-M16-6T	6	35	29.0	42.5	M16	1.3	6.5	1.0
	042-M16-6T	6	42	29.0	42.5	M16	1.3	6.5	1.0
	025-M12-2T	2	25	21.0	32.0	M12	-	10.0	1.0
	030-M12-3T	3	30	21.0	32.0	M12	-	10.0	1.0
	035-M16-3T	3	35	29.0	42.0	M16	-	10.0	1.0
	042-M16-4T	4	42	29.0	42.0	M16	-	10.0	1.0

## Spare Parts

TYPE		
	Insert screw	Wrench
XDH06	L065SSTX2.5-3.6P	TPF-08
XDH10	L1060SSTX4.0-5.7P	TPF-15

## Available inserts

### XDHW



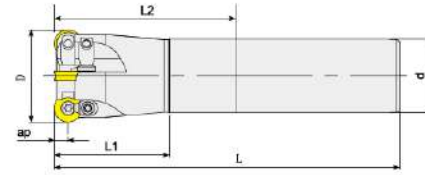
Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●									
Stainless steel	M			●									
Cast iron	K	●											
Non-ferrous metal	N												
Heat resistant alloy, Titanium alloy	S												
Hardened steel	H												

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)					CVD Coated					PVD Coated							
	L	d	S	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>XDHW</b>	060210SN	6.5	6.5	2.38	1.0	2.95									●	●		
	10T310SN	10.0	10.0	3.97	1.0	3.95									●	●		



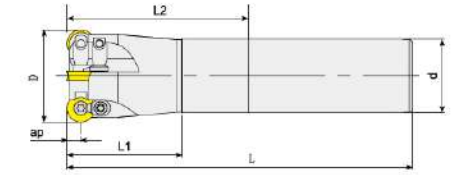
## EMR Corner Radius Endmill



mm

Designation	No.of Inserts	Dimension(mm)						Adapter
		D	d	ap	L1	L2	L	
<b>EMR-4R</b> 12-130-C12-1T	1	12	12	4	40	-	130	S
13-130-C12-1T	1	13	12		40	-	130	S
16-130-C16-2T	2	16	16		40	-	130	S
16-160-C16-2T	2	16	16		40	-	160	S
16-160-C15-2T	2	16	15		40	-	160	S
16-200-C16-2T	2	16	16		40	100	200	S
16-200-C15-2T	2	16	16		40	-	200	S
17-160-C16-2T	2	17	16		40	-	160	S
17-200-C16-2T	2	17	16		50	-	200	S
20-160-C20-2T	2	20	20		50	-	160	S
20-200-C20-2T	2	20	20		50	100	200	S
20-160-C19-2T	2	20	19		50	-	160	S
20-200-C19-2T	2	20	19		50	-	200	S
21-160-C20-2T	2	21	20		50	-	160	S
21-200-C20-2T	2	21	20	50	-	200	S	
<b>EMR-5R</b> 20-160-C20-2T	2	20	20	5	50	-	160	S
20-200-C20-2T	2	20	20		50	100	200	S
21-160-C20-2T	2	21	20		50	-	160	S
21-200-C20-2T	2	21	20		50	-	200	S
25-160-C20-2T	2	25	20		50	-	160	S
25-160-C25-2T	2	25	25		50	-	160	S
25-160-C24-2T	2	25	24		50	-	160	S

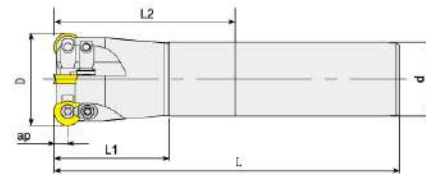
## EMR Corner Radius Endmill



mm

Designation	No.of Inserts	Dimension(mm)						Adapter
		D	d	ap	L1	L2	L	
<b>EMR-5R</b> 25-200-C20-2T	2	25	20	5	50	-	200	S
25-200-C25-2T	2	25	25		75	-	200	S
25-200-C24-2T	2	25	24		50	-	200	S
25-250-C25-2T	2	25	25		60	115	250	S
25-250-C24-2T	2	25	24		50	-	250	S
26-160-C25-2T	2	26	25		50	-	160	S
26-200-C25-2T	2	26	25		50	-	200	S
26-250-C25-2T	2	26	25		50	-	250	S
30-110-C20-2T	2	30	20		40	-	110	S
30-110-C3/4-2T	2	30	19.05		40	-	110	S
30-160-C25-2T	2	30	25		50	-	160	S
30-200-C25-2T	2	30	25		50	-	200	S
30-250-C25-2T	2	30	25		60	-	250	S
30-300-C25-2T	2	30	25		60	-	300	S
30-300-C32-3T	2	30	32		60	-	300	S
35-160-C32-2T	2	35	32		50	-	160	S
35-160-C32-3T	3	35	32		50	-	160	S
35-200-C32-2T	2	35	32		50	-	200	S
35-200-C32-3T	3	35	32	50	-	200	S	
35-250-C32-3T	3	35	32	60	-	250	S	
35-300-C32-3T	3	35	32	60	-	300	S	
35-350-C32-3T	3	35	32	60	-	350	S	

## EMR Corner Radius Endmill



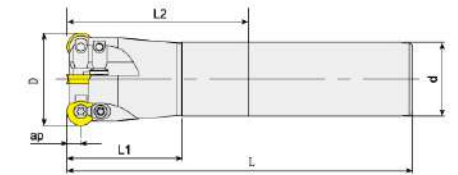
mm

Designation	No.of Inserts	Dimension(mm)						Adapter	
		D	d	ap	L1	L2	L		
<b>EMR-5R</b>	35-400-C32-3T	3	35	32	5	60	-	400	S
	40-160-C32-4T	4	40	32		50	-	160	S
	40-200-C32-4T	4	40	32		50	-	200	S
	40-250-C32-4T	4	40	32		60	-	250	S
	40-300-C32-4T	4	40	32		60	-	300	S
	40-350-C32-4T	4	40	32		60	-	350	S

## Parts

TYPE				
	Clamp	Clamp screw	Insert screw	Wrench
EMR-4R	Y-4R	YS30070PN	L0755SSTX3.0-4.0P	TPF-08
EMR-5R	Y-5R	YS35100PN	L0960SSTX4.0-5.7P	TPF-15

## EMR Corner Radius Endmill

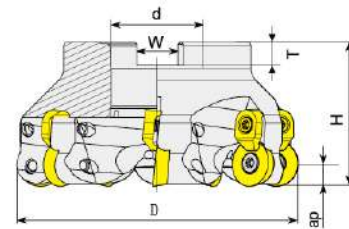


mm

Designation	No.of Inserts	Dimension(mm)						Adapter	
		D	d	ap	L1	L2	L		
<b>EMRW-6R</b>	25-200-C25-2T	2	25	25	6	50	-	200	S
	25-250-C25-2T	2	25	25		60	-	250	S
	32-160-C32-2T	2	32	32		50	-	160	S
	32-200-C25-2T	2	32	25		50	-	200	S
	32-200-C32-2T	2	32	32		80	-	200	S
	32-250-C25-2T	2	32	25		60	-	250	S
	32-250-C32-2T	2	32	32		100	-	250	S
	35-160-C32-3T	3	35	32		50	-	160	S
	35-200-C32-3T	3	35	32		50	-	200	S
	35-250-C32-3T	3	35	32		60	-	250	S
	35-300-C32-3T	3	35	32		60	-	300	S
	35-350-C32-3T	3	35	32		60	-	350	S
	35-400-C32-3T	3	35	32		60	-	400	S
	40-160-C32-3T	3	40	32		50	-	160	S
	40-200-C32-3T	3	40	32		50	-	200	S
	40-250-C32-3T	3	40	32		60	-	250	S
	40-300-C32-3T	3	40	32		60	-	300	S
	40-350-C32-3T	3	40	32		60	-	350	S
	50-200-C32-4T	4	50	32		60	-	200	S
	50-250-C32-4T	4	50	32		60	-	250	S



## EMR/EMRW Corner Radius Face Mill



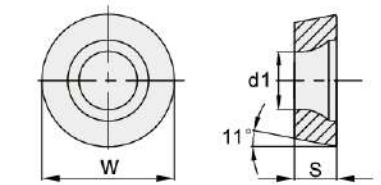
Designation	No. of Inserts	Dimension(mm)							
		D	d	ap	W	T	H	Arbor	
<b>RMR-5R</b>	050-22-04T	4	50	22	5	10.4	6.3	50	A
	063-22-04T	4	63	22		10.4	6.3	50	A
	080-27-06T	6	80	27		12.4	7.0	50	A
	100-32-06T	6	100	32		14.4	7.0	50	A
	125-40-07T	7	125	40		16.4	9.0	63	A
<b>EMRW-6R</b>	160-40-08T	8	160	40	16.4	9.0	63	B	
	050-22-04T	4	50	22	6	10.4	6.3	50	B
	063-22-04T	4	63	22		10.4	6.3	50	B
	080-27-06T	6	80	27		12.4	7.0	50	C
	100-32-06T	6	100	32		14.4	7.0	50	C
125-40-07T	7	125	40	16.4		9.0	63	C	
160-40-08T	8	160	40	16.4	9.0	63	C		
200-60-09T	9	200	60	25.7	14.0	63	C		

## Parts

TYPE				
RMR-5R	Y-5R	YS35100PN	L0960SSTX4.0-5.7P	TPF-15
EMRW-6R	Y-6R	YS40100PN	L1060SSTX4.0-5.7P	TPF-15

## Available inserts

RP

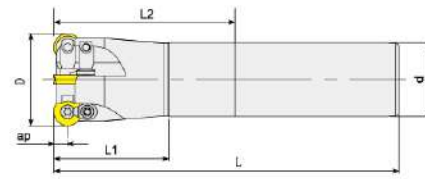


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)			CVD Coated					PVD Coated							
	W	S	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>RPMW</b>	08T2MO	8.0	2.78	2.90	○	○	○	○	○	○	●	●	●			
	10T3MO	10.0	3.97	4.00	○	○	○	○	○	○	●	●	●			
	1204MO	12.0	4.76	4.50	○	○	○	○	○	○	●	●	●			
	1606MO	16.0	6.35	5.50	○	○	○	○	○	○	●	●	●			
	2006MO	20.0	6.35	5.50	○	○	○	○	○	○	●	●	●			
<b>RPMT-JS</b>	08T2MOE-JS	8.0	2.78	2.90	○	○	○	○	○	○	●	●	●			
	10T3MOE-JS	10.0	3.97	4.00	○	○	○	○	○	○	●	●	●			
	1204MOE-JS	12.0	4.76	4.50	○	○	○	○	○	○	●	●	●			
	1606MOE-JS	16.0	6.35	5.50	○	○	○	○	○	○	●	●	●			

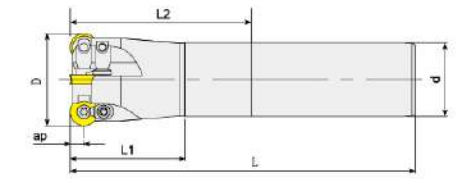
## TRS Corner Radius End Mill



mm

Designation	No.of Inserts	Dimension(mm)						
		D	d	ap	L1	L2	L	
<b>TRS-2.5R</b>	8-80-C8-1T	1	8	8	2.5	30	-	80
	10-120-C10-2T	2	10	10		40	-	120
	12-120-C12-2T	2	12	12		40	-	120
<b>TRS-3.5R</b>	10-120-C10-1T	1	10	10	3.5	40	-	120
	12-120-C12-1T	1	12	12		40	-	120
	16-120-C16-2T	2	16	16		40	-	120
<b>TRS-4R</b>	16-160-C16-2T	2	16	16	4	40	-	160
	12-130-C12-1T	1	12	12		40	-	130
	13-130-C12-1T	1	13	12		40	-	130
<b>TRS-5R</b>	16-160-C16-2T	2	16	16	5	40	-	160
	16-160-C15-2T	2	16	15		40	-	160
	16-200-C16-2T	2	16	16		40	100	200
	16-200-C15-2T	2	16	15		50	-	200
	17-160-C16-2T	2	17	16		40	-	160
	17-200-C16-2T	2	17	16		50	-	200
	20-160-C20-2T	2	20	20		50	-	160
	20-160-C19-2T	2	20	19		50	-	160
	20-200-C20-2T	2	20	20		50	100	200
	20-200-C19-2T	2	20	19		50	-	200
<b>TRS-6R</b>	21-160-C20-2T	2	21	20	6	50	-	160
	21-200-C20-2T	2	21	20		50	-	200
	20-160-C20-2T	2	20	20		50	-	160
	20-160-C19-2T	2	20	19		50	-	160

## TRS Corner Radius End Mill

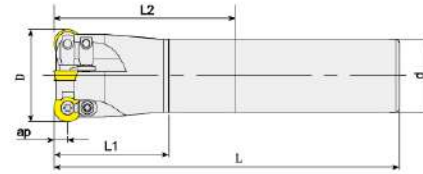


mm

Designation	No.of Inserts	Dimension(mm)						Adapter	
		D	d	ap	L1	L2	L		
<b>TRS-5R</b>	20-200-C20-2T	2	20	20	5	50	100	200	S
	25-160-C25-2T	2	25	25		50	-	160	S
	25-160-C20-2T	2	25	20		50	-	160	S
	25-160-C24-2T	2	25	24		50	-	160	S
	25-200-C25-2T	2	25	25		60	-	200	S
	25-250-C25-2T	2	25	25		60	115	250	S
	26-160-C25-2T	2	26	25		50	-	160	S
	26-200-C25-2T	2	26	25		60	-	200	S
	30-160-C25-2T	2	30	25		50	-	160	S
	30-200-C25-2T	2	30	25		50	-	200	S
	30-250-C25-2T	2	30	25		60	-	250	S
	35-160-C32-2T	2	35	32		50	-	160	S
<b>TRS-6R</b>	35-200-C32-2T	2	35	32	6	50	-	200	S
	35-160-C32-3T	3	35	32		50	-	160	S
	35-200-C32-3T	3	35	32		50	-	200	S
	35-250-C32-3T	3	35	32		60	-	250	S
	32-160-C25-2T	2	32	25		50	-	160	S
	32-200-C25-2T	2	32	25		50	-	200	S
	32-250-C25-2T	2	32	25		60	-	250	S
	35-160-C25-3T	3	35	25		50	-	160	S
<b>TRS-6R</b>	35-200-C25-3T	3	35	25	6	50	-	200	S
	40-160-C32-3T	3	40	32		50	-	160	S



## TRS Corner Radius End Mill



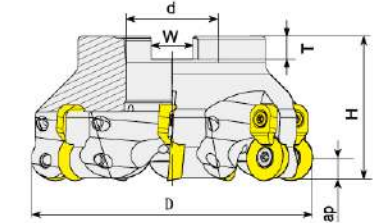
mm

Designation	No.of Inserts	Dimension(mm)						Adapter	
		D	d	ap	L1	L2	L		
<b>TRS-6R</b>	40-200-C32-3T	3	40	32	6	50	-	200	S
	40-250-C32-3T	3	40	32		60	-	250	S
	40-300-C32-3T	3	40	32		60	-	300	S

## Parts

TYPE				
	Clamp	Clamp screw	Insert screw	Wrench
RS-2.5R	-	-	L0460SSTX2.0-2.8P	TPF-06
TRS-3.5R	-	-	L0655SSTX2.5-3.6P	TPF-08
TRS-4R	Y-4R	YS30070PN	L0755SSTX3.0-4.0P	TPF-08
TRS-5R	Y-5R	YS40090PN	L0960SSTX4.0-5.7P	TPF-15
TRS-6R	Y-6R	YS40100PN	L1060SSTX4.0-5.7P	TPF-15
TRS-8R	Y-8R	YS50120PN	L1260SSTX5.0-7.0P	TPF-20

## TRS Corner Radius Face Mill

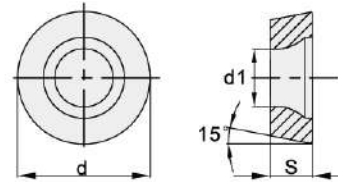


mm

Designation	No.of Inserts	Dimension(mm)						Arbor	
		D	d	ap	W	T	H		
<b>TRS-5R</b>	050-22-04T	4	50	22	5	10.4	6.3	50	A
	063-22-04T	4	63	22		10.4	6.3	50	A
	080-27-06T	6	80	27		12.4	7.0	50	B
	100-32-06T	6	100	32		14.4	8.0	50	B
	125-40-07T	7	125	40	16.4	9.0	63	B	
<b>TRS-6R</b>	050-22-04T	4	50	22	6	10.4	6.3	50	A
	063-22-04T	4	63	22		10.4	6.3	50	A
	080-27-06T	6	80	27		12.4	7.0	50	B
	100-32-06T	6	100	32		14.4	8.0	50	B
	125-40-07T	7	125	40		16.4	9.0	63	B
	160-40-08T	8	160	40	16.4	9.0	63	C	
<b>TRS-8R</b>	063-22-04T	4	63	22	8	10.4	6.3	50	A
	080-27-05T	5	80	27		12.4	7.0	50	B
	100-32-06T	6	100	32		14.4	8.0	50	B
	125-40-06T	6	125	40		16.4	9.0	63	B
	160-40-08T	8	160	40		16.4	9.0	63	C
	200-60-09T	9	200	60		25.7	14.0	63	C

## Available inserts

### RDMW/RDMT

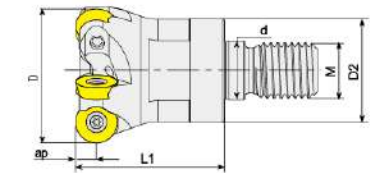


Workpiece	Machining Type	Machining Type										
		●	●	*				●	●	*	*	*
Steel	P	●	●	*				●	●	*	*	*
Stainless steel	M		*				●	●	*	*	*	*
Cast iron	K	●		●	●	●	●	●	*	*	*	*
Non-ferrous metal	N											
Heat resistant alloy, Titanium alloy	S						●	●	*	*	*	*
Hardened steel	H								*	*	*	*

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)			CVD Coated						PVD Coated						
	d	S	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>RDMW</b>	0501MOEN	5.00	1.59	2.0								●				
	0702MOEN	7.00	2.38	2.8								●				
<b>RDMT</b>	08T2MOTN	8.0	2.78	2.8	○	○		○	○			●	●	●		
	10T3MOTN	10.0	3.97	3.9	○	○		○	○			●	●	●		
	1204MOTN	12.0	4.76	4.5	○	○		○	○			●	●	●		
	1604MOTN	16.0	4.76	5.0	○	○		○	○			●	●	●		

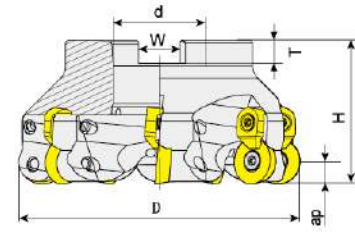
## TRD Type Milling Modular



Designation	No. of Inserts	Dimension(mm)						
		D	L1	D2	M	d	APmax	
<b>TRD2.5R</b>	010-M06-2T	2	10	20	9.8	M6	6.5	1.5
	012M06-3T	3	12	20	10.0	M6	6.5	1.5
	015-M08-4T	4	15	20	13.5	M8	8.5	1.5
<b>TRD3.5R</b>	015-M08-2T	2	15	28	13.5	M8	8.5	2.0
	015-M08-3T	3	15	28	13.5	M8	10.5	2.0
	020-M10-4T	4	20	28	18.0	M10	12.5	2.0
<b>TRD05R</b>	025-M12-5T	5	25	28	21.0	M12	12.5	2.0
	020-M10-2T	2	20	32	18.0	M10	10.5	2.5
	025-M12-2T	2	25	32	21.0	M12	12.5	2.5
<b>TRD06R</b>	025-M16-4T	3	25	32	21.0	M12	12.5	2.5
	030-M16-4T	4	30	42	29.0	M16	17.0	2.5
	035-M16-5T	5	35	42	29.0	M16	17.0	2.5
<b>TRD08R</b>	024-M12-2T	2	24	32	21.0	M12	12.5	3.0
	035-M16-3T	3	35	42	29.0	M16	17.0	3.0
	035-M16-4T	4	35	42	29.0	M16	17.0	3.0
	042-M16-4T	4	42	42	29.0	M16	17.0	3.0
<b>TRD08R</b>	042-M16-5T	5	42	42	29.0	M16	17.0	3.0
	032-M16-2T	2	32	42	29.0	M16	17.0	4.0



## TRD Corner Radius Face Mill



mm

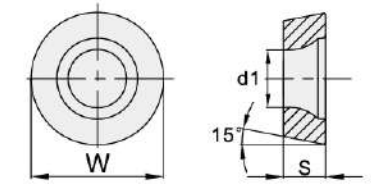
Designation	No. of Inserts	Dimension(mm)						Arbor	
		D	d	a	W	T	H		
<b>TRD05R</b>	050-22-04T	4	50	22	5	10.4	6.3	50	A
	063-22-04T	4	63	22		10.4	6.3	50	A
	080-27-06T	6	80	27		12.4	7.0	50	B
	100-32-06T	6	100	32		14.4	8.0	50	B
<b>TRD06R</b>	125-40-07T	7	125	40	6	16.4	9.0	63	B
	050-22-04T	4	50	22		10.4	6.3	50	A
	063-22-04T	4	63	22		10.4	6.3	50	A
	080-27-06T	6	80	27		12.4	7.0	50	B
	100-32-06T	6	100	32		14.4	8.0	50	B
125-40-07T	7	125	40	16.4	9.0	63	B		
160-40-08T	8	160	40	16.4	9.0	63	C		

## Spare Parts

TYPE				
	Clamp	Clamp screw	Insert screw	Wrench
TRS-2.5R	-	-	LS0460SSTX2.0-2.8P	TPF-06
TRS-3.5R	-	-	LS0655SSTX2.5-3.6P	TPF-08
TRS05R	Y-5R	YS40090PN	LS1060SSTX3.5-5.0P	TPF-15
TRS06R	Y-6R	YS40100PN	LS1060SSTX3.5-5.0P	TPF-15
TRS08R	-	-	LS1260SSTX5.0-7.0P	TPF-20

## Available inserts

RD\*X



Workpiece	Machining Type										
		●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)			CVD Coated					PVD Coated							
	W	S	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>RDHX</b>	1003MOT	10.0	3.18	3.9	○	○	○	○	○	○	●	●				
	12T3MOT	12.0	3.97	3.9	○	○	○	○	○	○	●	●				
<b>RDMX</b>	1003MOTN	10.0	3.18	3.9	○	○	○	○	○	○	●	●				
	12T3MOTN	12.0	3.97	3.9	○	○	○	○	○	○	●	●				

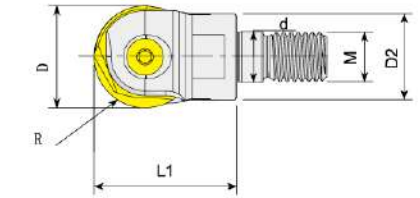
## WGR Type Ball Precision Endmill



mm

Designation	No.of Inserts	Dimension(mm)						Spare parts		Adapter
		D	d	L1	L	R	Screw	wrench		
<b>WGR</b>										
04R-C08-110L	1	8	8	25	110	4	TS30070B	T-8	S	
04R-C10-110L	1	8	10	25	110	4	TS30070B	T-8	S	
04R-C12-110L	1	8	12	55	140	4	TS30070B	T-8	S	
05R-C10-130L	1	10	10	30	130	5	TS40085B	T-15	S	
05R-C12-160L	1	10	12	30	160	5	TS40087B	T-15	S	
06R-C12-130L	1	12	12	32	130	6	TS50094B	T-20	S	
06R-C16-160L	1	12	16	58.5	160	6	TS50094B	T-20	S	
08R-C16-160L	1	16	16	65	160	8	TS50128B	T-20	S	
08R-C20-200L	1	16	20	65	200	8	TS50128B	T-20	S	
10R-C20-160L	1	20	20	45	160	10	TS20129B	T-20	S	
10R-C20-200L	1	20	20	76	200	10	TS50129B	T-20	S	
10R-C25-250L	1	20	25	120	250	10	TS50129B	T-20	S	
12.5R-C25-160L	1	25	25	45	160	12.5	TS60210B	T-25	S	
12.5R-C25-200L	1	25	25	76	200	12.5	TS60210B	T-25	S	
12.5R-C32-200L	1	25	32	98	200	12.5	TS60210B	T-25	S	
12.5R-C32-250L	1	25	32	120	250	12.5	TS60210B	T-25	S	
15R-C32-200L	1	30	32	80	200	15	TS80247B	T-30	S	
15R-C40-250L	1	30	40	121	250	15	TS80247B	T-30	S	

## WGR Type Ball Precision Modular

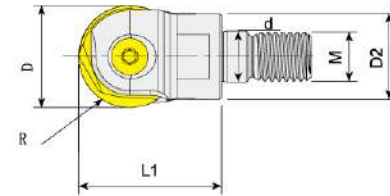


mm

Designation	No.of Inserts	Dimension(mm)					Spare parts			
		D	L1	d	M	D2	Screw	wrench	R	
<b>WGR</b>										
008-M04	1	8	16	4.5	M4	9.2	TS30070B	T-8	4	
010-M05	1	10	20	5.5	M5	9.2	TS40087B	T15	5	
012-M06	1	12	20	6.5	M6	10.0	TS50094B	T20	6	
016-M08	1	16	28	8.5	M8	13.0	TS50128B	T20	8	
020-M10	1	20	30	10.5	M10	18.0	TS20129B	T20	10	
025-M12	1	25	35	12.5	M12	21.0	TS60210B	T-25	12.5	
030-M16	1	30	40	17.0	M16	29.0	TS80247B	T-30	15	



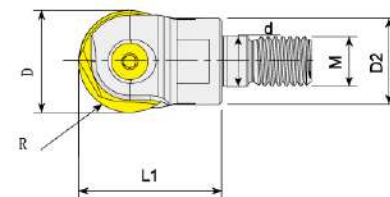
## PPH Type Ball Precision Modular



mm

Designation	No. of Inserts	Dimension(mm)					Spare parts		
		D	L1	d	M	D2	Screw	wrench	R
<b>PPH</b>									
008-M04	1	8	16	4.5	M4	9.2	TS30078B	T8	4
010-M05	1	10	20	5.5	M5	9.2	TS30078B	T8	5
012-M06	1	12	20	6.5	M6	10.0	TS35095B	T15	6
016-M08	1	16	28	8.5	M8	13.0	TS40132B	T15	8
020-M10	1	20	30	10.5	M10	18.0	TS50163B	T20	10
025-M12	1	25	35	12.5	M12	21.0	TS60202B	T25	12.5
030-M16	1	30	40	17.0	M16	29.0	TS80252B	T30	15

## ABPF PPH Type Ball Precision Modular



mm

Designation	No. of Inserts	Dimension(mm)					Spare parts		
		D	L1	d	M	D2	Screw	wrench	R
<b>ABPF</b>									
008-M04	1	8	16	4.5	M4	9.2	TS30067B	T-8	4
010-M05	1	10	20	5.5	M5	9.2	TS35083B	T15	5
012-M06	1	12	20	6.5	M6	10.0	TS50100B	T20	6
016-M08	1	16	28	8.5	M8	13.0	TS50134B	T20	8
020-M10	1	20	30	10.5	M10	18.0	TS60167B	T-25	10
025-M12	1	25	35	12.5	M12	21.0	TS60218B	T-20	12.5
030-M16	1	30	40	17.0	M16	29.0	TS80250B	T30	15

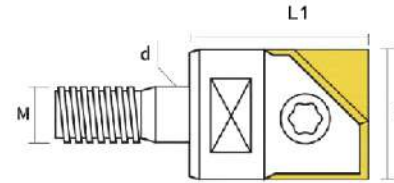
## Available inserts

Workpiece	Machining Type												
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●									
Stainless steel	M		●										
Cast iron	K		●										
Non-ferrous metal	N												
Heat resistant alloy, Titanium alloy	S												
Hardened steel	H												

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)				CVD Coated					PVD Coated								
	W	L	S	r	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	
<b>P3200</b>	D08	8.0	9.50	2.0	4.0													
	D10	10.0	11.50	2.5	5.0													
	D12	12.0	12.00	2.5	6.0													
	D16	16.0	14.00	3.0	8.0													
	D20	20.0	16.00	3.0	10.0													
	D25	25.0	21.50	4.0	12.5													
D30	30.0	25.00	5.0	15.0														
<b>ZPFG</b>	080	8.0	9.70	2.1	4.0													
	100	10.0	12.10	2.7	5.0													
	120	12.0	14.60	3.2	6.0													
	160	16.0	16.60	4.2	8.0													
	200	20.0	20.30	5.2	10.0													
	250	25.0	24.10	6.2	12.5													
	300	30.0	29.20	7.2	15.0													

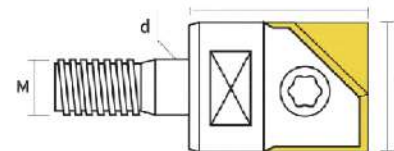
## ARPF Type Ball Precision Modular



mm

Designation	No.of Inserts	Dimension(mm)				Spare parts		
		D	L1	d	M	Screw	wrench	
<b>ARPF</b>	012-M06	1	12	20	6.5	M6	TS50100B	T20
	016-M08	1	16	28	8.5	M8	TS50134B	T20
	020-M10	1	20	30	10.5	M10	TS60167B	T25
	025-M12	1	25	35	12.5	M12	TS60218B	T30
	030-M16	1	30	40	17.0	M16	TS80250B	T30

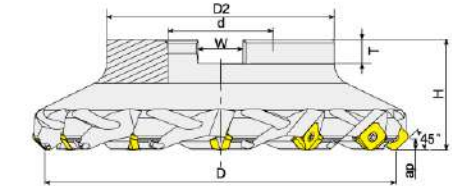
## BNM Type Ball Precision Modular



mm

Designation	No.of Inserts	Dimension(mm)				Spare parts		
		D	L1	d	M	Screw	wrench	
<b>RNM</b>	012-M06	1	12	20	6.5	M6	TS35095B	T15
	016-M08	1	16	28	8.5	M8	TS40132B	T15
	020-M10	1	20	30	10.5	M10	TS50163B	T20
	025-M12	1	25	35	12.5	M12	TS60202B	T25
	030-M16	1	30	40	17.0	M16	TS80252B	T30

## KM Type Shell Mill



mm

Designation	No.of Inserts	Dimension(mm)								
		D	D2	d	W	T	H	ap	Arbor	
<b>KM12</b>	050-22-04T	4	50	64	22	10.4	6.3	50	6.0	A
	063-22-04T	4	63	77	22	10.4	6.3	50	6.0	A
	080-27-05T	5	80	94	27	12.4	7.0	50	6.0	B
	100-32-05T	5	100	114	32	14.4	8.0	50	6.0	B
	125-40-06T	6	125	139	40	16.4	9.0	63	6.0	B
	160-40-06T	6	160	174	40	16.4	9.0	63	6.0	C
	200-60-08T	8	200	210	60	25.7	14.0	63	6.0	C
	250-60-10T	10	250	260	60	25.7	14.0	63	6.0	C

## Parts

TYPE		
	Insert screw	Wrench
KM12	L1160SSTX5.0-7.0P	FF-TPF15

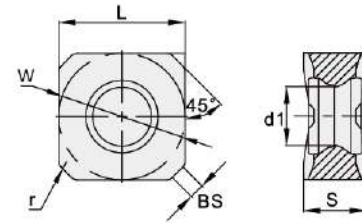




## Available inserts

### SNMX

(Suitable for TWSX45 Type)

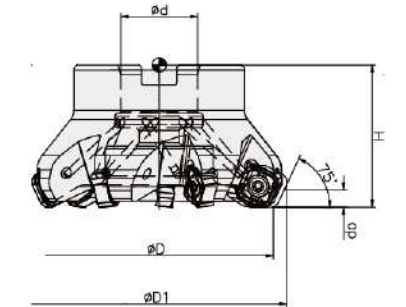


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)							CVD Coated						PVD Coated					
	L	S	W	BS	d1	r	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>SNMX-GM</b> 	1205ANN-GM	12.70	5.54	12.70	1.50	5.8	-	●	○	○	●	●	●	●	●	●	○		
	120512-GM	12.70	5.54	12.70	1.50	5.8	1.2	○	○	○	●	●	○	○	●	○	○		
	1506ANR-GM	5.00	5.60	15.00	1.30	5.5	0.9								●				
<b>SNMX-GR</b> 	1506ANR-GR	15.00	5.60	15.00	1.30	5.5	0.9							●					
	1907ANR-GR	19.00	7.00	19.00	1.67	7.2	1.0			●				●					

## TWSX75 Type Shell Mill



Designation	No. of Inserts	Dimension(mm)					Arbor	kg	
		D	D1	d	ap	H			
<b>TWSX7512</b>	050-22-04T	4	50	55.4	22	9.5	40	A	0.40
	063-22-06T	6	63	68.4	22	9.5	40	A	0.60
	080-27-07T	7	80	85.4	27	9.5	50	A	1.30
	100-32-06T	8	100	105.4	32	9.5	50	A	1.90
	100-32-08T	12	100	105.4	32	9.5	50	A	1.90
	125-40-08T	10	125	130.4	40	9.5	63	B	3.20
	125-40-10T	16	125	130.4	40	9.5	63	B	3.20
	160-40-10T	12	160	165.4	40	9.5	63	C	4.70
	160-40-12T	20	160	165.4	40	9.5	63	C	4.70
	200-60-16T	16	200	205.4	60	9.5	63	C	6.40
	250-60-16T	20	250	255.3	60	9.5	63	C	11.70

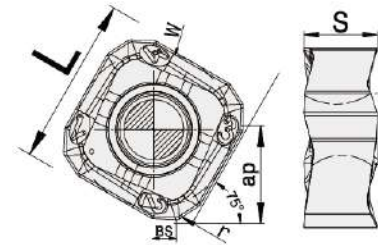
## Parts

TYPE	Insert screw	Wrench
TWSX7512	L1060SSTX4.0-5.7P	FF-TPF15
TWSX8812	L1060SSTX4.0-5.7P	FF-TPF15



## Available inserts

### SNMX12 (Suitable for TWSX75 Type)



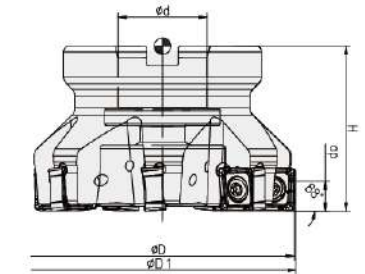
Workpiece	Steel	P	Machining Type	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Stainless steel	M		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)							CVD Coated					PVD Coated					
	L	S	W	BS	r	ap	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235

SNMX-GM	1206ENTN-GM	13.5	7.00	13.50	2.20	0.4	9.5	●	●	●	○	○	○	○	●	●				

## TWSX88 Type Shell Mill



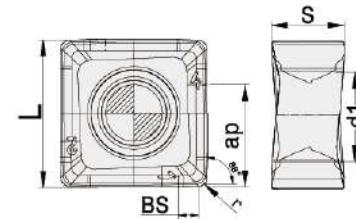
Designation	No. of Inserts	Dimension(mm)					Arbor	kg	
		D	D1	d	ap	H			
<b>TWSX8812</b>	050-22-05T	5	50	51.2	22	12.0	40	A	0.30
	063-22-06T	6	63	64.2	22	12.0	40	A	0.50
	080-27-07T	7	80	81.2	27	12.0	50	A	1.20
	080-27-09T	9	80	81.2	27	12.0	50	A	1.20
	100-32-08T	8	100	101.2	32	12.0	50	B	1.90
	100-32-11T	11	100	101.2	32	12.0	50	B	1.70
	125-40-10T	10	125	126.1	40	12.0	63	B	2.80
	125-40-14T	14	125	126.1	40	12.0	63	B	2.80
	160-40-12T	12	160	161.1	40	12.0	63	C	4.20
	160-40-18T	18	160	161.2	40	12.0	63	C	4.20
	200-40-14T	14	200	201.1	40	12.0	63	C	6.00
	200-40-22T	22	200	201.2	40	12.0	63	C	6.00

## Parts

TYPE		
TWSX7512	L1060SSTX4.0-5.7P	FF-TPF15
TWSX8812	L1060SSTX4.0-5.7P	FF-TPF15

## Available inserts

### SNMX12 (Suitable for TWSX88 Type)



Workpiece	Machining Type	Machining Type													
		●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●											
Stainless steel	M		●												
Cast iron	K														
Non-ferrous metal	N														
Heat resistant alloy, Titanium alloy	S														
Hardened steel	H														

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)					CVD Coated						PVD Coated					
	L	S	BS	r	ap	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235
SNMX-GM	120612-GM	13.5	6.8	-	1.2	12.0	●							●	●		
	120616-GM	13.5	6.8	-	1.6	12.0											

## S\*PD Type Shell Mill

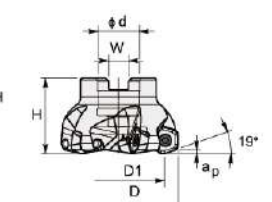
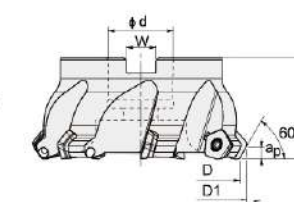
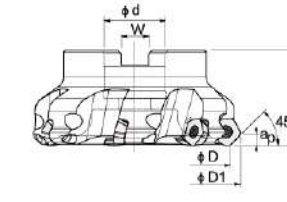


Fig.1



Fig.2

Fig.2

Designation	No. of Inserts	Dimension(mm)								Arbor	kg	Fig.
		D	D1	d	H	W	F	ap				
SEPD09	050-22-04T	4	50	60.8	22	40	10.40	-	4.50	A	0.31	1
	063-22-05T	5	63	73.8	22	40	10.40	-	4.50	A	0.41	1
	080-27-06T	6	80	90.9	27	50	12.40	-	4.50	B	0.95	1
	100-32-07T	7	100	110.9	32	50	14.40	-	4.50	B	1.59	1
	125-40-07T	7	125	135.9	40	63	16.40	-	4.50	B	3.06	1
SSPD09	160-40-09T	9	160	170.9	40	63	16.40	66.70	4.50	C	4.20	1
	040-16-03T	3	40	46.8	16	40	8.40	-	5.50	A	0.18	2
	050-22-04T	4	50	58.8	22	40	10.40	-	5.50	A	0.26	2
	063-22-05T	5	63	71.8	22	40	10.40	-	5.50	A	0.34	2
	080-27-06T	6	80	88.8	27	50	12.40	-	5.50	B	0.81	2
SFPD09	100-32-07T	7	100	108.9	32	50	14.40	-	5.50	B	1.54	2
	125-40-08T	8	125	133.9	40	63	16.40	-	5.50	B	2.78	2
	160-40-10T	10	160	168.9	40	63	16.40	66.70	5.50	C	4.51	2
	050-22-04T	4	50	35.6	22	40	10.40	-	2.00	A	0.23	3
	050-22-05T	5	50	35.6	22	40	10.40	-	2.00	A	0.36	3
SFPD09	063-22-05T	5	63	48.6	22	40	10.40	-	2.00	A	0.33	3
	063-22-06T	6	63	48.6	22	40	10.40	-	2.00	A	0.47	3
	080-27-05T	5	80	65.6	27	50	12.40	-	2.00	B	0.84	3
	080-27-06T	6	80	65.6	27	50	12.40	-	2.00	B	0.88	3
	100-32-06T	6	100	85.6	32	50	14.40	-	2.00	B	1.46	3
	100-32-08T	8	100	85.6	32	50	14.40	-	2.00	B	1.40	3
	125-40-08T	8	125	111.0	40	63	16.40	-	2.00	B	3.16	3
	125-40-10T	10	125	111.0	40	63	16.40	-	2.00	B	3.15	3

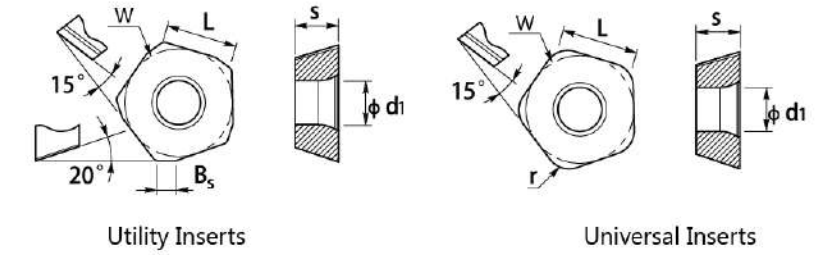


## Parts

TYPE		
	Insert screw	Wrench
SEPD09	L1255SSTX4.5-6.4P	FF-TPF20
SSPD09	L1255SSTX4.5-6.4P	FF-TPF20
SFPD09	L1255SSTX4.5-6.4P	FF-TPF20

## Available Inserts

PD\*\*



Workpiece	Machining Type	Machining Type															
		●	●	*						●	●	*	*	*	*		
Steel	P	●	●	*						●	●	*	*	*	*		
Stainless steel	M		*							●	●	*	*	*	*		
Cast iron	K	*								●	●	*	*	*	*		
Non-ferrous metal	N																
Heat resistant alloy, Titanium alloy	S									●	●	*	*	*	*		
Hardened steel	H													*	*	*	*

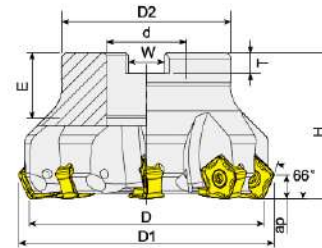
● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)							CVD Coated				PVD Coated								
	L	W	S	BS	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H	
<b>PDKX-GM</b> 	0905ZEER-GM	9.00	13.50	5.47	2.00	-	5.5												●	●
<b>PDKT-GM</b> 	090530ER-GM	9.00	13.50	5.47	-	3.0	5.5												●	●
<b>PDGW</b> 	090530SR	9.00	13.50	5.47	-	3.0	5.5												●	●

TURN LINE  
 THREAD LINE  
 GROOVE LINE  
 MILL LINE  
 DRILL LINE  
 TOOL LINE

TURN LINE  
 THREAD LINE  
 GROOVE LINE  
 MILL LINE  
 DRILL LINE  
 TOOL LINE

## MFPN Type Shell Mill



mm

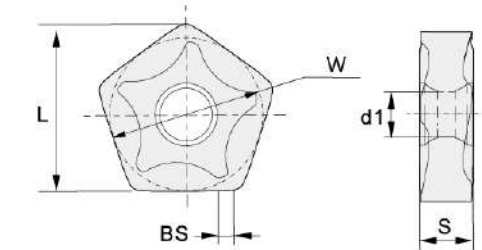
Designation	No.of Inserts	Dimension(mm)										Arbor
		D	D1	D2	d	H	E	T	W	ap		
<b>MFPN66</b>	050-22-04T	4	50	58	48	22	40	21	6.3	10.4	8	A
	050-22-05T	5	50	58	48	22	40	21	6.3	10.4	8	A
	063-22-05T	5	63	71	48	22	40	21	6.3	10.4	8	A
	063-22-07T	7	63	71	48	22	40	21	6.3	10.4	8	A
	080-27-06T	6	80	88	70	27	50	24	7.0	12.4	8	B
	080-27-09T	9	80	88	70	27	50	24	7.0	12.4	8	B
	100-32-07T	7	100	108	78	32	50	30	8.0	14.4	8	B
	100-32-11T	11	100	108	78	32	50	30	8.0	14.4	8	B
	125-40-09T	9	125	133	89	40	63	33	9.0	16.4	8	B
	125-40-13T	13	125	133	89	40	63	33	9.0	16.4	8	B
	160-40-11T	11	160	168	89	40	63	33	9.0	16.4	8	C
	160-40-15T	15	160	168	89	40	63	33	9.0	16.4	8	C
	200-60-13T	13	200	208	140	60	63	35	14.0	25.7	8	C
	200-60-17T	17	200	208	140	60	63	35	14.0	25.7	8	C
	250-60-15T	15	250	258	140	60	63	35	14.0	25.7	8	C
	250-60-19T	15	250	258	140	60	63	35	14.0	25.7	8	C

## Spare Parts

TYPE		
MFPN66	L1060SSTX4.0-5.7P	FF-TPF15

## Available inserts

### PNMU



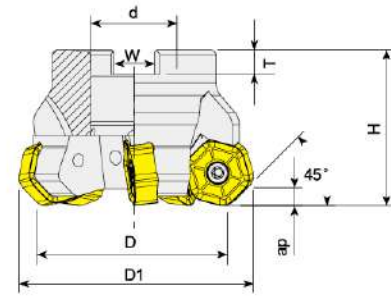
Workpiece	Machining Type										
		●	●	*				●	*	*	*
Steel	P	●	●	*				●	*	*	*
Stainless steel	M		*				●	*	*	*	*
Cast iron	K	*					●	*	*	*	*
Non-ferrous metal	N			●	●	*	●	*	*	*	*
Heat resistant alloy, Titanium alloy	S						●	*	*	*	*
Hardened steel	H							*	*	*	*

● Continuous cutting  
 \* General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)					CVD Coated					PVD Coated							
	L	W	S	BS	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>PNMU-GM</b> 	0905XNER-GM	14.6	12.2	5.56	2.0	4.7	○		○				●	●				



## MFHN45 Type Shell Mill



mm

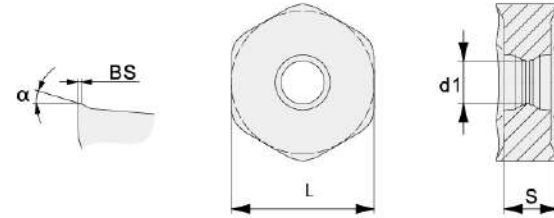
Designation	No. of Inserts	Dimension(mm)								Arbor	kg
		D	D1	d	H	W	T	ap			
<b>MFHN45</b> 6040-16-05T	5	40	47.3	16	40	8.4	5.6	3.0	A	0.37	
6050-22-04T	4	50	57.3	22	40	10.4	6.3	3.0	A	0.62	
6050-22-06T	6	50	57.3	22	40	10.4	6.3	3.0	A	0.41	
6063-22-06T	6	63	70.3	22	40	10.4	6.3	3.0	A	0.56	
6063-22-08T	8	63	70.3	22	40	10.4	6.3	3.0	A	0.69	
6080-27-07T	7	80	86.8	27	50	12.4	7.0	3.0	B	1.10	
6080-27-10T	10	80	86.8	27	50	12.4	7.0	3.0	B	1.19	
6100-32-08T	8	100	107.1	32	50	14.4	8.0	3.0	B	2.07	
6100-32-12T	12	100	107.1	32	50	14.4	8.0	3.0	B	1.82	
6125-40-10T	10	125	132.2	40	63	16.4	9.0	3.0	B	3.62	
6125-40-16T	16	125	132.2	40	63	16.4	9.0	3.0	B	3.62	
<b>MFHN45</b> 8050-22-04T	4	50	61.7	22	40	10.4	6.3	5.0	A	0.38	
8063-22-06T	6	63	74.7	22	40	10.4	6.3	5.0	A	0.54	
8080-27-06T	6	80	91.7	27	50	12.4	7.0	5.0	B	1.06	
8080-27-08T	8	80	91.7	27	50	12.4	7.0	5.0	B	1.06	
8100-32-08T	8	100	111.7	32	50	14.4	8.0	5.0	B	1.76	
8100-32-10T	10	100	111.7	32	50	14.4	8.0	5.0	B	1.76	
8125-40-10T	10	125	136.7	40	63	16.4	9.0	5.0	B	3.36	
8125-40-12T	12	125	136.7	40	63	16.4	9.0	5.0	B	3.36	
8160-40-12T	12	160	171.7	40	63	16.4	9.0	5.0	C	6.46	
8160-40-14T	14	160	171.7	40	63	16.4	9.0	5.0	C	6.45	
8200-60-12T	12	200	211.7	60	63	25.7	14.0	5.0	C	11.37	
8250-60-14T	14	250	261.7	60	63	25.7	14.0	5.0	C	18.50	
8315-60-16T	16	315	326.7	60	63	25.7	14.0	5.0	C	37.00	

## Spare Parts

TYPE		
	Insert screw	Wrench
MFHN45-6	L0755SSTX3.0-4.0P	FF-TPF08
MFHN45-8	L1255SSTX4.5-6.4P	FF-TPF20

## Available inserts

### HNGX



Workpiece	Machining Type	Machining Type											
		●	●	*					●	●	*	●	*
Steel	P	●	●	*					●	●	*	●	*
Stainless steel	M			*					●	●	*	●	*
Cast iron	K	●			●	●	●	●	●	●	*	●	*
Non-ferrous metal	N												
Heat resistant alloy, Titanium alloy	S								●	●	*	*	
Hardened steel	H										*	*	*

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

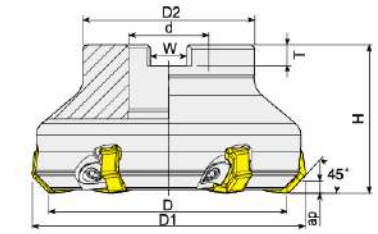
Designations	Dimensions(mm)					CVD Coated					PVD Coated						
	L	S	BS	d1	α	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235

### HNGX



0604ANSN-GM	10.5	4.76	0.09	3.7	23°												●	●
0906ANSN-GM	16.5	6.35	0.12	4.9	22°		●		●	●	●	●		●	●			
0906ANSN-GR	16.5	6.35	0.20	4.9	17°		●		●	●	●	●		●	●			

## TFXN45 Type Shell Mill



Designation	No. of Inserts	Dimension(mm)									Arbor
		D	D1	D2	d	H	ap	T	W		
<b>TFXN4507</b>	063-22-09T	9	63	71	53	22	50	4.0	6.3	10.4	A
	080-27-11T	11	80	88	65	27	50	4.0	7.0	12.4	B
	100-32-14T	14	100	108	80	32	50	4.0	8.0	14.4	B
	125-40-18T	18	125	133	80	40	63	4.0	9.0	16.4	B
	160-40-22T	22	160	168	115	40	63	4.0	9.0	16.4	C
	200-60-28T	28	200	208	160	60	63	4.0	14.0	25.7	C

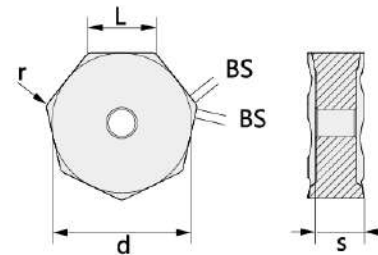
## Parts

TYPE			
TFXN4507	Clamping Wedge Tk4507	Insert screw TI2134	Wrench HW2.0



## Available inserts

### XNHF

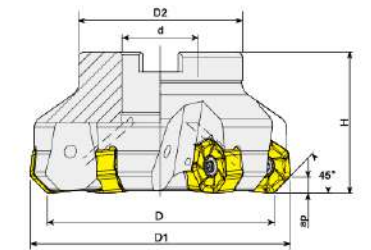


Workpiece	Machining Type	Machining Type										
		●	●	*				●	●	*	*	*
Steel	P	●	●	*				●	●	*	*	*
Stainless steel	M			*				●	●	*	*	*
Cast iron	K	*			●	●	*	●	●	*	*	*
Non-ferrous metal	N											
Heat resistant alloy, Titanium alloy	S							●	●	*	*	*
Hardened steel	H									*	*	*

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)					CVD Coated					PVD Coated						
	L	d	S	BS	r	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235
XNHF-GM	070508-GM	7.0	14.5	5.80	-	0.8				●				●	●		

## MFXN45 Type Shell Mill



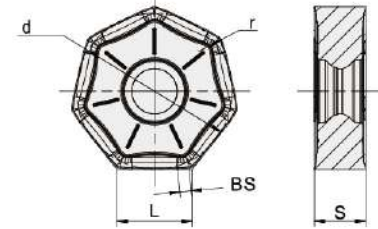
Designation	No.of Inserts	Dimension(mm)						Arbor	
		D	D1	D2	d	H	ap		
MFXN4507	040-16-03T	3	40	49.8	37	16	40	4.4	A
	050-22-04T	4	50	59.8	42	22	40	4.4	A
	050-22-05T	5	50	59.8	42	22	40	4.4	A
	063-22-05T	5	63	72.8	53	22	40	4.4	A
	063-22-06T	6	63	72.8	53	22	40	4.4	A
	080-27-06T	6	80	89.8	65	27	50	4.4	B
	080-27-07T	7	80	89.8	65	27	50	4.4	B
	100-32-07T	7	100	109.8	80	32	50	4.4	B
	100-32-08T	8	100	109.8	80	32	50	4.4	B
	125-40-08T	8	125	134.8	80	40	63	4.4	B
	125-40-10T	10	125	134.8	80	40	63	4.4	B
	160-40-09T	9	160	169.8	115	40	63	4.4	C
	160-40-12T	12	160	169.8	115	40	63	4.4	C

## Parts

TYPE		
MFXN4507	L1260SSTX3.5-5.3P	FF-TPF15

## Available inserts

### XNMU

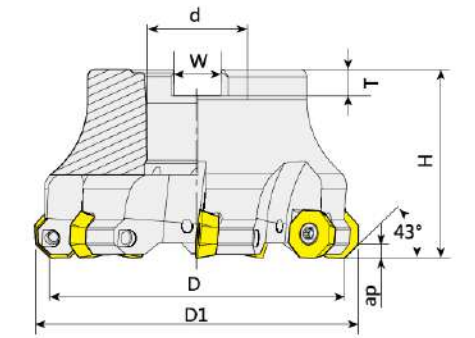


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●		
Steel	P	●	●	●				●	●	●	●	●	●
Stainless steel	M		●					●	●	●	●	●	●
Cast iron	K	●						●	●	●	●	●	●
Non-ferrous metal	N			●	●	●	●	●	●				
Heat resistant alloy, Titanium alloy	S							●	●	●	●		
Hardened steel	H									●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)					CVD Coated					PVD Coated							
	L	d	S	BS	r	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
XNMU-GM	0705ANN-GM	7.0	14.5	5.40	1.1	0.8				●	○			●	●	○		

## SOD45 Type Shell Mill



Designation	No. of Inserts	Dimension(mm)								Arbor
		D	D1	d	H	W	T	ap		
SOD4506	040-16-03T	3	40	50	16	40	8.4	5.6	4.0	A
	050-22-04T	4	50	60	22	40	10.4	6.3	4.0	A
	063-22-05T	5	63	72	22	40	10.4	6.3	4.0	A
	080-27-06T	6	80	90	27	50	12.4	7.0	4.0	A
	100-32-07T	7	100	110	32	50	14.4	8.0	4.0	B
	125-40-08T	8	125	135	40	63	16.4	9.0	4.0	B
	160-40-10T	10	160	170	40	63	16.4	9.0	4.0	C
	200-60-12T	12	200	210	60	63	25.7	14.0	4.0	C

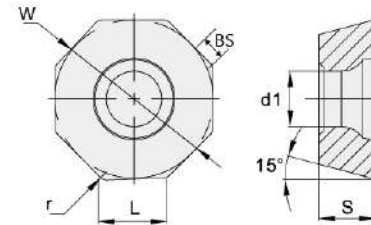
## Parts

TYPE	Insert screw	Wrench
SOD4506	L1260SSTX5.0-7.0P	FF-TPF20



## Available inserts

### ODHT

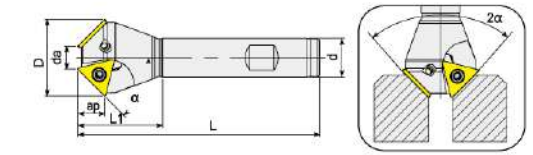


Workpiece	Machining Type	Machining Type																		
		●	●	●	●	●	●	●	●	●	●									
Steel	P	●	●	●																
Stainless steel	M		●																	
Cast iron	K	●																		
Non-ferrous metal	N																			
Heat resistant alloy, Titanium alloy	S																			
Hardened steel	H																			

● Continuous cutting  
 ● General cutting  
 \* Interrupted cutting

Designations	Dimensions(mm)						CVD Coated						PVD Coated						
	L	W	S	BS	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>ODHT-GH</b>	060508-GH	6.58	15.875	5.56	-	0.8	5.6								●	●			

## TC Type Chamfer Cutter



Designation	No. of Inserts	Dimension(mm)							Available Inserts
		D	d	L1	L	da	ap	α	
<b>B15°</b>									
TC11 C20T2-120ap18-22	2	22	20	30	120	18	9.7	15°	TC□□1102**
TC16 C20T1-120ap13-19	1	20	20	30	120	13	14.9	15°	
TC16 C20T2-120ap18-22	1	25	20	30	120	18	14.9	15°	TC□□16T3**
TC16 C20T2-120ap25-32	1	30	20	40	120	25	14.9	15°	
<b>B30°</b>									
TC16 C16T1-120ap6-20	1	20	16	30	120	6	13.4	30°	
TC16 C20T2-120ap18-30	2	30	20	30	120	18	13.4	30°	TC□□16T3**
TC16 C25T2-120ap19-30	2	30	25	30	120	19	13.4	30°	
TC16 C25T2-120ap28-40	2	40	25	40	120	28	13.4	30°	
<b>B45°</b>									
TC11 C12T1-120ap4-15	1	15	12	30	120	4	6.9	45°	TC□□1102**
TC16 C16T2-120ap6-20	1	20	16	30	120	6	10.8	45°	
TC16 C20T1-120ap6-20	1	20	20	30	120	6	10.8	45°	
TC16 C20T1-150ap8-25	1	25	20	40	150	8	10.8	45°	
TC16 C20T2-120ap14-30	2	30	20	30	120	14	10.8	45°	TC□□16T3**
TC16 C25T2-120ap14-30	2	30	25	30	120	14	10.8	45°	
TC16 C25T2-120ap20-40	2	40	25	40	120	20	10.8	45°	
TC16 C25T2-120ap30-50	2	50	25	40	120	30	10.8	45°	
TC16 C20T2-120ap45-60	2	60	25	45	120	45	10.8	45°	
<b>B60°</b>									
TC11 C20T2-120ap6-20	2	20	20	30	120	6	5.0	60°	TC□□1102**
TC11 C20T2-120ap10-25	2	25	20	30	120	10	5.0	60°	
TC16 C16T1-120ap6-20	1	20	16	30	120	6	7.8	60°	
TC16 C20T2-120ap10-30	2	30	20	30	120	10	7.8	60°	TC□□16T3**
TC16 C25T2-120ap10-30	2	30	25	30	120	10	7.8	60°	
TC16 C25T2-120ap17-40	2	40	25	30	120	17	7.8	60°	
<b>B75°</b>									
TC16 C25T2-120ap13-40	2	40	25	30	120	13	4.0	75°	TC□□16T3**

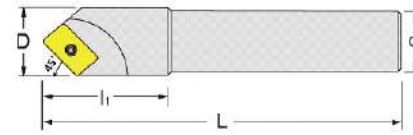
## Parts

TYPE		
	Insert screw	Wrench
B-TC11	L0655SSTX2.5-3.6P	TPF-08
B-TC16	L0960SSTX3.5-5.3P	TPF-15



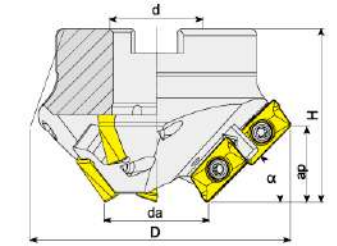


## 45° AP Type Chamfer Cutter



Designation	No.of Inserts	Dimension(mm)				
		D	d	L1	L	Chamfering Range
<b>B45°</b> AP11 C16T1-120ap4-13	1	13	16	30	120	4-13
AP16 C16T1-120ap8-21	1	21	16	35	120	8-21
AP16 C20T1-120ap8-21	1	21	20	35	120	8-21
AP16 C20T2-120ap18-32	2	32	20	35	120	18-32
AP16 C25T2-120ap25-40	2	40	25	35	120	25-40

## AP Type Chamfer Cutter



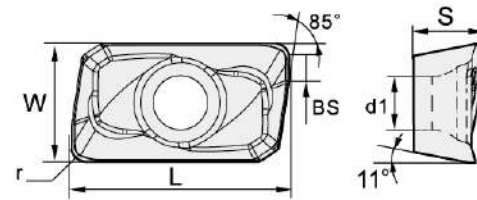
Designation	No.of flute	No.of Inserts	Dimension(mm)						
			D	da	d	H	ap	a	
<b>B15°</b> AP16-D3593-A27-Z0306	3	6	93	35	27	50	8.0	15	
<b>B30°</b> AP16-D3587-A27-Z0306	3	6	87	35	27	50	15.0	30	
<b>B45°</b> AP16-D3577-A27-Z0306	3	6	77	35	27	50	21.5	45	
<b>B60°</b> AP16-D3565-A22-Z0306	3	6	65	35	22	50	26.5	60	
<b>B75°</b> AP16-D3550-A22-Z0306	3	6	50	35	22	50	29.5	75	

## Parts

TYPE		
B-AP11	L0655SSTX2.5-3.6P	TPF-08
B-AP16	L0960SSTX4.0-5.7P	TPF-15

## Available inserts

### APMT

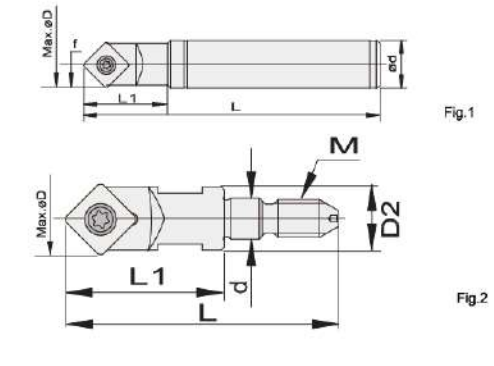


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

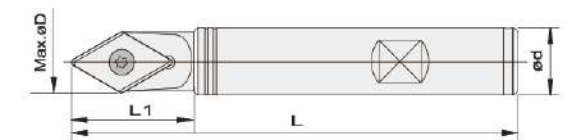
Designations	Dimensions(mm)						CVD Coated						PVD Coated					
	L	W	S	BS	r	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
APMT-H2	1135PDER-H2	11.0	6.350	3.50	1.2	0.80	●	●	●	●	●	●	●	●	●	●	●	
	1604PDER-H2	16.5	9.525	4.76	1.7	0.80	●	●	●	●	●	●	●	●	●	●	●	
APMT-M2	1135PDER-M2	11.0	6.350	3.50	1.2	0.80	●	●	●	●	●	●	●	●	●	●	●	
	1604PDER-M2	16.5	9.525	4.76	1.7	0.80	●	●	●	●	●	●	●	●	●	●	●	
APMT-XM	1135PDER-XM	11.0	6.350	3.50	1.2	0.80	●	●	○	●	○	●	●	●	●	●	●	
	1604PDER-XM	16.5	9.525	4.76	1.7	0.80	●	●	○	●	○	●	●	●	●	●	●	

## 90° Multi-pupose Chamfer Cutter



Designation	No. of Inserts	Dimension(mm)								Spare parts		
		Dmax	d	f	L1	L	M	D2	Fig	Screw	Wrench	
DX45	SD06C08T1-080L	1	8	8.0	4.75	-	80	-	-	1	NS25065B	TPF-08
	SD09C12T1-120L	1	14	12.0	6.75	29	120	-	-	1	NS35080B	TPF-15
SSP	1008-20-M04-1T-06	1	10	4.5	4.75	20	32	M4	7.8	2	NS25065B	TPF-08
	1412-30-M06-1T-09	1	14	6.5	6.75	30	45	M6	11.0	2	NS35080B	TPF-15

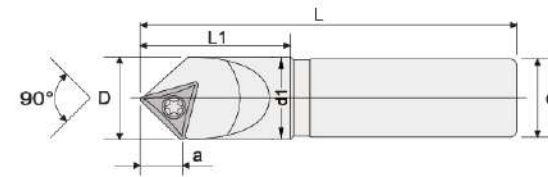
## 60° Multi-pupose Chamfer Cutter



Designation	No. of Inserts	Dimension(mm)				Spare parts		
		Dmax	d	L1	L	Screw	Wrench	
SSP	0808-080L-60°-07	1	9	8.0	-	80	NS25065B	TPF-08
	1616-110L-60°-11	1	13	16.0	29	110	NS40080B	TPF-15



## 90° Multi-purpose Chamfer Cutter



Designation	No. of Inserts	Dimension(mm)							Spare parts	
		D	d1	d	a	L1	L	Screw	Wrench	
<b>DX45</b> TC09R0.4-C12T1-120L	1	13.8	11.8	12	6.05	26	120	NS22050B	TPF-06	
TC16R0.4-C20T1-120L	1	22.5	19.0	20	11.30	50	120	NS40080B	TPF-15	
TC16R0.8-C20T1-120L	1	22.5	19.0	20	11.30	50	120	NS40080B	TPF-15	

mm

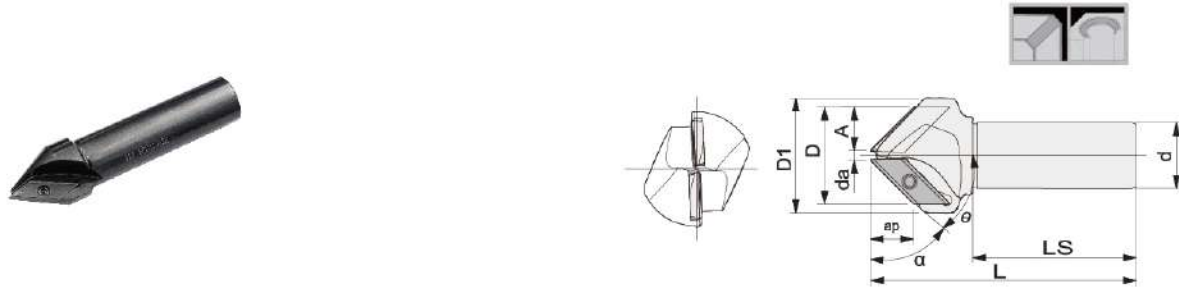
## Available inserts

Workpiece	Machining Type																					
		P	M	K	N	S	H	●	●	●	●	●	●									
Steel	P	●	●	●																		
Stainless steel	M		●																			
Cast iron	K			●																		
Non-ferrous metal	N				●																	
Heat resistant alloy, Titanium alloy	S					●																
Hardened steel	H																					

Designations	Dimensions(mm)					CVD Coated					PVD Coated											
	L	W	S	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H				
<b>TCEX-AR</b> 	090204E-AR	9.60	5.56	2.5	0.4	2.80																
	16T304E-AR	16.50	9.525	3.97	0.4	4.45																
	16T308E-AR	16.50	9.525	3.97	0.8	4.45																
<b>DCEX-AR</b> 	070204E-AR	7.80	6.35	2.38	0.4	2.80																
	11T304E-AR	11.60	9.525	3.97	0.4	4.40																
<b>SDEX-AR</b> 	060204E-AR	6.00	6.0	2.38	0.4	2.80																
	090408E-AR	9.53	9.53	4.8	0.8	4.40																

## ECC Type Chamfer Cutter

Chamfering endmill, screw clamp system, for large parallelogram inserts



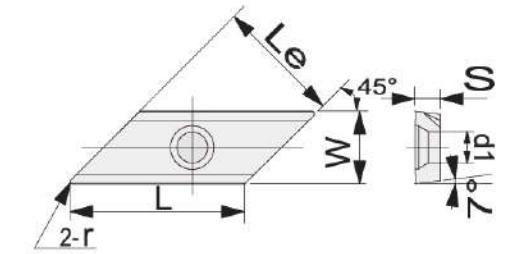
ECC	Designation	No.of Inserts	Dimension(mm)										Arbor
			D1	D	d	da	A	L	LS	$\alpha$	$\theta$	ap	
	17005R-30	2	26	20	12	11	7.5	78	40	30°	60°	13.5	S
	17005R-45	2	36	27	12	5	11.0	78	40	45°	45°	11.0	S
	17005R-60	2	44	32	12	5	13.5	78	40	60°	30°	7.5	S
	31005R-30	1	40	34	32	5	14.5	130	80	30°	60°	25.5	S
	31005R-45	2	56	46	32	5	20.5	130	80	45°	45°	20.5	S
	31005R-45-3071	2	81	71	32	30	20.5	130	80	45°	45°	20.5	S
	31005R-60	2	72	55	32	5	20.5	130	80	60°	30°	14.5	S

## Parts

TYPE	Insert screw	Wrench
ECC-17	L1060SSTX4.0-5.7P	TPF-15
ECC-31	L1260SSTX5.0-7.0P	TPF-20

## Available inserts

### XCET

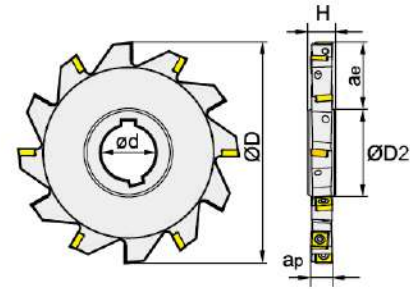


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●		
Steel (P)	●	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel (M)	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron (K)	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal (N)	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy (S)	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel (H)	●	●	●	●	●	●	●	●	●	●	●	●	●

Designations	Dimensions(mm)						CVD Coated					PVD Coated							
	L	W	S	Le	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
XCET 170404ER	17.12	9.525	4.0	12.0	0.4	5.0								●					
XCET 310404ER	30.15	12.70	4.5	22.0	0.4	5.5								●					



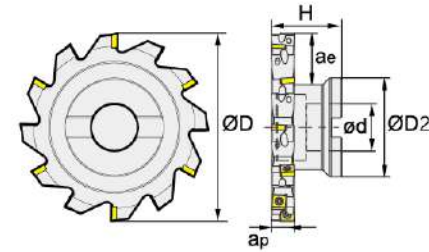
## PT01 Type Full Side Milling Cutter



mm

Designation	No.of Inserts	Dimension(mm)						kg	
		D	D2	d	ap	H	ae		
<b>PT01.06</b>	J27.080.10.ap08	10	80	41	27	8	12	17.6	0.20
	J32.100.14.ap08	14	100	47	32	8	12	25.1	0.30
	J32.100.14.ap10	14	100	47	32	10	14	25.1	0.40
<b>PT01.08</b>	J40.125.16.ap10	16	125	55	40	10	14	33.6	0.60
	J40.125.12.ap12	12	125	55	40	12	16	32.6	0.70
<b>PT01.12</b>	J40.160.12.ap12	12	160	62	40	12	16	31.5	1.30
	J40.160.12.ap16	12	160	62	40	16	20	47.6	1.60
	J40.160.12.ap18	12	160	62	40	18	24	47.3	1.90
	J40.160.12.ap20	12	160	62	40	20	26	47.3	2.10
	J50.200.14.ap16	14	200	72	50	16	20	62.6	2.50
	J50.200.14.ap18	14	200	72	50	18	24	62.3	2.90
	J50.200.14.ap20	14	200	72	50	20	26	62.3	3.30

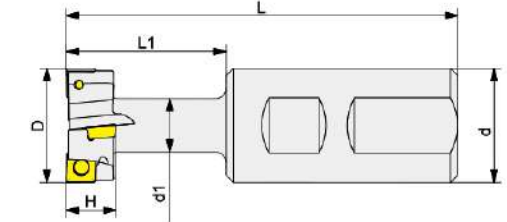
## PT01 Type Side Milling Cutter



mm

Designation	No.of Inserts	Dimension(mm)						Arbor	kg	
		D	D2	d	ap	H	ae			
<b>PT01.06</b>	A22.080.10.ap08	10	80	45	22	8	40.0	21.0	A	0.40
	B27.100.14.ap08	14	100	55	27	8	40.0	24.5	B	0.60
	B27.100.14.ap10	14	100	55	27	10	40.0	24.5	B	0.70
	B32.125.16.ap10	16	125	65	32	10	45.0	33.3	B	1.10
<b>PT01.08</b>	B32.125.12.ap12	12	125	65	32	12	45.0	33.0	B	1.40
	B40.160.14.ap12	14	160	80	40	12	45.0	44.0	B	1.90
	C40.200.18.ap12	18	200	92	40	12	50.0	52.0	C	3.20
<b>PT01.12</b>	B32.125.12.ap16	12	125	65	32	16	50.0	33.0	B	2.30
	B40.160.12.ap16	12	160	80	40	16	60.0	45.0	B	2.30
	B40.160.12.ap18	12	160	80	40	18	60.0	45.0	B	2.40
	C40.200.14.ap16	14	200	92	40	16	50.0	52.0	C	3.60
	C40.200.14.ap18	14	200	92	40	18	50.0	52.0	C	3.90
C40.200.14.ap20	14	200	92	40	20	50.0	52.0	C	4.20	

## PT01 Type T-Cutter



mm

Designation	No.of Inserts	Dimension(mm)						
		D	d	d1	L	L1	H	
<b>PT01.06</b>	W25.021.01.H09	1	21	25	10	100	32	9
	W25.025.01.H11	1	25	25	12	100	35	11
<b>PT01.08</b>	W32.032.02.H14	2	32	32	15	110	45	14
<b>PT01.12</b>	W32.040.02.H18	2	40	32	19	125	55	18
	W40.050.02.H22	2	50	40	25	140	65	22

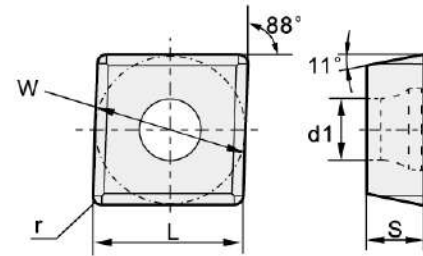
## Parts

TYPE		
	Insert screw	Wrench
PT01.06	L0655SSTX2.5-3.6P	TFP-08
PT01.08	L0750SSTX3.0-4.0P	TFP-08
PT01.12	L1160SSTX5.0-7.0P	TFP-15



## Available inserts

### MPHT

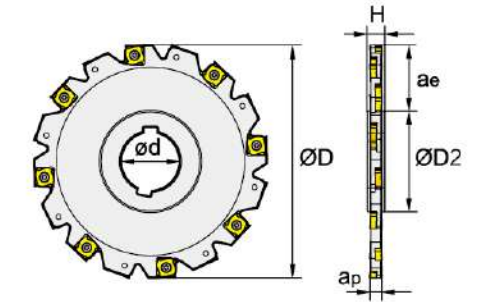


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

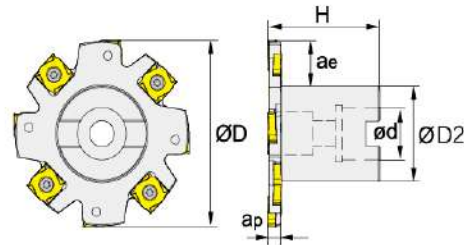
Designations	Dimensions(mm)						CVD Coated						PVD Coated						
	L	W	S	r	d1		TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
<b>MPHT-GM</b>	060304-GM	6.35	6.35	3.18	0.4	2.80	○	●	○	●			○	●	●	○			
	080305-GM	8.30	8.30	3.18	0.5	3.40	○	●	○	●			○	●	●	○			
	120408-GM	12.70	12.70	4.76	0.8	5.56	○	●	○	●			○	●	●	○			

## PT02 Type Full Side Milling Cutter



Designation	No. of Inserts	Dimension(mm)							kg
		D	D2	d	ap	H	ae		
<b>PT02.1202</b>	J27.100.10.ap04	10	100	40.7	27	4	12	25	0.20
	J40.125.12.ap04	12	125	50.5	40	4	12	32	0.30
	J40.160.16.ap04	16	160	66.7	40	4	12	44	0.50
<b>PT02.1203</b>	J27.100.10.ap05	10	100	45.0	27	5	12	25	0.20
	J40.125.12.ap05	12	125	58.0	40	5	12	32	0.30
	J40.160.16.ap05	16	160	68.0	40	5	12	44	0.60
<b>PT02.12T3</b>	J27.100.10.ap06	10	100	45.0	27	6	12	25	0.30
	J40.125.12.ap06	12	125	58.0	40	6	12	32	0.40
	J40.160.16.ap06	16	160	68.0	40	6	12	44	0.70
	J50.200.18.ap06	18	200	72.0	50	6	12	62	1.10
	J50.250.24.ap06	24	250	72.0	50	6	12	87	1.70
	<b>PT02.1204</b>	J27.100.10.ap07	10	100	45.0	27	7	12	25
J40.125.12.ap07		12	125	58.0	40	7	12	32	0.40
J40.160.16.ap07		16	160	68.0	40	7	12	44	0.80
	J50.200.18.ap07	18	200	72.0	50	7	12	62	1.20
	J50.250.24.ap07	24	250	72.0	50	7	12	87	1.90
	<b>PT02.12T4</b>	J27.100.10.ap08	10	100	45.0	27	8	12	25
J40.125.12.ap08		12	125	58.0	40	8	12	32	0.50
J40.160.16.ap08		16	160	68.0	40	8	12	44	0.90
	J50.200.18.ap08	18	200	72.0	50	8	12	62	1.40
	J50.250.24.ap08	24	250	72.0	50	8	12	87	2.20

## PT02 Type Full Side Milling Cutter



mm

Designation	No. of Inserts	Dimension(mm)						Arbor	kg		
		D	D2	d	ap	H	ae				
<b>PT02.1202</b>	A22.063.06.ap04	6	63	32	22	4	40	14	A	0.20	
	A22.080.08.ap04	8	80	40	22	4	50	18	A	0.40	
	A27.100.10.ap04	10	100	48	27	4	50	23	A	0.60	
<b>PT02.1203</b>	A22.063.06.ap05	6	63	32	22	5	40	14	A	0.20	
	A22.080.08.ap05	8	80	40	22	5	50	18	A	0.40	
	A27.100.10.ap05	10	100	48	27	5	50	23	A	0.70	
<b>PT02.12T3</b>	A22.063.06.ap06	6	63	32	22	6	40	14	A	0.20	
	A22.080.08.ap06	8	80	40	22	6	50	18	A	0.50	
	A27.100.10.ap06	10	100	48	27	6	50	23	A	0.70	
B40.125.12.ap06		12	125	70	40	6	50	23	B	1.00	
	B40.160.16.ap06	16	160	70	40	6	50	41	B	1.30	
	<b>PT02.1204</b>	A22.063.06.ap07	6	63	32	22	7	40	14	A	0.20
		A22.080.08.ap07	8	80	40	22	7	50	18	A	0.50
A27.100.10.ap07		10	100	48	27	7	50	23	A	0.70	
	B40.125.12.ap07	12	125	70	40	7	50	23	B	1.10	
	B40.160.16.ap07	16	160	70	40	7	50	41	B	1.40	
<b>PT02.12T4</b>	A22.063.06.ap08	6	63	32	22	8	40	14	A	0.20	
	A22.080.08.ap08	8	80	40	22	8	50	18	A	0.50	
	A27.100.10.ap08	10	100	48	27	8	50	23	A	0.80	
	B40.125.12.ap08	12	125	70	40	8	50	23	B	1.10	
B40.160.16.ap08	16	160	70	40	8	50	41	B	1.50		

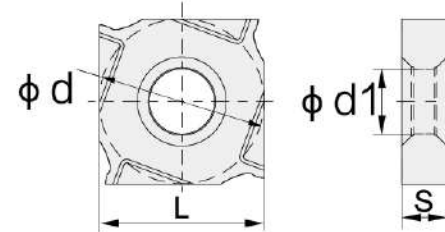
## Parts

TYPE		
	Insert screw	Wrench
PT02.1202	191 M4.0x3.2X	FF-TPF09
PT02.1203	191 M4.0x3.2X	FF-TPF15
PT02.12T3	191 M4.0x5.1X	FF-TPF15
PT02.1204	191 M4.0x6.1X	FF-TPF15
PT02.12T4	191 M4.0x7.1X	FF-TPF15



## Available Inserts

### XSEQ

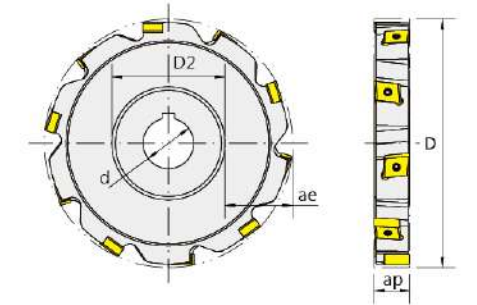


Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

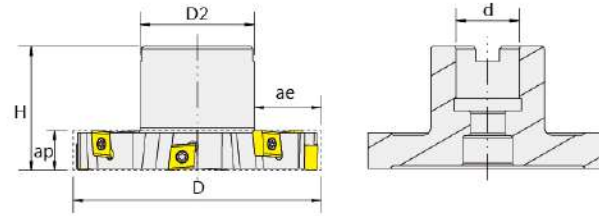
Designations	Dimensions(mm)				CVD Coated						PVD Coated						
	L	d	S	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
XSEQ	1202	12.70	12.7	2.3	5.00								●				
	1203	12.70	12.7	3.0	5.00								●				
	12T3	12.70	12.7	3.5	5.00								●				
	1204	12.70	12.7	4.0	5.00								●				
	12T4	12.70	12.7	4.5	5.00												

## TSCN Type Full Side Milling Cutter



Designation	No. of Inserts	Dimension(mm)					kg	
		D	D2	d	ap	ae		
TSCN10	J27.080.06.ap14	6	80	44	27	14	18	0.30
	J27.100.08.ap14	8	100	48	27	14	26	0.50
	J32.125.10.ap14	10	125	55	32	14	35	0.90
	J40.160.12.ap14	12	160	68	40	14	46	1.09
	J50.200.16.ap14	16	200	78	50	14	61	1.79
TSCN12	J50.250.20.ap14	20	250	86	50	14	82	2.88
	J27.080.06.ap18	6	80	44	27	18	18	0.30
	J27.100.08.ap18	8	100	48	27	18	26	0.50
	J32.125.10.ap18	10	125	55	32	18	35	0.90
	J40.160.12.ap18	12	160	68	40	18	46	1.09
TSCN16	J50.200.16.ap18	16	200	78	50	18	61	1.79
	J50.250.20.ap18	20	250	86	50	18	82	2.88
	J27.080.06.ap22	6	80	44	27	22	18	0.30
	J27.100.08.ap22	8	100	48	27	22	26	0.50
	J32.125.10.ap22	10	125	55	32	22	35	0.90
TSCN16	J40.160.12.ap22	12	160	68	40	22	46	1.09
	J50.200.16.ap22	16	200	78	50	22	61	1.79
	J50.250.20.ap22	20	250	86	50	22	82	2.88

## TSCN Type Full Side Milling Cutter



mm

Designation	No. of Inserts	Dimension(mm)							Arbor	kg
		D	D2	d	ap	H	ae			
<b>TSCN10</b>	A27.080.06.ap16	6	80	48	27	16	50	15	A	0.35
	B27.100.08.ap16	8	100	48	27	16	50	25	B	0.61
	B32.125.10.ap16	10	125	58	32	16	50	32	B	1.01
	B40.160.12.ap16	12	160	70	40	16	50	43	B	1.75
	C40.200.16.ap16	16	200	88	40	16	50	55	C	2.63
<b>TSCN12</b>	C60.250.20.ap16	20	250	112	60	16	50	68	C	5.86
	A27.080.06.ap20	6	80	48	27	20	50	15	A	0.35
	B27.100.08.ap20	8	100	48	27	20	50	25	B	0.61
	B32.125.10.ap20	10	125	58	32	20	50	32	B	1.01
	B40.160.12.ap20	12	160	70	40	20	50	43	B	1.75
<b>TSCN16</b>	C40.200.16.ap20	16	200	88	40	20	50	55	C	2.63
	C60.250.20.ap20	20	250	112	60	20	50	68	C	5.86
	A27.080.06.ap24	6	80	48	27	24	50	15	A	0.35
	B27.100.08.ap24	8	100	48	27	24	50	25	B	0.61
	B32.125.10.ap24	10	125	58	32	24	50	32	B	1.01
<b>TSCN16</b>	B40.160.12.ap24	12	160	70	40	24	50	43	B	1.75
	C40.200.16.ap24	16	200	88	40	24	50	55	C	2.63
	C60.250.20.ap24	20	250	112	60	24	50	68	C	5.86

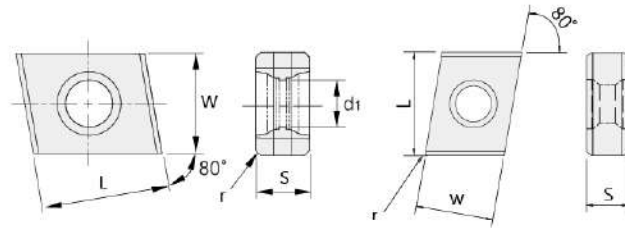
## Parts

TYPE		
	Insert screw	Wrench
TSCN10	L1160SSTX4.0-5.5P	FF-TPF15
TSCN12	L1160SSTX4.0-5.5P	FF-TPF15
TSCN16	L1360SSTX5.0-7.2P	FF-TPF20



## Available Inserts

### CNHX

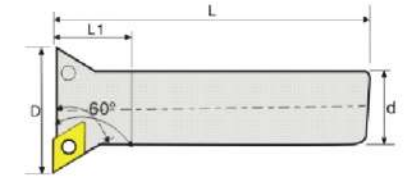


Workpiece	Steel	P	Machining Type	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Stainless steel	M		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

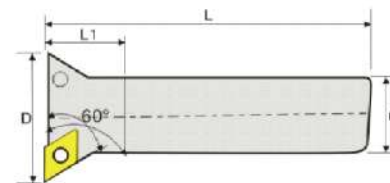
Designations	Dimensions(mm)						CVD Coated						PVD Coated					
	L	W	S	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
CNHX-GR	100508-GR	10.3	10.03	5.4	0.8	4.7							●					
	120508-GR	12.7	11.00	5.6	0.8	4.7							●					
	160608-GR	16.0	12.00	6.4	0.8	5.9							●					

## DCW60 Type Dovetail Slot Cutter



Designation	No. of Inserts	Dimension(mm)				Available Inserts
		D	d	L1	L	
DCW60	25-C16-120L-2T-07	25	16	25	120	DC□□0702**
	25-C20-120L-2T-07	25	20	25	120	
	30-C20-120L-3T-07	30	20	25	120	DC□□11T3**
	40-C25-160L-3T-11	40	25	25	160	
	50-C32-160L-3T-11	50	32	30	160	
	60-C32-160L-4T-11	60	32	30	160	
	80-C32-160L-5T-11	80	32	30	160	

## DCW55 Type Dovetail Slot Cutter



Designation		No. of Inserts	Dimension(mm)				Available Inserts
			D	d	L1	L	
<b>DCW55</b>	25-C16-120L-2T-07	2	25	16	25	120	DC□□0702**
	25-C20-120L-2T-07	2	25	20	25	120	
	30-C20-120L-3T-07	3	30	20	25	120	
	40-C25-160L-3T-11	3	40	25	25	160	
	50-C32-160L-3T-11	3	50	32	30	160	DC□□11T3**
	60-C32-160L-4T-11	4	60	32	30	160	
	80-C32-160L-5T-11	5	80	32	30	160	

## Parts

TYPE	Insert screw	Wrench
DCW-07	TS25060A	T-8
DCW-11	TS40090A	T-15

## MFT Carbide Modular Head Holder

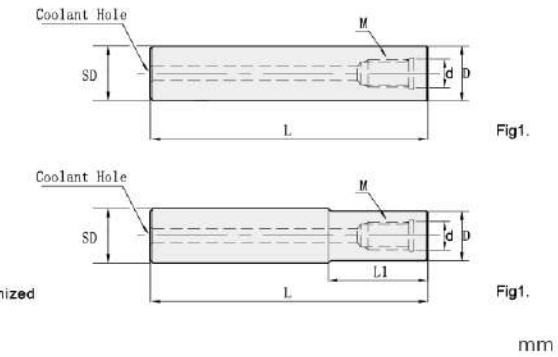


A: standard



B: customization

The size of the clearance space is customized according to customer requirements



Designation	Dimension(mm)					Shape
	D	SD	d	L	M	
<b>MFT08</b>	08-100-M04	8.0	8	4.5	100	M4
<b>MFT10</b>	10-100-M05	10.1	10	5.5	100	M5
	10-150-M05	10.0	10	5.5	150	M5
<b>MFT12</b>	10-100-M06	10.0	10	6.5	100	M6
	10-150-M06	10.0	10	6.5	150	M6
<b>MFT15</b>	12-100-M06	12.0	12	6.5	100	M6
	12-150-M06	12.0	12	6.5	150	M6
<b>MFT15.6</b>	12-200-M06	12.0	12	6.5	200	M6
	15-100-M08	15.0	15	8.5	100	M8
<b>MFT16</b>	15-150-M08	15.0	15	8.5	150	M8
	15-200-M08	15.0	15	8.5	200	M8
<b>MFT15.6</b>	15-250-M08	15.0	15	8.5	250	M8
	15.6-100-M08	15.6	15.6	8.5	100	M8
<b>MFT16</b>	15.6-150-M08	15.6	15.6	8.5	150	M8
	15.6-200-M08	15.6	15.6	8.5	200	M8
<b>MFT19</b>	15.6-250-M08	15.6	15.6	8.5	250	M8
	16-100-M08	16.0	16	8.5	100	M8
<b>MFT20</b>	16-150-M08	16.0	16	8.5	150	M8
	16-200-M08	16.0	16	8.5	200	M8
<b>MFT24</b>	16-250-M08	16.0	16	8.5	250	M8
	19-100-M10	19.0	19	10.5	100	M10
<b>MFT20</b>	19-200-M10	19.0	19	10.5	200	M10
	19-250-M10	19.0	19	10.5	250	M10
<b>MFT24</b>	20-100-M10	20.0	20	10.5	100	M10
	20-150-M10	20.0	20	10.5	150	M10
<b>MFT24</b>	20-200-M10	20.0	20	10.5	200	M10
	20-250-M10	20.0	20	10.5	250	M10
<b>MFT24</b>	24-150-M12	24.0	24	12.5	150	M12
	24-200-M12	24.0	24	12.5	200	M12
<b>MFT24</b>	24-250-M012	24.0	24	12.5	250	M12
	24-300-M012	24.0	24	12.5	300	M12



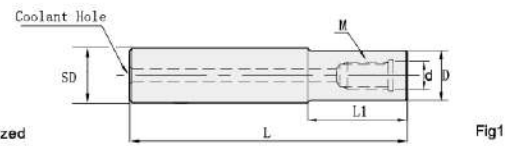
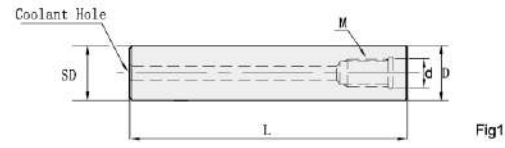
## MFT Carbide Modular Head Holder



A: standard



B: customization



The size of the clearance space is customized according to customer requirements

mm

Designation		Dimension(mm)					Shape
		D	SD	d	L	M	
<b>MFT25</b>	25-150-M12	25.0	25	12.5	150	M12	Fig.1
	25-200-M12	25.0	25	12.5	200	M12	
	25-250-M12	25.0	25	12.5	250	M12	
	25-300-M12	25.0	25	12.5	300	M12	
<b>MFT32</b>	32-200-M26	32.0	32	17.0	200	M12	
	32-250-M16	32.0	32	17.0	250	M12	
	32-300-M16	32.0	32	17.0	300	M12	
	32-350-M16	32.0	32	17.0	350	M12	
	32-400-M16	32.0	32	17.0	400	M12	

Type B does not have any inventory, which needs to be produced, and can also be customized according to the customer's size

mm

Designation		Dimension(mm)					Shape	
		D	SD	d	L1	L		M
<b>MFT10</b>	9.5-100-M06	9.5	10	5.5	40	100	M6	Fig.2
	9.5-150-M06	9.5	10	5.5	80	150	M6	
<b>MFT12</b>	11.5-100-M06	11.5	12	6.5	40	100	M6	
	11.5-150-M06	11.5	12	6.5	80	150	M6	
	11.5-200-M06	11.5	12	6.5	120	200	M6	
<b>MFT16</b>	15.5-100-M08	15.5	16	8.5	40	100	M8	
	15.5-150-M08	15.5	16	8.5	80	150	M8	
	15.5-200-M08	15.5	16	8.5	120	200	M8	
<b>MFT20</b>	15.5-250-M08	15.5	16	8.5	160	250	M8	
	19.5-100-M10	19.5	20	10.5	40	100	M10	
	19.5-150-M10	19.5	20	10.5	80	150	M10	
	19.5-200-M10	19.5	20	10.5	120	200	M10	
<b>MFT25</b>	19.5-250-M10	19.5	20	10.5	160	250	M10	
	24.3-150-M12	24.3	25	12.5	70	150	M12	
	24.3-200-M12	24.3	25	12.5	100	200	M12	
	24.3-250-M12	24.3	25	12.5	150	250	M12	
	24.3-300-M12	24.3	25	12.5	200	300	M12	

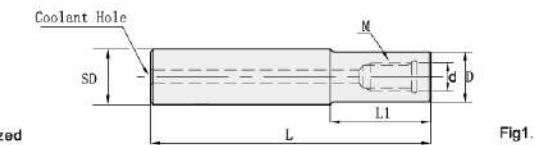
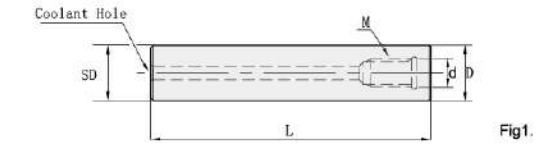
## MFT Carbide Modular Head Holder



A: standard



B: customization



The size of the clearance space is customized according to customer requirements

mm

Designation		Dimension(mm)					Shape	
		D	SD	d	L1	L		M
<b>MFT32</b>	29.0-150-M16	29.0	32	17.0	70	150	M32	Fig.2
	29.0-200-M16	29.0	32	17.0	120	200	M32	
	29.0-250-M16	29.0	32	17.0	150	250	M32	
	29.0-300-M16	29.0	32	17.0	200	300	M32	
	29.0-350-M16	29.0	32	17.0	250	350	M32	
	29.0-400-M16	29.0	32	17.0	300	400	M32	

4
D
B
E
040

1
2
3
4
5

**1 No. Of flutes** 4 D B E 040 04 200 V10 060 X

2. Flutes

2

3. Flutes

3

4. Flutes

4

6. Flutes

6

**2 Series** 4 D B E 040 04 200 V10 060 X

D: Graphite, Non-ferrous Endmill    CP: Composite Router Endmill    R: Ronghing ,Endmill  
 N: Endmill for general usage    A: Aluminum Endmill    A: Micro, Endmill  
 V: Variable Endmill    SP: Stainless Steel

**3 Type** 4 D B E 040 04 200 V10 060 X

Flat type

F

Ball type

B

Radius type

R

**4 Endmill** 4 D B E 040 04 200 V10 060 X

**5 Cutting dia** 4 D B E 040 04 200 V10 060 X

Notation	ØD (mm)
040	Ø4.0
060	Ø6.0
080	Ø8.0
100	Ø10.0

04
200
V10
60
X

6
7
8
9
10

**6 Shank diameter** 4 D B E 040 04 200 V10 060 X

Shank diameter	
Notation	Ød (mm)
06	Ø6
08	Ø8
10	Ø10
12	Ø12
16	Ø16

**7 Corner radius** 4 D B E 040 04 200 V10 060 X

Corner radius	
Notation	R (mm)
020	r 0.2
050	r 0.5
100	r 1.0
150	r 1.5

**8 Taper length** 4 D B E 040 04 200 V10 060 X

Taper length	
Notation	(mm)
V05	5
V10	10
V15	15

**9 Over length** 4 D B E 040 04 200 V10 060 X

Overall length	
Notation	L (mm)
050	50
080	80
100	100

**10 Over length** 4 D B E 040 04 200 V10 060 X

X: Special

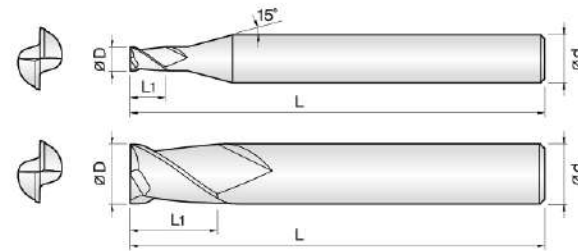
※ This code system is only for common endmills

TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE

TURN LINE  
THREAD LINE  
GROOVE LINE  
MILL LINE  
DRILL LINE  
TOOL LINE



## 2 Flutes Standard Length Endmills

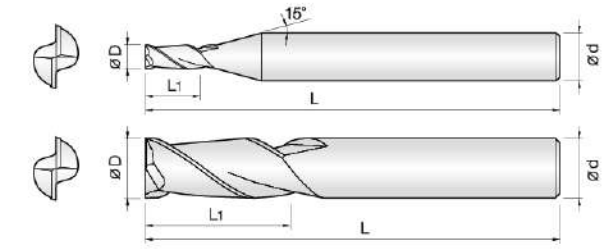


ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

(mm)

Order Code	φD	φd	L1	L	Coating		
					~HRC52	HRC50~62	HRC52~68
					TT550	TS600	N400
<b>2NFE</b> 01004000V03050	1.0	4	3	50	●	●	●
01504000V04050	1.5	4	4	50			
02002000V06050	2.0	2	6	50			
02004000V06050	2.0	4	6	50	●	●	●
02504000V08050	2.5	4	8	50			
03003000V08050	3.0	3	8	50	●	●	●
03004000V08050	3.0	4	8	50	●	●	●
03504000V11050	3.5	4	11	50			
04004000V11050	4.0	4	11	50	●	●	●
05005000V13050	5.0	5	13	50	●	●	●
05006000V13050	5.0	6	13	50	●	●	●
06006000V15050	6.0	6	15	50	●	●	●
07008000V20060	7.0	8	20	60	●	●	●
08008000V20060	8.0	8	20	60	●	●	●
09010000V25075	9.0	10	25	75	●	●	●
10010000V25075	10.0	10	25	75	●	●	●
12012000V30075	12.0	12	30	75	●	●	●
14014000V35080	14.0	14	35	80	●	●	●
16016000V45100	16.0	16	45	100	●	●	●
18018000V45100	18.0	18	45	100			
20020000V45100	20.0	20	45	100			

## 2 Flutes Long Length Endmills

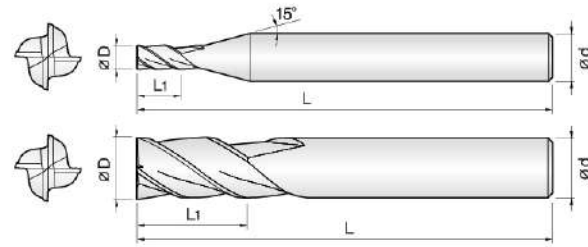
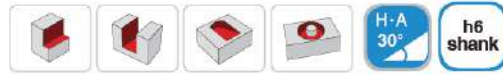


ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

(mm)

Order Code	φD	φd	L1	L	Coating		
					~HRC52	HRC50~62	HRC52~68
					TT550	TS600	N400
<b>2NFE</b> 03003000V09075	3.0	3	9	75	●	●	●
03004000V09075	3.0	4	9	75	●	●	●
03003000V12100	3.0	3	12	100	●	●	●
03004000V12100	3.0	4	12	100	●	●	●
04004000V12075	4.0	4	12	75	●	●	●
04004000V16100	4.0	4	16	100	●	●	●
06006000V18075	6.0	6	18	75	●	●	●
06006000V24100	6.0	6	24	100	●	●	●
06006000V30150	6.0	6	30	150	●	●	●
08008000V24075	8.0	8	24	75	●	●	●
08008000V32100	8.0	8	32	100	●	●	●
08008000V40150	8.0	8	40	150	●	●	●
10010000V40100	10.0	10	40	100	●	●	●
10010000V50150	10.0	10	50	150	●	●	●
12012000V45100	12.0	12	45	100	●	●	●
12012000V60150	12.0	12	60	150	●	●	●
14014000V45100	14.0	14	45	100	●	●	●
14014000V60150	14.0	14	60	150	●	●	●
16016000V60150	16.0	16	60	150	●	●	●
20020000V60150	20.0	20	60	150			

## 4 Flutes Standard Length Endmills

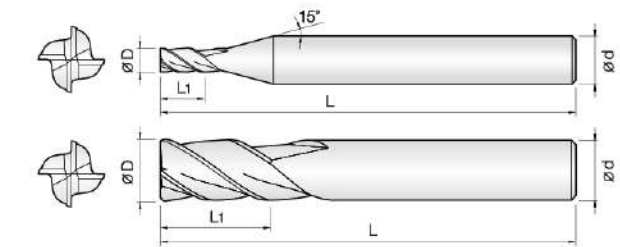


ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

(mm)

Order Code	φD	φd	L1	L	Coating		
					~HRC52	HRC50~62	HRC52~68
					TT550	TS600	N400
<b>4NFE</b> 01004000V03050	1.0	4	3	50	●	●	●
01504000V04050	1.5	4	4	50			
02002000V06050	2.0	2	6	50			
02004000V06050	2.0	4	6	50	●	●	●
02504000V08050	2.5	4	8	50			
03003000V08050	3.0	3	8	50	●	●	●
03004000V08050	3.0	4	8	50	●	●	●
03504000V11050	3.5	4	11	50			
04004000V11050	4.0	4	11	50	●	●	●
05005000V13050	5.0	5	13	50	●	●	●
05006000V13050	5.0	6	13	50	●	●	●
06006000V15050	6.0	6	15	50	●	●	●
07008000V20060	7.0	8	20	60	●	●	●
08008000V20060	8.0	8	20	60	●	●	●
09010000V25075	9.0	10	25	75	●	●	●
10010000V25075	10.0	10	25	75	●	●	●
12012000V30075	12.0	12	30	75	●	●	●
14014000V35080	14.0	14	35	80	●	●	●
16016000V45100	16.0	16	45	100	●	●	●
18018000V45100	18.0	18	45	100			
20020000V45100	20.0	20	45	100			

## 4 Flutes Long Length Endmills



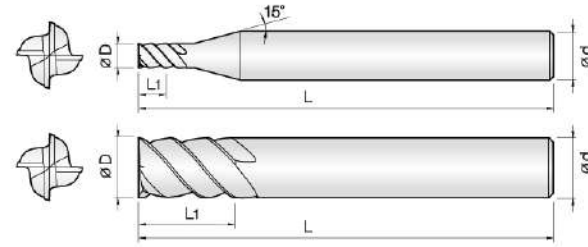
ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

(mm)

Order Code	φD	φd	L1	L	Coating		
					~HRC52	HRC50~62	HRC52~68
					TT550	TS600	N400
<b>4NFE</b> 03003000V09075	3.0	3	9	75	●	●	●
03004000V09075	3.0	4	9	75	●	●	●
03003000V12100	3.0	3	12	100	●	●	●
03004000V12100	3.0	4	12	100	●	●	●
04004000V12075	4.0	4	12	75	●	●	●
04004000V16100	4.0	4	16	100	●	●	●
06006000V18075	6.0	6	18	75	●	●	●
06006000V24100	6.0	6	24	100	●	●	●
06006000V30150	6.0	6	30	150	●	●	●
08008000V24075	8.0	8	24	75	●	●	●
08008000V32100	8.0	8	32	100	●	●	●
08008000V40150	8.0	8	40	150	●	●	●
10010000V40100	10.0	10	40	100	●	●	●
10010000V50150	10.0	10	50	150	●	●	●
12012000V45100	12.0	12	45	100	●	●	●
12012000V60150	12.0	12	60	150	●	●	●
14014000V45100	14.0	14	45	100	●	●	●
14014000V60150	14.0	14	60	150	●	●	●
16016000V60150	16.0	16	60	150	●	●	●
20020000V60150	20.0	20	60	150			

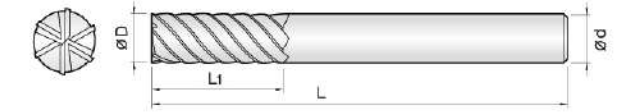


## 4 Flutes High Speed Helix 45° Endmills



ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

## 6 Flutes High Speed Helix 45° Endmills



ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

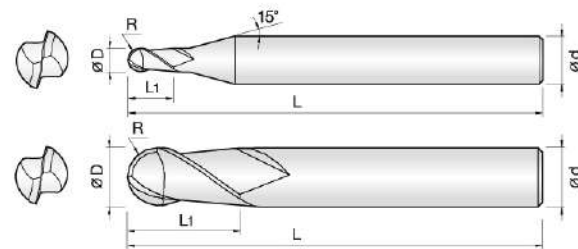
(mm)

Order Code	φD	φd	L1	L	Coating		
					~HRC52	HRC50~62	HRC52~68
					TT550	TS600	N400
<b>4NFE</b> 01004000V03050S	1.0	4	3	50			
01504000V04050S	1.5	4	4	50			
02004000V06050S	2.0	4	6	50			
02504000V08050S	2.5	4	8	50			
03004000V08050S	3.0	4	8	50			
04004000V11050S	4.0	4	11	50			
05006000V16050S	5.0	6	16	50			
06006000V16050S	6.0	6	16	50			
08008000V20060S	8.0	8	20	60			
10010000V25075S	10.0	10	25	75			
12012000V30075S	12.0	12	30	75			
14014000V40100S	14.0	14	40	100			
16016000V45100S	16.0	16	45	100			
18018000V45100S	18.0	18	45	100			
20020000V45100S	20.0	20	45	100			

(mm)

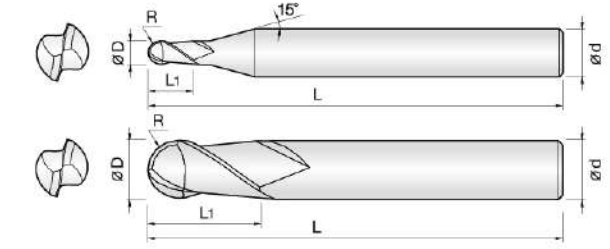
Order Code	φD	φd	L1	L	Coating		
					~HRC52	HRC50~62	HRC52~68
					TT550	TS600	N400
<b>6NFE</b> 06006000V15050S	6.0	6	16	50			
08008000V20060S	8.0	8	20	60			
10010000V25075S	10.0	10	25	75			
12012000V30075S	12.0	12	30	75			
16016000V45100S	16.0	16	45	100			
20020000V45100S	20.0	20	45	100			

## 2 Flutes Standard Length Ball Endmills



ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

## 2 Flutes Long Length Ball Endmills



ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

(mm)

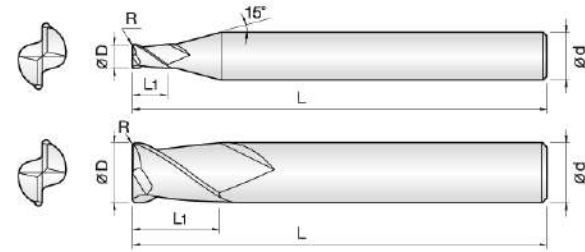
Order Code	φD	φd	L1	L	R	Coating		
						~HRC52	HRC50~62	HRC52~68
						TT550	TS600	N400
<b>2NBE</b> 01004050V02050	1.0	4	2	50	0.50	●	●	●
01504075V03050	1.5	4	3	50	0.75	●	●	●
02004100V04050	2.0	4	4	50	1.00	●	●	●
02504125V05050	2.5	4	5	50	1.25	●	●	●
03003150V06050	3.0	3	6	50	1.50	●	●	●
03004150V06050	3.0	4	6	50	1.50	●	●	●
03504175V07050	3.5	4	7	50	1.75	●	●	●
04004200V08050	4.0	4	8	50	2.00	●	●	●
05005250V10050	5.0	5	10	50	2.50	●	●	●
05006250V10050	5.0	6	10	50	2.50	●	●	●
06006300V12050	6.0	6	12	50	3.00	●	●	●
08008400V16060	8.0	8	16	60	4.00	●	●	●
10010500V20075	10.0	10	20	75	5.00	●	●	●
12012600V25075	12.0	12	25	75	6.00	●	●	●
16016800V30100	16.0	16	30	100	8.00	●	●	●

(mm)

Order Code	φD	φd	L1	L	R	Coating		
						~HRC52	HRC50~62	HRC52~68
						TT550	TS600	N400
<b>2NBE</b> 04004200V08075	4.0	4	8	75	2.00	●	●	●
04004200V08100	4.0	4	8	100	2.00	●	●	●
06006300V12075	6.0	6	12	75	3.00	●	●	●
06006300V12100	6.0	6	12	100	3.00	●	●	●
08008400V16075	8.0	8	16	75	4.00	●	●	●
08008400V16100	8.0	8	16	100	4.00	●	●	●
08008400V16150	8.0	8	16	150	4.00	●	●	●
10010500V20100	10.0	10	20	100	5.00	●	●	●
10010500V20150	10.0	10	20	150	5.00	●	●	●
12012600V24100	12.0	12	24	100	6.00	●	●	●
12012600V24150	12.0	12	24	150	6.00	●	●	●



## 2 Flutes Corner Radius Endmills



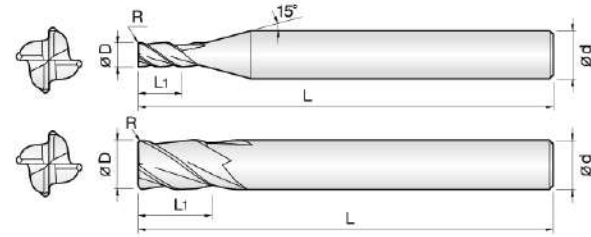
(mm)

ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

Order Code	φD	φd	L1	L	R	Coating		
						~HRC52	HRC50~62	HRC52~68
						TT550	TS600	N400
<b>2NRE</b> 01004020V03050	1.0	4	3	50	0.2			
01504020V04050	1.5	4	4	50	0.2			
02004020V05050	2.0	4	5	50	0.2			
02004050V05050	2.0	4	5	50	0.5			
03003020V08050	3.0	3	8	50	0.2			
03004020V08050	3.0	4	8	50	0.2	●	●	●
03003050V08050	3.0	3	8	50	0.5	●	●	●
03004050V08050	3.0	4	8	50	0.5	●	●	●
04004020V10050	4.0	4	10	50	0.2	●	●	●
04004050V10050	4.0	4	10	50	0.5	●	●	●
04004050V10075	4.0	4	10	75	0.5	●	●	●
04004050V12100	4.0	4	12	100	0.5			
04004100V10050	4.0	4	10	50	1.0	●	●	●
04004100V10075	4.0	4	10	75	1.0	●	●	●
06006020V15050	6.0	6	15	50	0.2	●	●	●
06006050V15050	6.0	6	15	50	0.5	●	●	●
06006050V15075	6.0	6	15	75	0.5	●	●	●
06006050V18100	6.0	6	18	100	0.5	●	●	●
06006100V15050	6.0	6	15	50	1.0	●	●	●
06006100V15075	6.0	6	15	75	1.0	●	●	●
06006100V18100	6.0	6	18	100	1.0	●	●	●
08008050V20060	8.0	8	20	60	0.5	●	●	●
08008050V20075	8.0	8	20	75	0.5	●	●	●
08008050V24100	8.0	8	24	100	0.5	●	●	●
08008050V32150	8.0	8	32	150	0.5			
08008100V20060	8.0	8	20	60	1.0	●	●	●
08008100V20075	8.0	8	20	75	1.0	●	●	●
08008100V24100	8.0	8	24	100	1.0	●	●	●
08008150V20060	8.0	8	20	60	1.5	●	●	●

<b>2NRE</b> 08008150V20075	8.0	8	20	75	1.5	●	●	●
08008150V24100	8.0	8	24	100	1.5	●	●	●
10010050V25075	10.0	10	25	75	0.5	●	●	●
10010100V25075	10.0	10	25	75	1.0	●	●	●
10010100V30100	10.0	10	30	100	1.0	●	●	●
10010100V40150	10.0	10	40	150	1.0			
10010150V25075	10.0	10	25	75	1.5	●	●	●
10010150V30100	10.0	10	30	100	1.5	●	●	●
10010150V40150	10.0	10	40	150	1.5			
12012050V30075	12.0	12	30	75	0.5	●	●	●
12012100V30075	12.0	12	30	75	1.0	●	●	●
12012100V35100	12.0	12	35	100	1.0	●	●	●
12012150V30075	12.0	12	30	75	1.5	●	●	●
12012150V35100	12.0	12	35	100	1.5	●	●	●
12012200V30075	12.0	12	30	75	2.0	●	●	●
12012200V35100	12.0	12	35	100	2.0	●	●	●

## 4 Flutes Corner Radius Endmills



(mm)

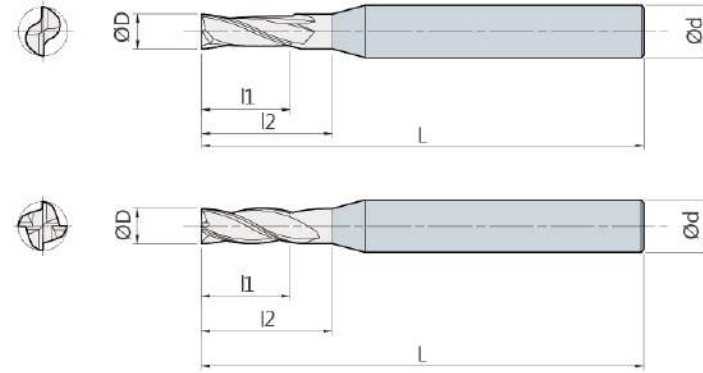
ØD	Tolerance
Ø1~Ø12	0.00~0.02
Ø12.1~Ø20	0.00~0.03

Order Code	φD	φd	L1	L	R	Coating		
						~HRC52	HRC50~62	HRC52~68
						TT550	TS600	N400
<b>4NRE</b> 01004020V03050	1.0	4	3	50	0.2			
01504020V04050	1.5	4	4	50	0.2			
02004020V05050	2.0	4	5	50	0.2			
02004050V05050	2.0	4	5	50	0.5			
03003020V08050	3.0	3	8	50	0.2			
03004020V08050	3.0	4	8	50	0.2	●	●	●
03003050V08050	3.0	3	8	50	0.5	●	●	●
03004050V08050	3.0	4	8	50	0.5	●	●	●
04004020V10050	4.0	4	10	50	0.2	●	●	●
04004050V10050	4.0	4	10	50	0.5	●	●	●
04004050V10075	4.0	4	10	75	0.5	●	●	●
04004050V12100	4.0	4	12	100	0.5			
04004100V10050	4.0	4	10	50	1.0	●	●	●
04004100V10075	4.0	4	10	75	1.0	●	●	●
06006020V15050	6.0	6	15	50	0.2	●	●	●
06006050V15050	6.0	6	15	50	0.5	●	●	●
06006050V15075	6.0	6	15	75	0.5	●	●	●
06006050V18100	6.0	6	18	100	0.5	●	●	●
06006100V15050	6.0	6	15	50	1.0	●	●	●
06006100V15075	6.0	6	15	75	1.0	●	●	●
06006100V18100	6.0	6	18	100	1.0	●	●	●
08008050V20060	8.0	8	20	60	0.5	●	●	●
08008050V20075	8.0	8	20	75	0.5	●	●	●
08008050V24100	8.0	8	24	100	0.5	●	●	●
08008050V32150	8.0	8	32	150	0.5			
08008100V20060	8.0	8	20	60	1.0	●	●	●
08008100V20075	8.0	8	20	75	1.0	●	●	●
08008100V24100	8.0	8	24	100	1.0	●	●	●
08008150V20060	8.0	8	20	60	1.5	●	●	●

<b>4NRE</b> 08008150V20075	8.0	8	20	75	1.5	●	●	●
08008150V24100	8.0	8	24	100	1.5	●	●	●
10010050V25075	10.0	10	25	75	0.5	●	●	●
10010100V25075	10.0	10	25	75	1.0	●	●	●
10010100V30100	10.0	10	30	100	1.0	●	●	●
10010100V40150	10.0	10	40	150	1.0			
10010150V25075	10.0	10	25	75	1.5	●	●	●
10010150V30100	10.0	10	30	100	1.5	●	●	●
10010150V40150	10.0	10	40	150	1.5			
12012050V30075	12.0	12	30	75	0.5	●	●	●
12012100V30075	12.0	12	30	75	1.0	●	●	●
12012100V35100	12.0	12	35	100	1.0	●	●	●
12012150V30075	12.0	12	30	75	1.5	●	●	●
12012150V35100	12.0	12	35	100	1.5	●	●	●
12012200V30075	12.0	12	30	75	2.0	●	●	●
12012200V35100	12.0	12	35	100	2.0	●	●	●



## 2&4 Flutes Endmills for Graphite



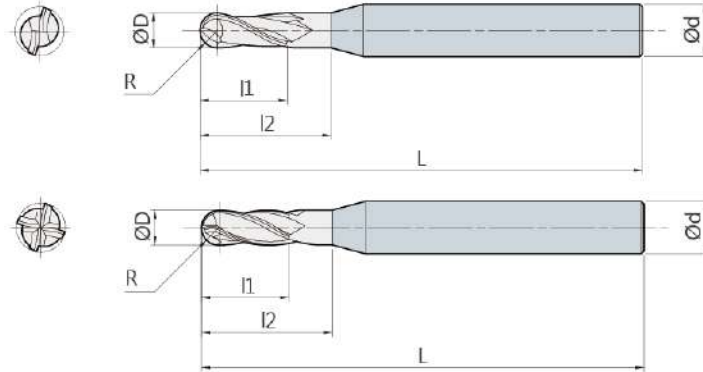
(mm)

ØD	Tolerance
~Ø5.9	0.00~0.02
Ø6.0~	0.00~0.03

Order Code	φD	φd	l1	l2	L	No.of flutes
<b>2DFE</b>						
00504000N05050	0.5	4	1.0	5	50	2
00604000N06050	0.6	4	1.2	6	50	2
00604000N08050	0.6	4	1.2	8	50	2
00804000N08050	0.8	4	2.0	8	50	2
01004000V03060	1.0	4	3.0	-	60	2
01004000N06060	1.0	4	3.0	6	60	2
01004000N10060	1.0	4	3.0	10	60	2
01004000N15060	1.0	4	3.0	15	60	2
01004000N20060	1.0	4	3.0	20	60	2
<b>4DFE</b>						
01504000V04060	1.5	4	4.0	-	60	4
01504000N10060	1.5	4	4.0	10	60	4
01504000N15060	1.5	4	4.0	15	60	4
01504000N20080	1.5	4	4.0	20	80	4
01504000N25080	1.5	4	4.0	25	80	4
02004000V06060	2.0	4	6.0	-	60	4
02004000N10060	2.0	4	6.0	10	60	4
02004000N12060	2.0	4	6.0	12	60	4
02004000N15060	2.0	4	6.0	15	60	4
02004000N20080	2.0	4	6.0	20	80	4
02004000N25080	2.0	4	6.0	25	80	4
02004000N30080	2.0	4	6.0	30	80	4
03004000V09050	3.0	4	9.0	-	50	4
03004000N20080	3.0	4	9.0	20	80	4
03004000N25080	3.0	4	9.0	25	80	4
03004000N30080	3.0	4	9.0	30	80	4
04004000V12050	4.0	4	12.0	-	50	4
04004000N20060	4.0	4	10.0	20	60	4
04004000N25060	4.0	4	10.0	25	60	4
04004000N20080	4.0	4	10.0	20	80	4

<b>4DFE</b>	04004000N25080	4.0	4	10.0	25	80	4
	06006000N30080	6.0	6	18.0	30	80	4
	06006000N40110	6.0	6	18.0	40	110	4
	06006000N50150	6.0	6	18.0	50	150	4
	08008000N40110	8.0	8	20.0	40	110	4
	08008000N50150	8.0	8	20.0	50	150	4
	10010000V40110	10.0	10	30.0	40	110	4
	10010000N50150	10.0	10	30.0	50	150	4
	12012000N50110	12.0	12	30.0	50	110	4
	12012000N60150	12.0	12	30.0	60	150	4

## 2&4 Flutes Ball Endmills for Graphite



(mm)

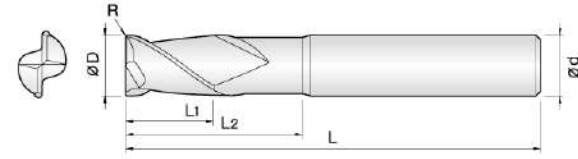
ØD	Tolerance
~Ø5.9	0.00~0.02
Ø6.0~	0.00~0.03

Order Code	φD	φd	l1	l2	L	R	No.of flutes
<b>2DBE</b> 00504025N05050	0.5	4	1.2	5	50	0.25	2
00504025N10050	0.5	4	1.2	10	50	0.25	2
00604030N06050	0.6	4	1.5	6	50	0.30	2
00604030N08050	0.6	4	1.5	8	50	0.30	2
00604030N10050	0.6	4	1.5	10	50	0.30	2
00604030N15050	0.6	4	1.5	15	50	0.30	2
01004050V03060	1.0	4	3.0	-	60	0.50	2
01004050N06060	1.0	4	2.5	6	60	0.50	2
01004050N08060	1.0	4	2.5	8	60	0.50	2
01004050N10060	1.0	4	2.5	10	60	0.50	2
01004050N15060	1.0	4	2.5	15	60	0.50	2
01004050N20060	1.0	4	2.5	20	60	0.50	2
01004050N10080	1.0	4	2.5	10	80	0.50	2
01004050N15080	1.0	4	2.5	15	80	0.50	2
01004050N20080	1.0	4	2.5	20	80	0.50	2
01504075N08060	1.5	4	4.0	8	60	0.75	2
01504075N12060	1.5	4	4.0	12	60	0.75	2
01504075N15060	1.5	4	4.0	15	60	0.75	2
01504075N20060	1.5	4	4.0	20	60	0.75	2
01504075N25080	1.5	4	4.0	25	80	0.75	2
01504075N30080	1.5	4	4.0	30	80	0.75	2
02004100V05060	2.0	4	5.0	-	60	1.00	2
02004100N08060	2.0	4	5.0	8	60	1.00	2
02004100N10060	2.0	4	5.0	10	60	1.00	2
02004100N15060	2.0	4	5.0	15	60	1.00	2
02004100N20060	2.0	4	5.0	20	60	1.00	2
02004100N16080	2.0	4	5.0	16	80	1.00	2
02004100N20080	2.0	4	5.0	20	80	1.00	2
02004100N25080	2.0	4	5.0	25	80	1.00	2

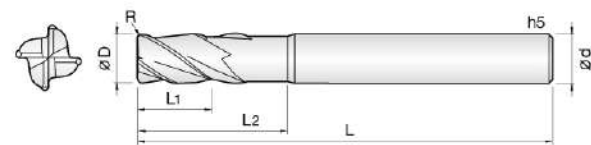
<b>2DBE</b> 02004100N30080	2.0	4	5.0	30	80	1.00	2
03004150V08060	3.0	4	8.0	-	60	1.50	2
03004150N20080	3.0	4	7.5	20	80	1.50	2
03004150N25080	3.0	4	7.5	25	80	1.50	2
03004150N30100	3.0	4	7.5	30	100	1.50	2
04004200V10050	4.0	4	10.0	-	50	2.00	2
04004200N20080	4.0	4	10.0	20	80	2.00	2
04004200N30080	4.0	4	10.0	30	80	2.00	2
04004200N30100	4.0	4	10.0	30	100	2.00	2
06006300N30080	6.0	6	15.0	30	80	3.00	2
<b>4DBE</b> 06006300N40110	6.0	6	15.0	40	110	3.00	4
06006300N50150	6.0	6	15.0	50	150	3.00	4
08008400N40110	8.0	8	20.0	40	110	4.00	4
08008400N50150	8.0	8	20.0	50	150	4.00	4
10010500V40110	10.0	10	30.0	40	110	5.00	4
10010500N50150	10.0	10	30.0	50	150	5.00	4
12012600N50110	12.0	12	30.0	50	110	6.00	4
12012600N60150	12.0	12	30.0	60	150	6.00	4



## 2&4 Flutes Corner Radius Endmills for Graphite



$\varnothing D$	Tolerance
~ $\varnothing 5.9$	0.00~0.02
$\varnothing 6.0$ ~	0.00~0.03

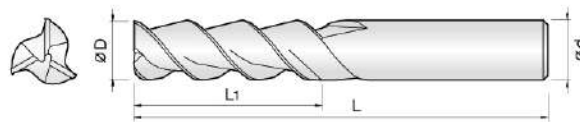
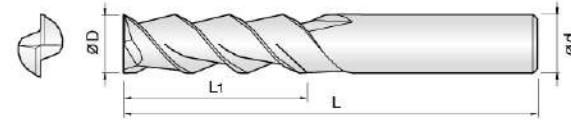


(mm)

Order Code	$\varnothing D$	$\varnothing d$	L1	L2	L	R	No. of flutes
<b>2DRE</b> 00504005N07050	0.5	4	1.0	7	50	0.05	2
00504005N10050	0.5	4	1.0	10	50	0.05	2
00804005N06050	0.8	4	2.0	6	50	0.05	2
00804005N08050	0.8	4	2.0	8	50	0.05	2
01004010N12050	1.0	4	2.5	12	50	0.10	2
01004020N10050	1.0	4	2.5	10	50	0.20	2
<b>4DRE</b> 01504020N10050	1.5	4	3.0	10	50	0.20	4
02004010N15050	2.0	4	5.0	15	50	0.10	4
02004020N10060	2.0	4	5.0	10	60	0.20	4
02004020N15060	2.0	4	5.0	15	60	0.20	4
02004020N20080	2.0	4	5.0	20	80	0.20	4
02004020N25080	2.0	4	5.0	25	80	0.20	4
03004010N18050	3.0	4	8.0	18	50	0.10	4
03004020N20080	3.0	4	8.0	20	80	0.20	4
03004020N25080	3.0	4	8.0	25	80	0.20	4
03004020N30080	3.0	4	8.0	30	80	0.20	4
04004020V12050	4.0	4	12.0	-	50	0.20	4
04004020N16060	4.0	4	10.0	16	60	0.20	4
04004030V12060	4.0	4	12.0	-	60	0.30	4
04004020N20080	4.0	4	10.0	20	80	0.20	4
04004020N25080	4.0	4	10.0	25	80	0.20	4
04004020N30080	4.0	4	10.0	30	80	0.20	4
04004050N20080	4.0	4	10.0	20	80	0.50	4
04004050N30080	4.0	4	10.0	30	80	0.50	4
04004050N30100	4.0	4	10.0	30	100	0.50	4
06006020N30080	6.0	6	15.0	30	80	0.20	4
06006030N30080	6.0	6	15.0	30	80	0.30	4
06006050N40110	6.0	6	15.0	40	110	0.50	4
06006050N50150	6.0	6	15.0	50	150	0.50	4

4DRE	08008050N40110	8.0	8	20.0	40	110	0.50	4
	08008050N50150	8.0	8	20.0	50	150	0.50	4
	10010050N40110	10.0	10	25.0	40	110	0.50	4
	10010050N60150	10.0	10	25.0	60	150	0.50	4
	12012050N50110	12.0	12	30.0	50	110	0.50	4
	12012050N60150	12.0	12	30.0	60	150	0.50	4

## 2&3 Flutes 45° Helix End Mills for Aluminum



(mm)

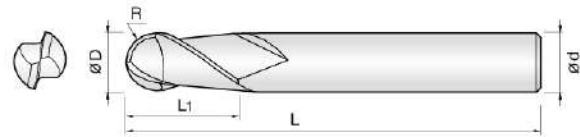
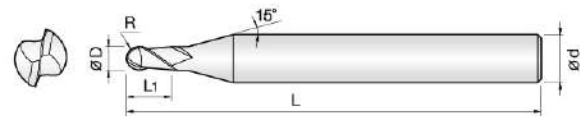
ØD	Tolerance
Ø1-Ø12	0.00~0.02
Ø12.1-Ø20	0.00~0.03

Order Code	φD	φd	L1	L	Carbide		Fig.
					Non-coated	Coated	
					TPK01	PDL025	
<b>2AFE</b> 01004000V03050	1.0	4	3	50	●		1
01504000V04050	1.5	4	4	50	●		1
02004000V06050	2.0	4	6	50	●		1
02504000V08050	2.5	4	8	50	●		1
03003000V08050	3.0	3	8	50	●		1
03004000V08050	3.0	4	8	50	●		1
04004000V11050	4.0	4	11	50	●		1
05006000V13050	5.0	6	13	50	●		1
06006000V13050	6.0	6	13	50	●		1
08008000V20060	8.0	8	20	60	●		1
10010000V25075	10.0	10	25	75	●		1
12012000V30075	12.0	12	30	75	●		1
14014000V45080	14.0	14	45	80	●		1
16016000V45100	16.0	16	45	100	●		1
18018000V45100	18.0	18	45	100	●		1
20020000V45100	20.0	20	45	100	●		1
02004000V08100	2.0	4	8	100	●		1
03003000V09075	3.0	3	9	75	●		1
03003000V12100	3.0	3	12	100	●		1
03004000V12100	3.0	4	12	100	●		1
04004000V12075	4.0	4	12	75	●		1
04004000V16100	4.0	4	16	100	●		1
06006000V18075	6.0	6	18	75	●		1
06006000V24100	6.0	6	24	100	●		1
06006000V30150	6.0	6	30	150	●		1
08008000V24075	8.0	8	24	75	●		1
08008000V32100	8.0	8	32	100	●		1
08008000V40150	8.0	8	40	150	●		1
08008000V40200	8.0	8	40	200	●		1
10010000V40100	10.0	10	40	100	●		1
10010000V50150	10.0	10	50	150	●		1
10010000V50200	10.0	10	50	200	●		1
12012000V45100	12.0	12	45	100	●		1
12012000V60150	12.0	12	60	150	●		1

12012000V60200	12.0	12	60	200	●		1
14014000V45100	14.0	14	45	100	●		1
14014000V60150	14.0	14	60	150	●		1
14014000V60200	14.0	14	60	200	●		1
16016000V60150	16.0	16	60	150	●		1
16016000V60200	16.0	16	60	200	●		1
18018000V60150	18.0	18	60	150	●		1
20020000V60150	20.0	20	60	150	●		1
20020000V60200	20.0	20	60	200	●		1
<b>3AFE</b> 01004000V03050	1.0	4	3	50	●		2
01504000V04050	1.5	4	4	50	●		2
02004000V06050	2.0	4	6	50	●		2
02504000V08050	2.5	4	8	50	●		2
03003000V08050	3.0	3	8	50	●		2
03004000V08050	3.0	4	8	50	●		2
04004000V11050	4.0	4	11	50	●		2
05006000V13050	5.0	6	13	50	●		2
06006000V13050	6.0	6	13	50	●		2
08008000V20060	8.0	8	20	60	●		2
10010000V25075	10.0	10	25	75	●		2
12012000V30075	12.0	12	30	75	●		2
14014000V45080	14.0	14	45	80	●		2
16016000V45100	16.0	16	45	100	●		2
18018000V45100	18.0	18	45	100	●		2
20020000V45100	20.0	20	45	100	●		2
02004000V08100	2.0	4	8	100	●		2
03003000V09075	3.0	3	9	75	●		2
03003000V12100	3.0	3	12	100	●		2
03004000V12100	3.0	4	12	100	●		2
04004000V12075	4.0	4	12	75	●		2
04004000V16100	4.0	4	16	100	●		2
06006000V18075	6.0	6	18	75	●		2
06006000V24100	6.0	6	24	100	●		2
06006000V30150	6.0	6	30	150	●		2
08008000V24075	8.0	8	24	75	●		2
08008000V32100	8.0	8	32	100	●		2
08008000V40150	8.0	8	40	150	●		2
08008000V40200	8.0	8	40	200	●		2
10010000V40100	10.0	10	40	100	●		2
10010000V50150	10.0	10	50	150	●		2
10010000V50200	10.0	10	50	200	●		2
12012000V45100	12.0	12	45	100	●		2
12012000V60150	12.0	12	60	150	●		2
12012000V60200	12.0	12	60	200	●		2
14014000V45100	14.0	14	45	100	●		2
14014000V60150	14.0	14	60	150	●		2
14014000V60200	14.0	14	60	200	●		2
16016000V60150	16.0	16	60	150	●		2
16016000V60200	16.0	16	60	200	●		2
18018000V60150	18.0	18	60	150	●		2
20020000V60150	20.0	20	60	150	●		2
20020000V60200	20.0	20	60	200	●		2



## 2 Flutes 45° Helix Ball End Mills for Aluminum

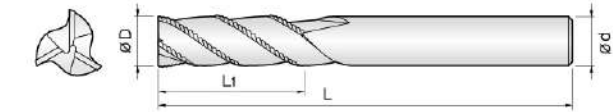


ØD	Tolerance
Ø1-Ø12	0.00-0.02

(mm)

Order Code	φD	φd	L1	L	R	Carbide	
						Non-coated	Coated
						TPK01	PDL025
<b>2ABE</b> 01004050V02050	1.0	4	2	50	0.50	●	
01504075V03050	1.5	4	3	50	0.75	●	
02004100V04050	2.0	4	4	50	1.00	●	
02504125V05050	2.5	4	5	50	1.25	●	
03004150V06050	3.0	4	6	50	1.50	●	
04004200V08050	4.0	4	8	50	2.00	●	
04006200V08050	4.0	6	8	50	2.00	●	
05006250V10050	5.0	6	10	50	2.50	●	
06006300V12050	6.0	6	12	50	3.00	●	
08008400V16060	8.0	8	16	60	4.00	●	
10010500V20075	10.0	10	20	75	5.00	●	
12012600V24075	12.0	12	24	75	6.00	●	
12012600V24100	12.0	12	24	100	6.00	●	

## 3 Flutes 45° Helix Roughing End Mills for Aluminum

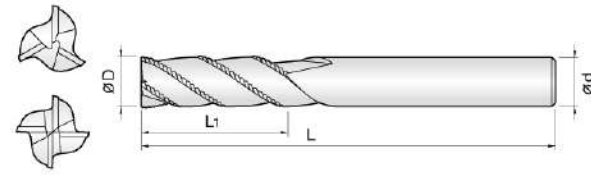


ØD	Tolerance
Ø1-Ø12	0.00-0.02

(mm)

Order Code	φD	φd	L1	L	Carbide	
					Non-coated	Coated
					TPK01	PDL025
<b>3RAFE</b> 04004000V10050	4.0	4	10	50	●	
05006000V13050	5.0	6	13	50	●	
06006000V16050	6.0	6	16	50	●	
08008000V20060	8.0	8	20	60	●	
10010000V25075	10.0	10	25	75	●	
12012000V30075	12.0	12	30	75	●	
16016000V45100	16.0	16	45	100	●	
20020000V45100	20.0	20	45	100	●	

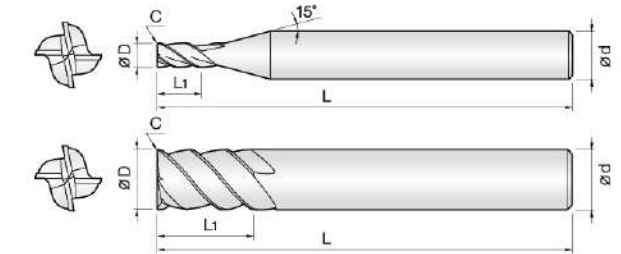
## 3&4 Flutes Roughing End Mills



ØD	Tolerance
Ø5~Ø20	0.00~0.05

Order Code	φD	φd	L1	L	Coating			
					~HRC52	HRC50~62	HRC52~68	
					TT550	TS600	N400	
<b>3RFE</b>								
04004000V10050	4.0	4	10	50	●	●	●	
05006000V13050	5.0	6	13	50	●	●	●	
06006000V16050	6.0	6	16	50	●	●	●	
08008000V20060	8.0	8	20	60	●	●	●	
10010000V25075	10.0	10	25	75	●	●	●	
12012000V30075	12.0	12	30	75	●	●	●	
16016000V45100	16.0	16	45	100	●	●	●	
20020000V45100	20.0	20	45	100	●	●	●	
<b>4RFE</b>								
04004000V10050	4.0	4	10	50	●	●	●	
05006000V13050	5.0	6	13	50	●	●	●	
06006000V16050	6.0	6	16	50	●	●	●	
08008000V20060	8.0	8	20	60	●	●	●	
10010000V25075	10.0	10	25	75	●	●	●	
12012000V30075	12.0	12	30	75	●	●	●	
16016000V45100	16.0	16	45	100	●	●	●	
20020000V45100	20.0	20	45	100				

## 4 Flutes Variable Helix End Mills for SUS & HRSA etc

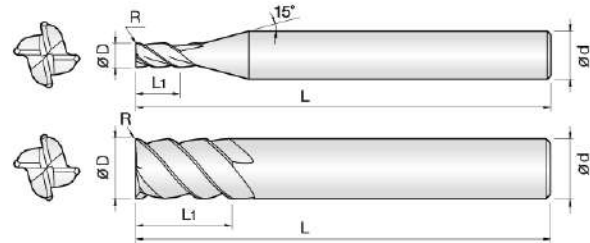


ØD	Tolerance
Ø2.5~Ø9	0.00~0.02
Ø10~Ø16	0.00~0.03

Order Code	φD	φd	L1	Avoidance diameter	L	C		Carbide	
						A	B	Non-coated	Coated
						Shield Edge	Shield Edge	TPK01	PDL025
<b>4VFE</b>									
03004000V08050	3.0	4	8	-	50			●	●
04004000V10050	4.0	4	10	-	50			●	●
05005000V13050	5.0	5	13	-	50			●	●
05006000V13050	5.0	6	13	-	50			●	●
06006000V15050	6.0	6	15	-	50			●	●
08008000V20060	8.0	8	20	-	60			●	●
10010000V25075	10.0	10	25	-	75			●	●
12012000V30075	12.0	12	30	-	75			●	●
14014000V35100	14.0	14	35	-	100			●	●
16016000V40100	16.0	16	40	-	100			●	●
18018000V40100	18.0	18	40	-	100			●	●
20020000V45100	20.0	20	45	-	100			●	●
04004000V10075	4.0	4	10	-	75			●	●
06006000V15075	6.0	6	15	-	75			●	●
08008000V20075	8.0	8	20	-	75			●	●
04004000V12100	4.0	4	12	-	100			●	●
06006000V18100	6.0	6	18	-	100			●	●
08008000V24100	8.0	8	24	-	100			●	●
10010000V30100	10.0	10	30	-	100			●	●
12012000V36100	12.0	12	36	-	100			●	●
06006000V18150	6.0	6	18	5.8	150			●	●
08008000V24150	8.0	8	24	7.8	150			●	●
10010000V30150	10.0	10	30	9.8	150			●	●
12012000V36150	12.0	12	36	11.8	150			●	●
14014000V42150	14.0	14	42	13.8	150			●	●
16016000V48150	16.0	16	48	15.8	150				
18018000V54150	18.0	18	54	17.8	150				
20020000V60150	20.0	20	60	19.8	150				



## 4 Flutes Variable Helix End Mills for SUS & HRSA etc



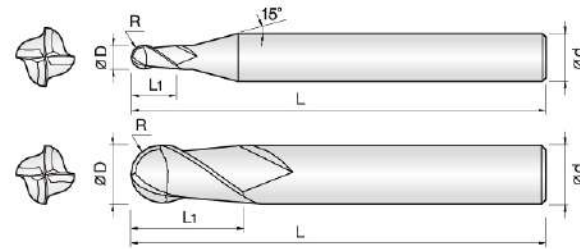
φD	Tolerance
φ2.5~φ9	0.00~0.02
φ10~φ16	0.00~0.03

(mm)

Order Code	φD	φd	L1	Avoidance diameter	L	R	Carbide	
							~HRC62	
							TSM600	PDL025
<b>4VFE</b> 03004050V08050	3.0	4	8	-	50	0.5	●	●
04004050V10050	4.0	4	10	-	50	0.5	●	●
04004100V10050	4.0	4	10	-	50	1.0	●	●
05005050V13050	5.0	5	13	-	50	0.5	●	●
05005100V13050	5.0	5	13	-	50	1.0	●	●
05006050V13050	5.0	6	13	-	50	0.5	●	●
05006100V13050	5.0	6	13	-	50	1.0	●	●
06006050V15050	6.0	6	15	-	50	0.5	●	●
06006100V15050	6.0	6	15	-	50	1.0	●	●
08008050V20060	8.0	8	20	-	60	0.5	●	●
08008100V20060	8.0	8	20	-	60	1.0	●	●
08008200V20060	8.0	8	20	-	60	2.0	●	●
10010050V25075	10.0	10	25	-	75	0.5	●	●
10010100V25075	10.0	10	25	-	75	1.0	●	●
10010200V25075	10.0	10	25	-	75	2.0	●	●
12012050V30075	12.0	12	30	-	75	0.5	●	●
12012100V30075	12.0	12	30	-	75	1.0	●	●
12012200V30075	12.0	12	30	-	75	2.0	●	●
14014050V35100	14.0	14	35	-	100	0.5	●	●
14014100V35100	14.0	14	35	-	100	1.0	●	●
14014200V35100	14.0	14	35	-	100	2.0	●	●
16016050V40100	16.0	16	40	-	100	0.5	●	●
16016100V40100	16.0	16	40	-	100	1.0	●	●
16016200V40100	16.0	16	40	-	100	2.0	●	●
18018050V40100	18.0	18	40	-	100	0.5	●	●
18018100V40100	18.0	18	40	-	100	1.0	●	●
18018200V40100	18.0	18	40	-	100	2.0	●	●
20020050V45100	20.0	20	45	-	100	0.5	●	●
20020100V45100	20.0	20	45	-	100	1.0	●	●

<b>4VFE</b> 20020200V45100	20.0	20	45	-	100	2.0	●	●
04004050V10075	4.0	4	10	-	75	0.5	●	●
04004100V10075	4.0	4	10	-	75	1.0	●	●
06006050V15075	6.0	6	15	-	75	0.5	●	●
06006100V15075	6.0	6	15	-	75	1.0	●	●
08008050V20075	8.0	8	20	-	75	0.5	●	●
08008100V20075	8.0	8	20	-	75	1.0	●	●
08008200V20075	8.0	8	20	-	75	2.0	●	●
04004050V12100	4.0	4	12	-	100	0.5	●	●
04004100V12100	4.0	4	12	-	100	1.0	●	●
06006050V18100	6.0	6	18	-	100	0.5	●	●
06006100V18100	6.0	6	18	-	100	1.0	●	●
08008050V24100	8.0	8	24	-	100	0.5	●	●
08008100V24100	8.0	8	24	-	100	1.0	●	●
08008200V24100	8.0	8	24	-	100	2.0	●	●
10010050V30100	10.0	10	30	-	100	0.5	●	●
10010100V30100	10.0	10	30	-	100	1.0	●	●
10010200V30100	10.0	10	30	-	100	2.0	●	●
12012050V36100	12.0	12	36	-	100	0.5	●	●
12012100V36100	12.0	12	36	-	100	1.0	●	●
12012200V36100	12.0	12	36	-	100	2.0	●	●
06006050V18150	6.0	6	18	5.8	150	0.5	●	●
06006100V18150	6.0	6	18	5.8	150	1.0	●	●
08008050V24150	8.0	8	24	7.8	150	0.5	●	●
08008100V24150	8.0	8	24	7.8	150	1.0	●	●
08008200V24150	8.0	8	24	7.8	150	2.0	●	●
10010050V30150	10.0	10	30	9.8	150	0.5	●	●
10010100V30150	10.0	10	30	9.8	150	1.0	●	●
10010200V30150	10.0	10	30	9.8	150	2.0	●	●
12012050V36150	12.0	12	36	11.8	150	0.5	●	●
12012100V36150	12.0	12	36	11.8	150	1.0	●	●
12012200V36150	12.0	12	36	11.8	150	2.0	●	●
14014050V42150	14.0	14	42	13.8	150	0.5	●	●
14014100V42150	14.0	14	42	13.8	150	1.0	●	●
14014200V42150	14.0	14	42	13.8	150	2.0	●	●
16016050V48150	16.0	16	48	15.8	150	0.5	●	●
16016100V48150	16.0	16	48	15.8	150	1.0	●	●
16016200V48150	16.0	16	48	15.8	150	2.0	●	●
18018050V54150	18.0	18	54	17.8	150	0.5	●	●
18018100V54150	18.0	18	54	17.8	150	1.0	●	●
18018200V54150	18.0	18	54	17.8	150	2.0	●	●
20020050V60150	20.0	20	60	19.8	150	0.5	●	●
20020100V60150	20.0	20	60	19.8	150	1.0	●	●
20020200V60150	20.0	20	60	19.8	150	2.0	●	●

## 4 Flutes Variable Helix Ball End Mills for SUS & HRSA etc

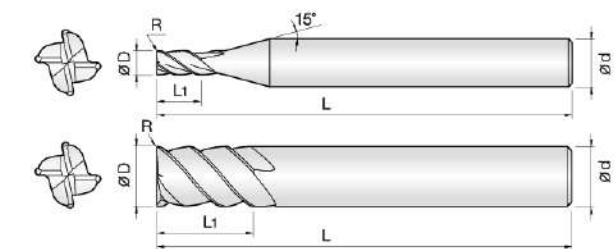


ØD	Tolerance
Ø2.5~Ø9	0.00~0.02
Ø10~Ø16	0.00~0.03

(mm)

Order Code	φD	φd	L1	Avoidance diameter	L	R	Carbide	
							~HRC62	
							TSM600	PDL025
<b>4VBE</b> 03004150V06050	3.0	4	6	-	50	1.5	●	●
04004200V08050	4.0	4	8	-	50	2.0	●	●
05005250V10050	5.0	5	10	-	50	2.5	●	●
05006250V10050	5.0	6	10	-	50	2.5	●	●
06006300V12050	6.0	6	12	-	50	3.0	●	●
08008400V16060	8.0	8	16	-	60	4.0	●	●
10010500V20075	10.0	10	20	-	75	5.0	●	●
12012600V24075	12.0	12	24	-	75	6.0	●	●
04004200V08075	4.0	4	8	-	75	2.0	●	●
06006300V12075	6.0	6	12	-	75	3.0	●	●
08008400V16075	8.0	8	16	-	75	4.0	●	●
04004200V08100	4.0	4	8	-	75	2.0		
06006300V12100	6.0	6	12	-	100	3.0		
08008400V16100	8.0	8	16	-	100	4.0		
10010500V20100	10.0	10	20	-	100	5.0		
12012600V24100	12.0	12	24	-	100	6.0		

## 4 Flutes Non Symmetry Corner Radius End Mills for SUS



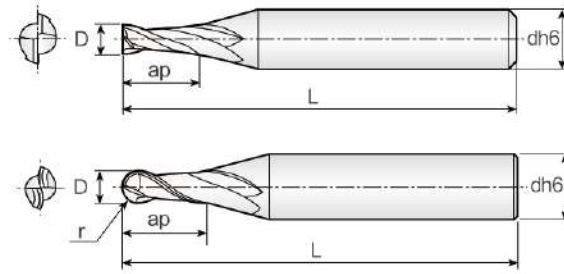
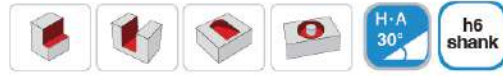
ØD	Tolerance
Ø2.5~Ø9	0.00~0.02
Ø10~Ø16	0.00~0.03

(mm)

Order Code	φD	φd	L1	L	R	Carbide	
						~HRC62	
						TSM600	PDL025
<b>4SPFE</b> 04004050V10050	4.0	4	10	50	0.5	●	●
06006050V15050	6.0	6	15	50	0.5	●	●
08008050V20060	8.0	8	20	60	0.5	●	●
10010050V25075	10.0	10	25	75	0.5	●	●
12012050V30075	12.0	12	30	75	0.5	●	●
16016050V40100	16.0	16	40	100	0.5		
16016100V40100	16.0	16	40	100	1.0		



## 2 Flutes Micro End Mills

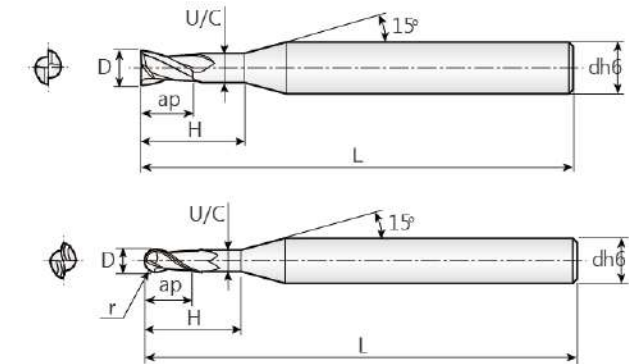


ØD	Tolerance
A11	0.00~0.012

(mm)

Order Code	φD	φd	L1	L	R	Coating		
						~HRC52	HRC50~62	HRC52~68
						TT550	TS600	N400
<b>2MFE</b> 00204000V004050	0.2	4	0.4	50	-	●	●	●
00304000V006050	0.3	4	0.6	50	-	●	●	●
00404000V008050	0.4	4	0.8	50	-	●	●	●
00504000V010050	0.5	4	1.0	50	-	●	●	●
00604000V012050	0.6	4	1.2	50	-	●	●	●
00704000V014050	0.7	4	1.4	50	-	●	●	●
00804000V016050	0.8	4	1.6	50	-	●	●	●
00904000V018050	0.9	4	1.8	50	-	●	●	●
01004000V025050	1.0	4	2.5	50	-	●	●	●
01204000V040050	1.2	4	4.0	50	-	●	●	●
01504000V040050	1.5	4	4.0	50	-	●	●	●
<b>2MBE</b> 00204010V004050	0.2	4	0.4	50	0.10	●	●	●
00304015V006050	0.3	4	0.6	50	0.15	●	●	●
00404020V008050	0.4	4	0.8	50	0.20	●	●	●
00504025V010050	0.5	4	1.0	50	0.25	●	●	●
00604030V012050	0.6	4	1.2	50	0.30	●	●	●
00704035V014050	0.7	4	1.4	50	0.35	●	●	●
00804040V016050	0.8	4	1.6	50	0.40	●	●	●
00904045V018050	0.9	4	1.8	50	0.45	●	●	●
01004050V025050	1.0	4	2.5	50	0.50	●	●	●
01204060V030050	1.2	4	3.0	50	0.60	●	●	●
01504075V040050	1.5	4	4.0	50	0.75	●	●	●

## 2 Flutes Micro Rib End Mills

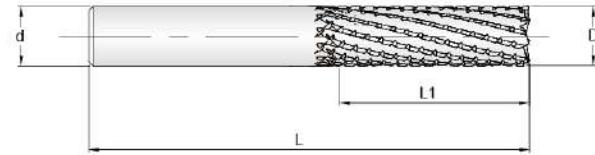


ØD	Tolerance
A11	0.00~0.015

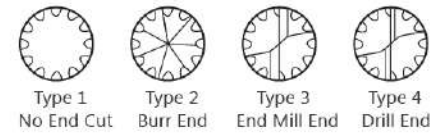
(mm)

Order Code	φD	φd	L1	L2	L	UC	R	Coating		
								~HRC52	HRC50~62	HRC52~68
								TT550	TS600	N400
<b>2RMFE</b> 00204000N010050	0.2	4	0.4	1.0	50	-	-	●	●	●
00304000N015050	0.3	4	0.6	1.5	50	-	-	●	●	●
00404000N020050	0.4	4	0.8	2.0	50	0.37	-	●	●	●
00504000N025050	0.5	4	1.0	2.5	50	0.45	-	●	●	●
00604000N030050	0.6	4	1.2	3.0	50	0.55	-	●	●	●
00704000N035050	0.7	4	1.4	3.5	50	0.65	-	●	●	●
00804000N040050	0.8	4	1.6	4.0	50	0.75	-	●	●	●
00904000N045050	0.9	4	1.8	4.5	50	0.85	-	●	●	●
01004000N060050	1.0	4	1.8	6.0	50	0.97	-	●	●	●
01204000N080050	1.2	4	1.8	8.0	50	1.17	-	●	●	●
01504000N100050	1.5	4	2.3	10.0	50	1.45	-	●	●	●
<b>2RMBE</b> 00204010N010050	0.2	4	0.4	1.0	50	-	0.10	●	●	●
00304015N015050	0.3	4	0.6	1.5	50	-	0.15	●	●	●
00404020N020050	0.4	4	0.8	2.0	50	0.36	0.20	●	●	●
00504025N025050	0.5	4	1.0	2.5	50	0.45	0.25	●	●	●
00604030N030050	0.6	4	1.2	3.0	50	0.55	0.30	●	●	●
00704035N035050	0.7	4	1.4	3.5	50	0.65	0.35	●	●	●
00804040N040050	0.8	4	1.6	4.0	50	0.75	0.40	●	●	●
00904045N045050	0.9	4	1.8	4.5	50	0.85	0.45	●	●	●
01004050N060050	1.0	4	1.8	6.0	50	0.97	0.50	●	●	●
01204060N080050	1.2	4	1.8	8.0	50	1.17	0.60	●	●	●
01504075N100050	1.5	4	2.3	10.0	50	1.45	0.75	●	●	●

## Solid Carbide, CFRP Routers with Chip Breaker Helical Flutes



ØD	Tolerance
Ø4~12	0.02~0.08



### INCH SIZES

(mm)

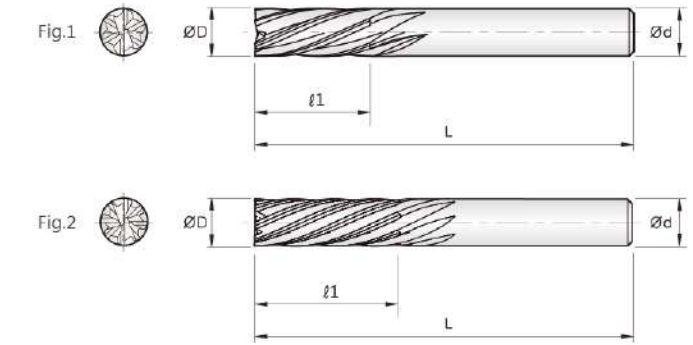
Order Code				D		d	L1	L	No.of flutes
Type1	Type2	Type3	Type4	Fraction	Decimal				
2CPR0125V005003	6CPHR0125V005003	4CPHR0125V005003	4CPDR0125V005003	1/8	0.1250	1/8	1/2	3	Multi Flutes
2CPR0250V010003	6CPHR0250V010003	4CPHR0250V010003	4CPDR0250V010003	1/4	0.2500	1/4	1	3	Multi Flutes
2CPR0375V010003	6CPHR0375V010003	4CPHR0375V010003	4CPDR0375V010003	3/8	0.3750	3/8	1	3	Multi Flutes
2CPR0500V015004	6CPHR0500V015004	4CPHR0500V015004	4CPDR0500V015004	1/2	0.5000	1/2	1-1/2	4	Multi Flutes

### METRIC SIZES

(mm)

Order Code				D	d	L1	L	No.of flutes
Type1	Type2	Type3	Type4					
2CPR03003000V09050	6CPHR03003000V09050	4CPHR03003000V09050	4CPDR03003000V09050	3.0	3	9	50	Multi Flutes
2CPR06006000V18065	6CPHR06006000V18065	4CPHR06006000V18065	4CPDR06006000V18065	6.0	6	18	65	Multi Flutes
2CPR08008000V24070	6CPHR08008000V24070	4CPHR08008000V24070	4CPDR08008000V24070	8.0	8	24	70	Multi Flutes
2CPR10010000V30080	6CPHR10010000V30080	4CPHR10010000V30080	4CPDR10010000V30080	10.0	10	30	80	Multi Flutes
2CPR12012000V36100	6CPHR12012000V36100	4CPHR12012000V36100	4CPDR12012000V36100	12.0	12	36	100	Multi Flutes

## Solid Carbide, CFRP Routers with Chip Breaker Helical Flutes



ØD	Tolerance
Ø6~12	0.00~0.03

### INCH SIZES

(mm)

Order Code		D		d	L1	L2	L	No.of flutes
without chipbreaker	with chipbreaker	Fraction	Decimal					
6CPNR0250V010003	6CPRR0250V010003	1/4	0.2500	1/4	1	3	3	6
6CPNR0375V010003	6CPRR0375V010003	3/8	0.3750	3/8	1	3	3	6
6CPNR0500V015004	6CPRR0500V015004	1/2	0.5000	1/2	1-1/2	4	4	6

### METRIC SIZES

(mm)

Order Code		D	d	L1	L2	L	No.of flutes
without chipbreaker	with chipbreaker						
6CPNR06006000V18065	6CPRR06006000V18065	6.0	6	18	65	65	6
6CPNR08008000V24070	6CPRR08008000V24070	8.0	8	24	70	70	6
6CPNR10010000V30080	6CPRR10010000V30080	10.0	10	30	80	80	6
6CPNR12012000V36100	6CPRR12012000V36100	12.0	12	36	100	100	6



## Recommended cutting condition

Materials	Cutting Speed m/min	Feed (mm/rev)						
		φ13.0-φ15.0	φ15.5-φ21.5	φ22.0-φ27.5	φ28.0-φ33.0	φ34.0-φ41.0	φ42.0-φ50.0	φ51.0-φ60.0
Low Carbon Steel (-0.3% C)	180-250	0.05-0.08	0.06-0.10	0.06-0.12	0.07-0.13	0.08-0.15	0.08-0.16	0.08-0.12
Carbon Steel (0.3% C-)	160-220	0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25	0.10-0.15
Low Alloy Steel (- Hb300)	150-220	0.06-0.12	0.08-0.14	0.10-0.18	0.12-0.22	0.12-0.23	0.13-0.24	0.08-0.15
High Alloy Steel (Hb300-)	130-180	0.06-0.10	0.08-0.15	0.10-0.20	0.12-0.23	0.12-0.24	0.13-0.25	0.08-0.15
Stainless Steel	170-240	0.05-0.10	0.06-0.12	0.08-0.15	0.09-0.16	0.10-0.17	0.11-0.19	0.06-0.12
Cast Iron	180-250	0.06-0.12	0.08-0.16	0.12-0.20	0.15-0.25	0.16-0.28	0.18-0.30	0.12-0.20
Ductile Cast Iron	130-200	0.06-0.10	0.08-0.15	0.10-0.18	0.12-0.20	0.15-0.23	0.16-0.25	0.10-0.15
Aluminum	330-380	0.06-0.14	0.08-0.15	0.10-0.20	0.12-0.22	0.14-0.23	0.15-0.26	0.15-0.22
Ti Alloy (Ti 6Al)	30-60	0.05-0.10	0.06-0.17	0.10-0.18	0.10-0.22	0.14-0.23	0.15-0.24	0.10-0.15

## Coolant Supply

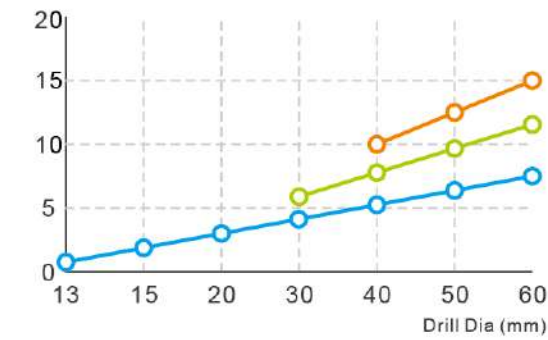
It is important to ensure that the recommended coolant pressure is applied

·Low pressure can cause vibration and reduced tool life

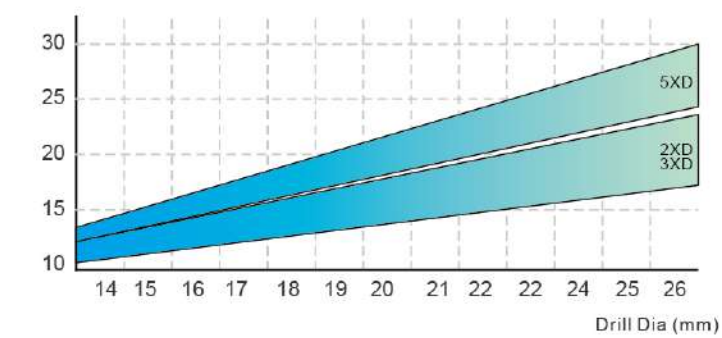
·The recommended minimum pressure is 4kg/cm<sup>2</sup> for 2XD and 3XD and for the 4XD the minimum pressure recommended is 5kg/cm<sup>2</sup>



Net Power Consumption



Coolant



## USER GUIDER

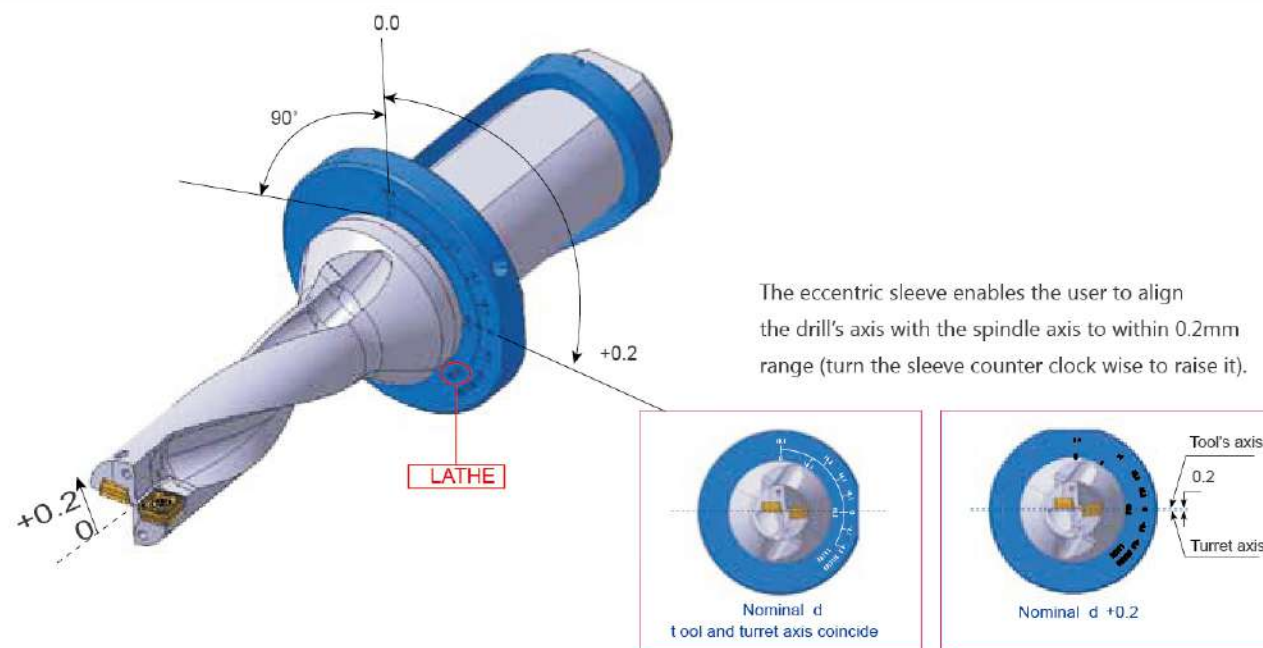
### >> Lathe application

- On a milling machine the sleeve can change the drill's nominal diameter by shifting the drill's axis out of the tool spindle.



### >> Milling application

- On a lathe, the eccentric sleeve can shift the drill's axis to coincide with the spindle axis.



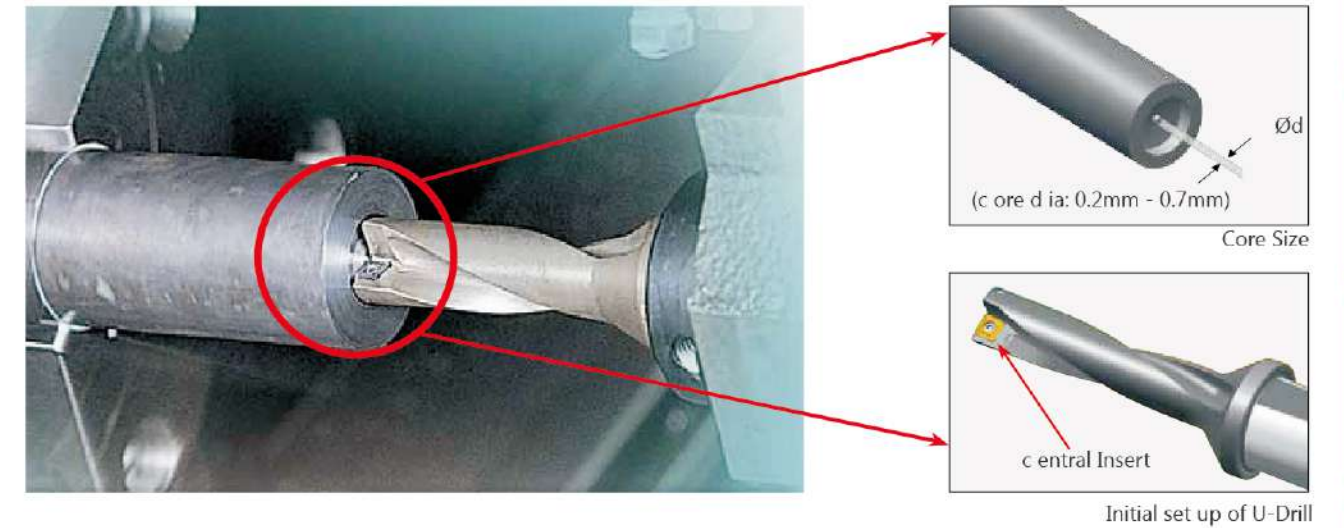
### >> Technical Information for Lathe Applications

- Initial drill set up and check

On first hole – please retract the drill after drilling to a depth of 3mm - 6mm and check it has produced a small core within 0.2mm - 0.7mm

- If a core is not created:** --It can cause insert breakage and vibration when drilling.  
--Please reverse the drill body 180 degrees in tool post and try again.

- If the size of core is over the recommendations:** --Please adjust offsets to bring core to correct size.  
--Failure to do so can cause overload and vibration during drilling.





## Hole Tolerance and Maximum Hole Size with Radial Adjustment

Drill Dia	3XD			4XD		
	Normal	Radial shift	Max'hole (φ)	Normal	Radia shift	Max'hole (φ)
13	13.16	+0.5	-14.0	13.22	+0.5	-14.0
14	14.10	+0.5	-15.0	14.15	+0.5	-15.0
15	15.10	+0.5	-16.0	15.17	+0.5	-16.0
16	16.07	+0.5	-17.0	16.09	+0.5	-17.0
17	17.08	+0.5	-18.0	17.13	+0.5	-18.0
18	18.05	+0.5	-19.0	18.20	+0.5	-19.0
19	19.08	+0.5	-20.0	19.18	+0.5	-20.0
20	20.06	+0.5	-21.0	20.05	+0.5	-21.0
21	20.97	+0.25	-21.5	21.00	+0.25	-21.5
22	21.94	+0.5	-23.0	22.01	+0.5	-23.0
23	23.10	+0.5	-24.0	23.10	+0.5	-24.0
24	24.10	+0.5	-25.0	24.15	+0.5	-25.0
25	25.06	+0.5	-26.0	25.13	+0.5	-26.0
26	26.03	+0.25	-26.5	26.09	+0.25	-26.5
27	27.05	+0.25	-27.5	26.96	+0.25	-27.5
28	28.11	+0.5	-29.0	27.97	+0.5	-29.0
29	28.54	+0.5	-30.0	29.07	+0.5	-30.0
30	30.23	+0.5	-31.0	30.13	+0.5	-31.0
31	31.07	+0.25	-31.5	31.12	+0.25	-31.5
32	32.06	+0.25	-32.5	32.11	+0.25	-32.5
33	33.12	+0.25	-33.5	33.17	+0.25	-33.5
34	34.10	+0.5	-35.0	34.15	+0.5	-35.0
35	35.07	+0.5	-36.0	35.12	+0.5	-36.0
36	36.03	+0.5	-37.0	36.08	+0.5	-37.0
37	37.14	+0.5	-38.0	37.19	+0.5	-38.0
38	38.05	+0.5	-39.0	38.08	+0.5	-39.0
39	39.03	+0.5	-40.0	39.08	+0.5	-40.0
40	40.00	+0.25	-40.5	40.05	+0.25	-40.5
41	40.99	+0.25	-41.5	41.04	+0.25	-41.5
42	42.03	+0.5	-43.0	42.08	+0.5	-43.0
43	42.99	+0.5	-44.0	43.04	+0.5	-44.0
44	44.17	+0.5	-45.0	44.22	+0.5	-45.0
45	45.21	+0.5	-46.0	45.26	+0.5	-46.0
46	46.17	+0.5	-47.0	46.23	+0.5	-47.0
47	47.15	+0.5	-48.0	47.20	+0.5	-48.0
48	48.12	+0.25	-48.5	48.17	+0.25	-48.5
49	49.00	+0.25	-49.5	49.05	+0.25	-49.5
50	50.02	+0.25	-50.0	50.07	+0.25	-50.0

Choose the shortest possible drill for best performance and productivity results.

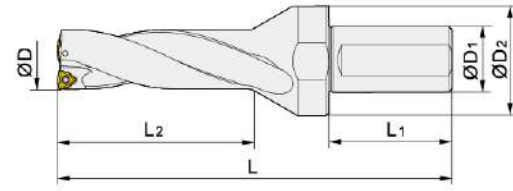
## Hole tolerance

Depth of drilling	Tolerance (mm)	Test Cutting Condition
2XD	+0.20/-0.1	<ul style="list-style-type: none"> <li>● vc = 130 ~200 m/min</li> <li>● fn = 0.04 ~ 0.15 mm/rev</li> <li>● Workpiece = SCM440</li> <li>● Coolant : Over 5kg/cm<sup>2</sup></li> </ul>
3XD	+0.25/-0.1	
4XD	+0.30/-0.1	
5XD	+0.40/-0.1	

## How to calculate machining power of drill: P (kw)

PC(kw) = 425xkcxcvcfnxD/107		
Example		
● Specific cutting force, kc(Mpa)	● Workpiece = 4140	● Fn = 0.1mm/rev
● Cutting speed: vc(m/min)	● kc=254Mpa	● D = 20mm
● Feed rate: fn(mm/rev)	● vc = 100m/min	
● Drill diameter: D(mm)	● PC(kw) = 425x254x100x0.1x20/1000000 = 2.159kw	

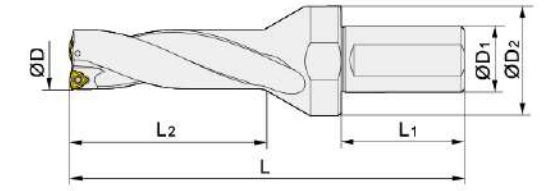
## 2D WC



mm

Designation	Stock	Size							Inserts	Spare Parts	
		D	D1	D2	L2	L1	L				
<b>ZD02</b> 140-XP25-WC03-02	●	14.0	25	32	28	56	106	WC□□0302□□	M2.5X6	T-8	
145-XP25-WC03-02	●	14.5	25	32	29	56	107				
150-XP25-WC03-02	●	15.0	25	32	30	56	108				
155-XP25-WC03-02	●	15.5	25	32	31	56	109				
160-XP25-WC03-02	●	16.0	25	32	32	56	110				
165-XP25-WC03-02	●	16.5	25	32	33	56	111				
170-XP25-WC03-02	●	17.0	25	32	34	56	112				
175-XP25-WC03-02	●	17.5	25	32	35	56	113				
180-XP25-WC03-02	●	18.0	25	32	36	56	114				
185-XP25-WC03-02	●	18.5	25	32	37	56	115				
190-XP25-WC03-02	●	19.0	25	32	38	56	116				
95-XP25-WC03-02	●	19.5	25	32	39	56	117				
200-XP25-WC03-02	●	20.0	25	32	40	56	119				
205-XP25-WC03-02	●	20.5	25	32	41	56	120				
210-XP25-WC04-02	●	21.0	25	45	42	56	121	WC□□0402□□	M2.5X6	T-8	
215-XP25-WC04-02	●	21.5	25	45	43	56	122				
220-XP25-WC04-02	●	22.0	25	45	44	56	123				
225-XP25-WC04-02	●	22.5	25	45	45	56	124				
230-XP25-WC04-02	●	23.0	25	45	46	56	125				
235-XP25-WC04-02	●	23.5	25	45	47	56	126				
240-XP25-WC04-02	●	24.0	25	45	48	56	127				
245-XP25-WC04-02	●	24.5	25	45	49	56	128				
250-XP32-WC05-02	●	25.0	32	55	50	60	141	WC□□0503□□	M3.0x8	T-8	
255-XP32-WC05-02	●	25.5	32	55	51	60	142				
260-XP32-WC05-02	●	26.0	32	55	52	60	143				
265-XP32-WC05-02	●	26.5	32	55	53	60	144				
270-XP32-WC05-02	●	27.0	32	55	54	60	145				
275-XP32-WC05-02	●	27.5	32	55	55	60	146				
280-XP32-WC05-02	●	28.0	32	55	56	60	147				
285-XP32-WC05-02	●	28.5	32	55	57	60	148				
290-XP32-WC05-02	●	29.0	32	55	58	60	149				
295-XP32-WC05-02	●	29.5	32	55	59	60	150				
300-XP32-WC05-02	●	30.0	32	55	60	60	151				
305-XP32-WC05-02	●	30.5	32	55	61	60	152				
310-XP32-WC05-02	●	31.0	32	55	62	60	153				
315-XP32-WC05-02	●	31.5	32	55	63	60	154				

## 2D WC



mm

Designation	Stock	Size							Inserts	Spare Parts	
		D	D1	D2	L2	L1	L				
<b>ZD02</b> 320-XP32-WC06-02	●	32.0	32	55	64	60	155	WC□□06T3□□	M3.5x9	T-15	
325-XP32-WC06-02	●	32.5	32	55	65	60	156				
330-XP32-WC06-02	●	33.0	32	55	66	60	157				
335-XP32-WC06-02	●	33.5	32	55	67	60	158				
340-XP32-WC06-02	●	34.0	32	55	68	60	159				
345-XP32-WC06-02	●	34.5	32	55	69	60	160				
350-XP32-WC06-02	●	35.0	32	55	70	60	161				
355-XP32-WC06-02	●	35.5	32	55	71	60	162				
360-XP32-WC06-02	●	36.0	32	55	72	60	163				
365-XP32-WC06-02	●	36.5	32	55	73	60	164				
370-XP32-WC06-02	●	37.0	32	55	74	60	165				
375-XP32-WC06-02	●	37.5	32	55	75	60	166				
380-XP32-WC06-02	●	38.0	32	55	76	60	167				
385-XP32-WC06-02	●	38.5	32	55	77	60	168				
390-XP32-WC06-02	●	39.0	32	55	78	60	169				
395-XP32-WC06-02	●	39.5	32	55	79	60	170				
400-XP32-WC06-02	●	40.0	32	55	80	60	171				
410-XP32-WC06-02	●	41.0	32	55	82	60	173				
420-XP32-WC06-02	●	42.0	32	55	84	60	175				
430-XP40-WC08-02	●	43.0	40	60	86	70	191	WC□□0804□□	M4.0x10	T-15	
440-XP40-WC08-02	●	44.0	40	60	88	70	193				
450-XP40-WC08-02	●	45.0	40	60	90	70	195				
460-XP40-WC08-02	●	46.0	40	60	92	70	197				
470-XP40-WC08-02	●	47.0	40	60	94	70	199				
480-XP40-WC08-02	●	48.0	40	60	96	70	201				
490-XP40-WC08-02	●	49.0	40	60	98	70	203				
500-XP40-WC08-02	●	50.0	40	60	100	70	205				
510-XP40-WC08-02	●	51.0	40	70	102	70	207				
520-XP40-WC08-02	●	52.0	40	70	104	70	209				
530-XP40-WC08-02	●	53.0	40	70	106	70	211				
540-XP40-WC08-02	●	54.0	40	70	108	70	213				
550-XP40-WC08-02	●	55.0	40	70	110	70	215				
560-XP40-WC08-02	●	56.0	40	70	112	70	217				
570-XP40-WC08-02	●	57.0	40	70	114	70	219				
580-XP40-WC06-04	●	58.0	40	70	116	70	221				
590-XP40-WC06-04	●	59.0	40	70	118	70	223				
600-XP40-WC06-04	●	60.0	40	70	120	70	225				

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

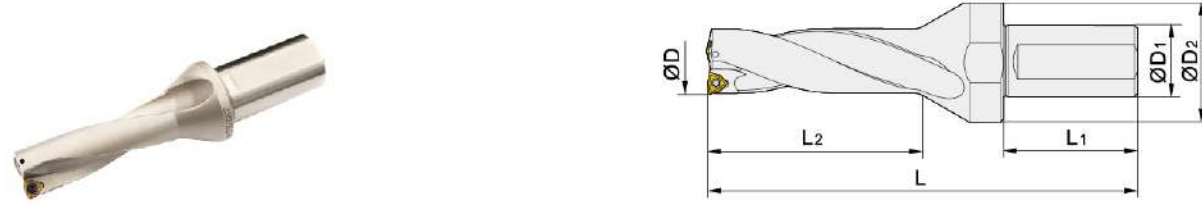
MILL LINE

DRILL LINE

TOOL LINE



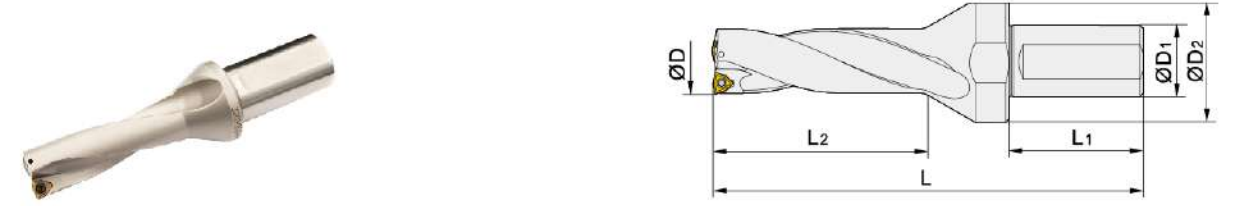
## 3D WC



mm

Designation	Stock	Size						Inserts	Spare Parts	
		D	D1	D2	L2	L1	L			
<b>ZD03</b> 140-XP25-WC03-02	●	14.0	25	32	42.0	56	120	WC□□0302□□	M2.5X6	T-8
145-XP25-WC03-02	●	14.5	25	32	43.5	56	122			
150-XP25-WC03-02	●	15.0	25	32	45.0	56	123			
155-XP25-WC03-02	●	15.5	25	32	46.5	56	125			
160-XP25-WC03-02	●	16.0	25	32	48.0	56	126			
165-XP25-WC03-02	●	16.5	25	32	49.5	56	128			
170-XP25-WC03-02	●	17.0	25	32	51.0	56	129			
175-XP25-WC03-02	●	17.5	25	32	52.5	56	131			
180-XP25-WC03-02	●	18.0	25	32	54.0	56	132			
185-XP25-WC03-02	●	18.5	25	32	55.5	56	134			
190-XP25-WC03-02	●	19.0	25	32	57.0	56	135	WC□□0402□□	M2.5X6	T-8
195-XP25-WC03-02	●	19.5	25	32	58.5	56	137			
200-XP25-WC03-02	●	20.0	25	32	60.0	56	138			
205-XP25-WC03-02	●	20.5	25	32	61.5	56	140			
210-XP25-WC04-02	●	21.0	25	45	63.0	56	141			
215-XP25-WC04-02	●	21.5	25	45	64.5	56	143			
220-XP25-WC04-02	●	22.0	25	45	66.0	56	144			
225-XP25-WC04-02	●	22.5	25	45	67.5	56	146			
230-XP25-WC04-02	●	23.0	25	45	69.0	56	147			
235-XP25-WC04-02	●	23.5	25	45	70.5	56	149			
240-XP25-WC04-02	●	24.0	25	45	72.0	56	150	WC□□0503□□	M3.0x8	T-8
245-XP25-WC04-02	●	24.5	25	45	73.5	56	152			
250-XP32-WC05-02	●	25.0	32	55	75.0	60	166			
255-XP32-WC05-02	●	25.5	32	55	76.5	60	168			
260-XP32-WC05-02	●	26.0	32	55	78.0	60	169			
265-XP32-WC05-02	●	26.5	32	55	79.5	60	171			
270-XP32-WC05-02	●	27.0	32	55	81.0	60	172			
275-XP32-WC05-02	●	27.5	32	55	82.5	60	174			
280-XP32-WC05-02	●	28.0	32	55	84.0	60	175			
285-XP32-WC05-02	●	28.5	32	55	85.5	60	177			
290-XP32-WC05-02	●	29.0	32	55	87.0	60	178	WC□□06T3□□	M3.5x9	T-15
295-XP32-WC05-02	●	29.5	32	55	88.5	60	180			
300-XP32-WC05-02	●	30.0	32	55	90.0	60	181			
305-XP32-WC05-02	●	30.5	32	55	91.5	60	183			
310-XP32-WC05-02	●	31.0	32	55	93.0	60	184			
315-XP32-WC05-02	●	31.5	32	55	94.5	60	186			

## 3D WC

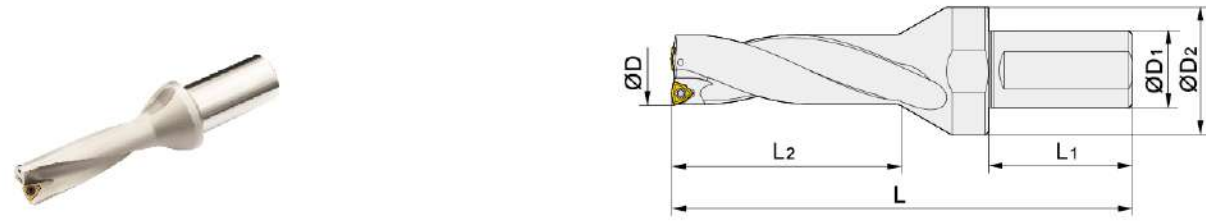


mm

Designation	Stock	Size						Inserts	Spare Parts	
		D	D1	D2	L2	L1	L			
<b>ZD03</b> 320-XP32-WC06-02	●	32.0	32	55	96.0	60	187	WC□□06T3□□	M3.5x9	T-15
325-XP32-WC06-02	●	32.5	32	55	97.0	60	189			
330-XP32-WC06-02	●	33.0	32	55	99.0	60	190			
335-XP32-WC06-02	●	33.5	32	55	100.5	60	192			
340-XP32-WC06-02	●	34.0	32	55	102.0	60	193			
345-XP32-WC06-02	●	34.5	32	55	103.5	60	195			
350-XP32-WC06-02	●	35.0	32	55	105.0	60	196			
355-XP32-WC06-02	●	35.5	32	55	106.5	60	198			
360-XP32-WC06-02	●	36.0	32	55	108.0	60	199			
365-XP32-WC06-02	●	36.5	32	55	109.5	60	201			
370-XP32-WC06-02	●	37.0	32	55	111.0	60	202	WC□□0804□□	M4.0x10	T-15
375-XP32-WC06-02	●	37.5	32	55	112.5	60	204			
380-XP32-WC06-02	●	38.0	32	55	114.0	60	205			
385-XP32-WC06-02	●	38.5	32	55	115.5	60	207			
390-XP32-WC06-02	●	39.0	32	55	117.0	60	208			
395-XP32-WC06-02	●	39.5	32	55	118.5	60	210			
400-XP32-WC06-02	●	40.0	32	55	120.0	60	211			
410-XP32-WC06-02	●	41.0	32	55	123.0	60	214			
420-XP32-WC06-02	●	42.0	32	55	126.0	60	217			
430-XP40-WC08-02	●	43.0	40	60	129.0	70	234			
440-XP40-WC08-02	●	44.0	40	60	132.0	70	237	WC□□06T3□□	M3.5x9	T-15
450-XP40-WC08-02	●	45.0	40	60	135.0	70	240			
460-XP40-WC08-02	●	46.0	40	60	138.0	70	243			
470-XP40-WC08-02	●	47.0	40	60	141.0	70	246			
480-XP40-WC08-02	●	48.0	40	60	144.0	70	249			
490-XP40-WC08-02	●	49.0	40	60	147.0	70	252			
500-XP40-WC08-02	●	50.0	40	60	150.0	70	255			
510-XP40-WC08-02	●	51.0	40	70	153.0	70	258			
520-XP40-WC08-02	●	52.0	40	70	156.0	70	261			
530-XP40-WC08-02	●	53.0	40	70	159.0	70	264			
540-XP40-WC08-02	●	54.0	40	70	162.0	70	267	WC□□06T3□□	M3.5x9	T-15
550-XP40-WC08-02	●	55.0	40	70	165.0	70	270			
560-XP40-WC08-02	●	56.0	40	70	168.0	70	273			
570-XP40-WC08-02	●	57.0	40	70	171.0	70	276			
580-XP40-WC06-04	●	58.0	40	70	174.0	70	279			
590-XP40-WC06-04	●	59.0	40	70	177.0	70	282			
600-XP40-WC06-04	●	60.0	40	70	180.0	70	285			



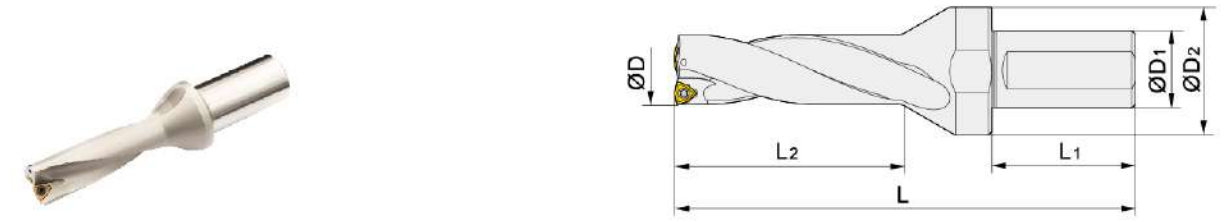
## 4D WC



mm

Designation	Stock	Size						Inserts	Spare Parts	
		D	D1	D2	L2	L1	L			
<b>ZD04</b> 140-XP25-WC03-02	●	14.0	25	32	56	56	134	WC□□0302□□	M2.5X6	T-8
145-XP25-WC03-02	●	14.5	25	32	58	56	136			
150-XP25-WC03-02	●	15.0	25	32	60	56	138			
155-XP25-WC03-02	●	15.5	25	32	62	56	140			
160-XP25-WC03-02	●	16.0	20	25	64	56	142			
165-XP25-WC03-02	●	16.5	20	25	66	56	144			
170-XP25-WC03-02	●	17.0	25	32	68	56	146			
175-XP25-WC03-02	●	17.5	25	32	70	56	148			
180-XP25-WC03-02	●	18.0	25	32	72	56	150			
185-XP25-WC03-02	●	18.5	25	32	74	56	152			
190-XP25-WC03-02	●	19.0	25	32	76	56	154			
195-XP25-WC03-02	●	19.5	25	32	78	56	155			
200-XP25-WC03-02	●	20.0	25	32	80	56	159			
205-XP25-WC03-02	●	20.5	25	32	82	56	161			
210-XP25-WC04-02	●	21.0	25	45	84	56	163			
215-XP25-WC04-02	●	21.5	25	45	86	56	165			
220-XP25-WC04-02	●	22.0	25	45	88	56	167			
225-XP25-WC04-02	●	22.5	25	45	90	56	169			
230-XP25-WC04-02	●	23.0	25	45	92	56	171			
235-XP25-WC04-02	●	23.5	25	45	94	56	173			
240-XP25-WC04-02	●	24.0	25	45	96	56	175	WC□□0503□□	M3.0x8	T-8
245-XP25-WC04-02	●	24.5	25	45	98	56	177			
250-XP32-WC05-02	●	25.0	32	55	100	60	191			
255-XP32-WC05-02	●	25.5	32	55	102	60	193			
260-XP32-WC05-02	●	26.0	32	55	104	60	195			
265-XP32-WC05-02	●	26.5	32	55	106	60	197			
270-XP32-WC05-02	●	27.0	32	55	108	60	199			
275-XP32-WC05-02	●	27.5	32	55	110	60	201			
280-XP32-WC05-02	●	28.0	32	55	112	60	203			
285-XP32-WC05-02	●	28.5	32	55	114	60	205			
290-XP32-WC05-02	●	29.0	32	55	116	60	207			
295-XP32-WC05-02	●	29.5	32	55	118	60	209			
300-XP32-WC05-02	●	30.0	32	55	120	60	211			
305-XP32-WC05-02	●	30.5	32	55	122	60	213			
310-XP32-WC05-02	●	31.0	32	55	124	60	215			
315-XP32-WC05-02	●	31.5	32	55	126	60	217			

## 4D WC

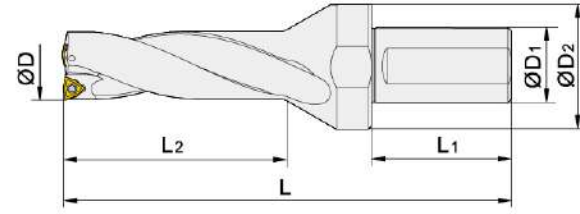


mm

Designation	Stock	Size						Inserts	Spare Parts				
		D	D1	D2	L2	L1	L						
<b>ZD04</b> 320-XP32-WC06-02	●	32.0	32	55	128	60	219	WC□□06T3□□	M3.5x9	T-15			
325-XP32-WC06-02	●	32.5	32	55	130	60	221						
330-XP32-WC06-02	●	33.0	32	55	132	60	223						
335-XP32-WC06-02	●	33.5	32	55	134	60	225						
340-XP32-WC06-02	●	34.0	32	55	136	60	227						
345-XP32-WC06-02	●	34.5	32	55	138	60	229						
350-XP32-WC06-02	●	35.0	32	55	140	60	231						
355-XP32-WC06-02	●	35.5	32	55	142	60	233						
360-XP32-WC06-02	●	36.0	32	55	144	60	235						
365-XP32-WC06-02	●	36.5	32	55	146	60	237						
370-XP32-WC06-02	●	37.0	32	55	148	60	239						
375-XP32-WC06-02	●	37.5	32	55	150	60	241						
380-XP32-WC06-02	●	38.0	32	55	152	60	243						
385-XP32-WC06-02	●	38.5	32	55	154	60	245						
390-XP32-WC06-02	●	39.0	32	55	156	60	247						
395-XP32-WC06-02	●	39.5	32	55	158	60	249						
400-XP32-WC06-02	●	40.0	32	55	160	60	251						
410-XP32-WC06-02	●	41.0	32	55	164	60	255						
420-XP32-WC06-02	●	42.0	32	55	168	60	259						
430-XP40-WC08-02	●	43.0	40	60	172	70	277				WC□□0804□□	M4.0x10	T-15
440-XP40-WC08-02	●	44.0	40	60	176	70	281						
450-XP40-WC08-02	●	45.0	40	60	180	70	285						
460-XP40-WC08-02	●	46.0	40	60	184	70	289						
470-XP40-WC08-02	●	47.0	40	60	188	70	293						
480-XP40-WC08-02	●	48.0	40	60	192	70	297						
490-XP40-WC08-02	●	49.0	40	60	196	70	301						
500-XP40-WC08-02	●	50.0	40	60	200	70	305						
510-XP40-WC08-02	●	51.0	40	70	204	70	309						
520-XP40-WC08-02	●	52.0	40	70	208	70	313						
530-XP40-WC08-02	●	53.0	40	70	212	70	317						
540-XP40-WC08-02	●	54.0	40	70	216	70	321						
550-XP40-WC08-02	●	55.0	40	70	220	70	325						
560-XP40-WC08-02	●	56.0	40	70	224	70	329						
570-XP40-WC08-02	●	57.0	40	70	228	70	333						
580-XP40-WC06-04	●	58.0	40	70	232	70	337	WC□□06T3□□	M3.5x9	T-15			
590-XP40-WC06-04	●	59.0	40	70	236	70	341						
600-XP40-WC06-04	●	60.0	40	70	240	70	345						



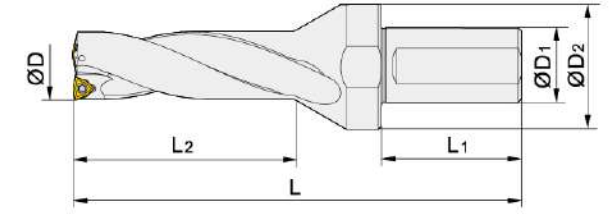
## 5D WC



mm

Designation	Stock	Size						Inserts	Spare Parts	
		D	D1	D2	L2	L1	L			
<b>ZD05</b> 200-XP25-WC03-02	●	20.0	25	32	100.0	56	179	WC□□0302□□	M2.5X6	T-8
205-XP25-WC03-02	●	20.5	25	32	102.5	56	182			
210-XP25-WC04-02	●	21.0	25	45	105.0	56	184			
215-XP25-WC04-02	●	21.5	25	45	107.0	56	187			
220-XP25-WC04-02	●	22.0	25	45	110.0	56	189	WC□□0402□□	M2.5X6	T-8
225-XP25-WC04-02	●	22.5	25	45	112.5	56	192			
230-XP25-WC04-02	●	23.0	25	45	115.0	56	194			
235-XP25-WC04-02	●	23.5	25	45	117.5	56	197			
240-XP25-WC04-02	●	24.0	25	45	120.0	56	199			
245-XP25-WC04-02	●	24.5	25	45	122.5	56	202			
250-XP32-WC05-02	●	25.0	32	55	125.0	60	216	WC□□0503□□	M3.0x8	T-8
255-XP32-WC05-02	●	25.5	32	55	127.5	60	219			
260-XP32-WC05-02	●	26.0	32	55	130.0	60	221			
265-XP32-WC05-02	●	26.5	32	55	132.5	60	224			
270-XP32-WC05-02	●	27.0	32	55	135.0	60	226			
275-XP32-WC05-02	●	27.5	32	55	137.5	60	229			
280-XP32-WC05-02	●	28.0	32	55	140.0	60	231			
285-XP32-WC05-02	●	28.5	32	55	142.5	60	234			
290-XP32-WC05-02	●	29.0	32	55	145.0	60	236			
295-XP32-WC05-02	●	29.5	32	55	147.5	60	239			
300-XP32-WC05-02	●	30.0	32	55	150.0	60	241			
305-XP32-WC05-02	●	30.5	32	55	152.5	60	244			
310-XP32-WC05-02	●	31.0	32	55	155.0	60	246	WC□□06T3□□	M3.5x9	T-15
315-XP32-WC05-02	●	31.5	32	55	157.5	60	249			
320-XP32-WC06-02	●	32.0	32	55	160.0	60	251			
325-XP32-WC06-02	●	32.5	32	55	162.5	60	254			
330-XP32-WC06-02	●	33.0	32	55	165.0	60	256			
335-XP32-WC06-02	●	33.5	32	55	167.5	60	259			
340-XP32-WC06-02	●	34.0	32	55	170.0	60	261			
345-XP32-WC06-02	●	34.5	32	55	172.5	60	264			
350-XP32-WC06-02	●	35.0	32	55	175.0	60	266			
355-XP32-WC06-02	●	35.5	32	55	177.5	60	269			
360-XP32-WC06-02	●	36.0	32	55	180.0	60	271			
365-XP32-WC06-02	●	36.5	32	55	182.5	60	274			
370-XP32-WC06-02	●	37.0	32	55	185.0	60	276			
375-XP32-WC06-02	●	37.5	32	55	187.5	60	279			

## 5D WC

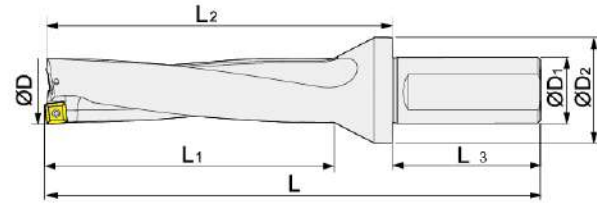


mm

Designation	Stock	Size						Inserts	Spare Parts	
		D	D1	D2	L2	L1	L			
<b>ZD05</b> 380-XP32-WC06-02	●	38.0	32	55	190.0	60	281	WC□□06T3□□	M3.5x9	T-15
385-XP32-WC06-02	●	38.5	32	55	192.5	60	284			
390-XP32-WC06-02	●	39.0	32	55	195.0	60	286			
395-XP32-WC06-02	●	39.5	32	55	197.5	60	289			
400-XP32-WC06-02	●	40.0	32	55	200.0	60	291			
410-XP32-WC06-02	●	41.0	32	55	205.0	60	296			
420-XP32-WC06-02	●	42.0	32	55	210.0	60	301	WC□□0804□□	M4.0x10	T-15
430-XP40-WC08-02	●	43.0	40	60	215.0	70	320			
440-XP40-WC08-02	●	44.0	40	60	220.0	70	325			
450-XP40-WC08-02	●	45.0	40	60	225.0	70	330			
460-XP40-WC08-02	●	46.0	40	60	230.0	70	335			
470-XP40-WC08-02	●	47.0	40	60	235.0	70	340			
480-XP40-WC08-02	●	48.0	40	60	240.0	70	345			
490-XP40-WC08-02	●	49.0	40	60	245.0	70	350			
500-XP40-WC08-02	●	50.0	40	60	250.0	70	355			
510-XP40-WC08-02	●	51.0	40	70	255.0	70	360			
520-XP40-WC08-02	●	52.0	40	70	260.0	70	365			
530-XP40-WC08-02	●	53.0	40	70	265.0	70	370			
540-XP40-WC08-02	●	54.0	40	70	270.0	70	375			
550-XP40-WC08-02	●	55.0	40	70	275.0	70	380			
560-XP40-WC08-02	●	56.0	40	70	280.0	70	385			
570-XP40-WC08-02	●	57.0	40	70	285.0	70	390			
580-XP40-WC06-04	●	58.0	40	70	290.0	70	395	WC□□06T3□□	M3.5x9	T-15
590-XP40-WC06-04	●	59.0	40	70	295.0	70	400			
600-XP40-WC06-04	●	60.0	40	70	300.0	70	405			



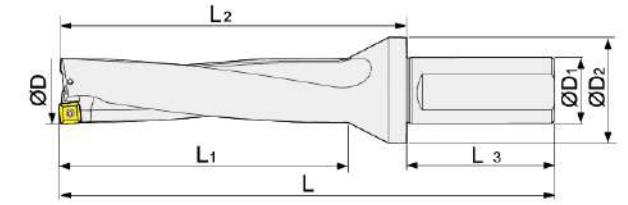
## 2D SP



mm

Designation	Stock	Size							Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L			
<b>ZD02</b> 100-XP20-SP04-02	●	10.0	20	25	20	38	50	88	SP□□040202	M1.8x3.6	T-6
105-XP20-SP04-02	●	10.5	20	25	21	39	50	89			
110-XP20-SP04-02	●	11.0	20	25	22	40	50	90			
115-XP20-SP04-02	●	11.5	20	25	23	40	50	90			
120-XP20-SP04-02	●	12.0	20	25	24	42	50	92	SP□□040202 SP□□040204	M1.8x3.6 M2.0x5.5	T-6
125-XP20-SP04-02	●	12.5	20	25	25	43	50	93			
130-XP25-SP05-02	●	13.0	25	32	26	48	56	104	SP□□0502□□	M2.0x5	T-6
135-XP25-SP05-02	●	13.5	25	32	27	49	56	105			
140-XP25-SP05-02	●	14.0	25	32	28	50	56	106			
145-XP25-SP05-02	●	14.5	25	32	29	51	56	107			
150-XP25-SP05-02	●	15.0	25	32	30	52	56	108			
155-XP25-SP06-02	●	15.5	25	32	31	53	56	109			
160-XP25-SP06-02	●	16.0	20	25	32	54	56	110			
165-XP25-SP06-02	●	16.5	20	25	33	55	56	111			
170-XP25-SP06-02	●	17.0	25	32	34	56	56	112			
175-XP25-SP06-02	●	17.5	25	32	35	57	56	113			
180-XP25-SP06-02	●	18.0	25	32	36	58	56	114	SP□□0602□□	M2.2x5	T-6
185-XP25-SP06-02	●	18.5	25	32	37	59	56	115			
190-XP25-SP06-02	●	19.0	25	32	38	60	56	116			
195-XP25-SP06-02	●	19.5	25	32	39	61	56	117			
200-XP25-SP06-02	●	20.0	25	32	40	63	56	119			
205-XP25-SP06-02	●	20.5	25	32	41	64	56	120			
210-XP25-SP06-02	●	21.0	25	45	42	65	56	121			
215-XP25-SP06-02	●	21.5	25	45	43	66	56	122			
220-XP25-SP07-02	●	22.0	25	45	44	67	56	123			
225-XP25-SP07-02	●	22.5	25	45	45	68	56	124			
230-XP25-SP07-02	●	23.0	25	45	46	69	56	125	SP□□07T3□□	M2.5x6	T-8
235-XP25-SP07-02	●	23.5	25	45	47	70	56	126			
240-XP25-SP07-02	●	24.0	25	45	48	71	56	127			
245-XP25-SP07-02	●	24.5	25	45	49	72	56	128			
250-XP32-SP07-02	●	25.0	32	55	50	81	60	141			
255-XP32-SP07-02	●	25.5	32	55	51	82	60	142			
260-XP32-SP07-02	●	26.0	32	55	52	83	60	143			
265-XP32-SP07-02	●	26.5	32	55	53	84	60	144			
270-XP32-SP07-02	●	27.0	32	55	54	85	60	145			
275-XP32-SP09-02	●	27.5	32	55	55	86	60	146			
280-XP32-SP09-02	●	28.0	32	55	56	87	60	147	SP□□0904□□	M3.5x9	T-15
285-XP32-SP09-02	●	28.5	32	55	57	88	60	148			
290-XP32-SP09-02	●	29.0	32	55	58	89	60	149			
295-XP32-SP09-02	●	29.5	32	55	59	90	60	150			
300-XP32-SP09-02	●	30.0	32	55	60	91	60	151			
305-XP32-SP09-02	●	30.5	32	55	61	92	60	152			

## 2D SP

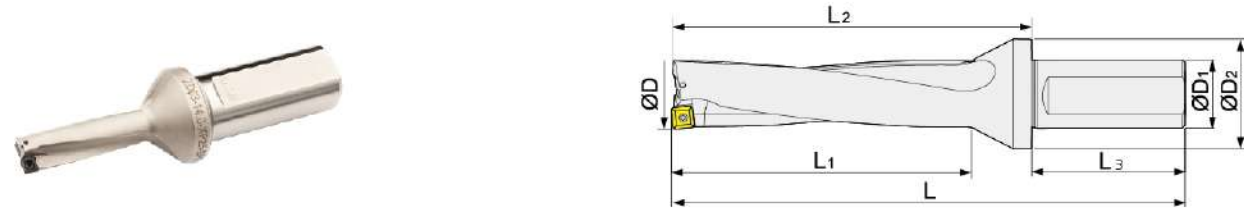


mm

Designation	Stock	Size							Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L			
<b>ZD02</b> 310-XP32-SP09-02	●	31.0	32	55	62	93	60	153	SP□□0904□□	M3.5x9	T-15
315-XP32-SP09-02	●	31.5	32	55	63	94	60	154			
320-XP32-SP09-02	●	32.0	32	55	64	95	60	155			
325-XP32-SP09-02	●	32.5	32	55	65	96	60	156			
330-XP32-SP09-02	●	33.0	32	55	66	97	60	157			
335-XP32-SP11-02	●	33.5	32	55	67	98	60	158			
340-XP32-SP11-02	●	34.0	32	55	68	99	60	159			
345-XP32-SP11-02	●	34.5	32	55	69	100	60	160			
350-XP32-SP11-02	●	35.0	32	55	70	101	60	161			
355-XP32-SP11-02	●	35.5	32	55	71	102	60	162			
360-XP32-SP11-02	●	36.0	32	55	72	103	60	163	SP□□1104□□	M4.0x10	T-15
365-XP32-SP11-02	●	36.5	32	55	73	104	60	164			
370-XP32-SP11-02	●	37.0	32	55	74	105	60	165			
375-XP32-SP11-02	●	37.5	32	55	75	106	60	166			
380-XP32-SP11-02	●	38.0	32	55	76	107	60	167			
385-XP32-SP11-02	●	38.5	32	55	77	108	60	168			
390-XP32-SP11-02	●	39.0	32	55	78	109	60	169			
395-XP32-SP11-02	●	39.5	32	55	79	110	60	170			
400-XP32-SP11-02	●	40.0	32	55	80	111	60	171			
410-XP32-SP14-02	●	41.0	32	55	82	113	60	173			
420-XP32-SP14-02	●	42.0	32	55	84	115	60	175			
430-XP40-SP14-02	●	43.0	40	60	86	121	70	191			
440-XP40-SP14-02	●	44.0	40	60	88	123	70	193			
450-XP40-SP14-02	●	45.0	40	60	90	125	70	195			
460-XP40-SP14-02	●	46.0	40	60	92	127	70	197			
470-XP40-SP14-02	●	47.0	40	60	94	129	70	199			
480-XP40-SP14-02	●	48.0	40	60	96	131	70	201			
490-XP40-SP14-02	●	49.0	40	60	98	133	70	203			
500-XP40-SP14-02	●	50.0	40	60	100	135	70	205			
510-XP40-SP14-02	●	51.0	40	70	102	137	70	207	SP□□0904□□	M3.5x9	T-15
520-XP40-SP09-04	●	52.0	40	70	104	139	70	209			
530-XP40-SP09-04	●	53.0	40	70	106	127	70	211			
540-XP40-SP09-04	●	54.0	40	70	108	127	70	213			
550-XP40-SP09-04	●	55.0	40	70	110	127	70	215			
560-XP40-SP09-04	●	56.0	40	70	112	127	70	217			
570-XP40-SP09-04	●	57.0	40	70	114	127	70	219			
580-XP40-SP09-04	●	58.0	40	70	116	127	70	221			
590-XP40-SP09-04	●	59.0	40	70	118	127	70	223			
600-XP40-SP09-04	●	60.0	40	70	120	127	70	225			



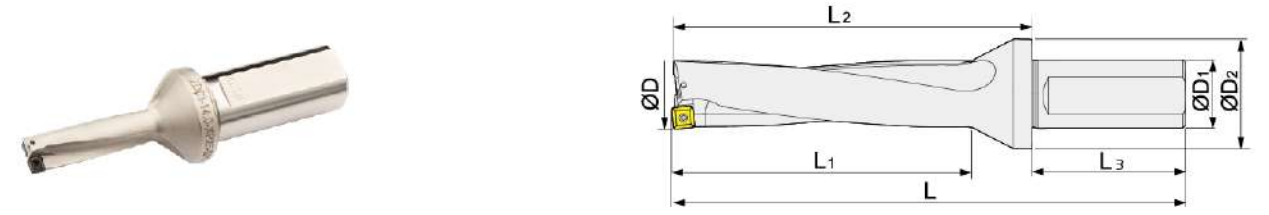
## 3D SP



mm

Designation	Stock	Size							Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L			
<b>ZD03</b> 100-XP20-SP04-02	●	10.0	20	25	30.0	48	50	98	SP□□040202	M1.8x3.6	T-6
105-XP20-SP04-02	●	10.5	20	25	31.5	50	50	100			
110-XP20-SP04-02	●	11.0	20	25	33.0	51	50	101			
115-XP20-SP04-02	●	11.5	20	25	34.5	52	50	102			
120-XP20-SP04-02	●	12.0	20	25	36.0	53	50	103			
125-XP20-SP04-02	●	12.5	20	25	37.5	55	50	105	SP□□040202 SP□□040204	M1.8x3.6 M2.0x5.5	T-6
130-XP25-SP05-02	●	13.0	25	32	39.0	61	56	117			
135-XP25-SP05-02	●	13.5	25	32	40.5	63	56	119	SP□□0502□□	M2.0x5	T-6
140-XP25-SP05-02	●	14.0	25	32	42.0	64	56	120			
145-XP25-SP05-02	●	14.5	25	32	43.5	66	56	122			
150-XP25-SP05-02	●	15.0	25	32	45.0	67	56	123			
155-XP25-SP06-02	●	15.5	25	32	46.5	69	56	125			
160-XP25-SP06-02	●	16.0	20	25	48.0	70	56	126	SP□□0602□□	M2.2x5	T-6
165-XP25-SP06-02	●	16.5	20	25	49.5	72	56	128			
170-XP25-SP06-02	●	17.0	25	32	51.0	73	56	129			
175-XP25-SP06-02	●	17.5	25	32	52.5	75	56	131			
180-XP25-SP06-02	●	18.0	25	32	54.0	76	56	132			
185-XP25-SP06-02	●	18.5	25	32	55.5	78	56	134			
190-XP25-SP06-02	●	19.0	25	32	57.0	79	56	135			
195-XP25-SP06-02	●	19.5	25	32	58.5	81	56	137			
200-XP25-SP06-02	●	20.0	25	32	60.0	82	56	138			
205-XP25-SP06-02	●	20.5	25	32	61.5	84	56	140			
210-XP25-SP06-02	●	21.0	25	45	63.0	85	56	141	SP□□07T3□□	M2.5x6	T-8
215-XP25-SP06-02	●	21.5	25	45	64.5	87	56	143			
220-XP25-SP07-02	●	22.0	25	45	66.0	88	56	144			
225-XP25-SP07-02	●	22.5	25	45	67.5	90	56	146			
230-XP25-SP07-02	●	23.0	25	45	69.0	91	56	147			
235-XP25-SP07-02	●	23.5	25	45	70.5	93	56	149			
240-XP25-SP07-02	●	24.0	25	45	72.0	94	56	150			
245-XP25-SP07-02	●	24.5	25	45	73.5	96	56	152			
250-XP32-SP07-02	●	25.0	32	55	75.0	106	60	166			
255-XP32-SP07-02	●	25.5	32	55	76.5	108	60	168			
260-XP32-SP07-02	●	26.0	32	55	78.0	109	60	169	SP□□0904□□	M3.5x9	T-15
265-XP32-SP07-02	●	26.5	32	55	79.5	111	60	171			
270-XP32-SP07-02	●	27.0	32	55	81.0	112	60	172			
275-XP32-SP09-02	●	27.5	32	55	82.5	114	60	174			
280-XP32-SP09-02	●	28.0	32	55	84.0	115	60	175			
285-XP32-SP09-02	●	28.5	32	55	85.5	117	60	177			
290-XP32-SP09-02	●	29.0	32	55	87.0	118	60	178			
295-XP32-SP09-02	●	29.5	32	55	88.5	120	60	180			
300-XP32-SP09-02	●	30.0	32	55	90.0	121	60	181			
305-XP32-SP09-02	●	30.5	32	55	91.5	123	60	183			

## 3D SP

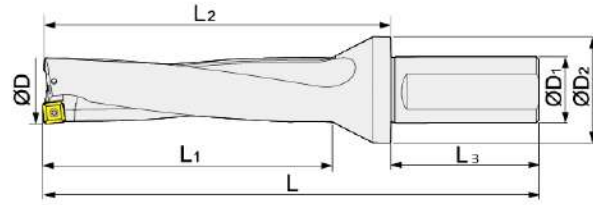


mm

Designation	Stock	Size							Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L			
<b>ZD03</b> 310-XP32-SP09-02	●	31.0	32	55	93.0	124	60	184	SP□□0904□□	M3.5x9	T-15
315-XP32-SP09-02	●	31.5	32	55	94.5	126	60	186			
320-XP32-SP09-02	●	32.0	32	55	96.0	127	60	187			
325-XP32-SP09-02	●	32.5	32	55	97.5	129	60	189			
330-XP32-SP09-02	●	33.0	32	55	99.0	130	60	190			
335-XP32-SP11-02	●	33.5	32	55	100.5	132	60	192	SP□□1104□□	M4.0x10	T-15
340-XP32-SP11-02	●	34.0	32	55	102.0	133	60	193			
345-XP32-SP11-02	●	34.5	32	55	103.5	135	60	195			
350-XP32-SP11-02	●	35.0	32	55	105.0	136	60	196			
355-XP32-SP11-02	●	35.5	32	55	106.5	138	60	198			
360-XP32-SP11-02	●	36.0	32	55	108.0	139	60	199			
365-XP32-SP11-02	●	36.5	32	55	109.5	141	60	201			
370-XP32-SP11-02	●	37.0	32	55	111.0	142	60	202			
375-XP32-SP11-02	●	37.5	32	55	112.5	144	60	204			
380-XP32-SP11-02	●	38.0	32	55	114.0	145	60	205			
385-XP32-SP11-02	●	38.5	32	55	115.5	147	60	207	SP□□1405□□	M5.0x12	T-20
390-XP32-SP11-02	●	39.0	32	55	117.0	148	60	208			
395-XP32-SP11-02	●	39.5	32	55	118.5	150	60	210			
400-XP32-SP11-02	●	40.0	32	55	120.0	151	60	211			
410-XP32-SP14-02	●	41.0	32	55	123.0	154	60	214			
420-XP32-SP14-02	●	42.0	32	55	126.0	157	60	217			
430-XP40-SP14-02	●	43.0	40	60	129.0	164	70	234			
440-XP40-SP14-02	●	44.0	40	60	132.0	167	70	237			
450-XP40-SP14-02	●	45.0	40	60	135.0	170	70	240			
460-XP40-SP14-02	●	46.0	40	60	138.0	173	70	243			
470-XP40-SP14-02	●	47.0	40	60	141.0	176	70	246	SP□□0904□□	M3.5x9	T-15
480-XP40-SP14-02	●	48.0	40	60	144.0	179	70	249			
490-XP40-SP14-02	●	49.0	40	60	147.0	182	70	252			
500-XP40-SP14-02	●	50.0	40	60	150.0	185	70	255			
510-XP40-SP14-02	●	51.0	40	70	153.0	188	70	258			
520-XP40-SP09-04	●	52.0	40	70	156.0	191	70	261			
530-XP40-SP09-04	●	53.0	40	70	159.0	194	70	264			
540-XP40-SP09-04	●	54.0	40	70	162.0	197	70	267			
550-XP40-SP09-04	●	55.0	40	70	165.0	200	70	270			
560-XP40-SP09-04	●	56.0	40	70	168.0	203	70	273			
570-XP40-SP09-04	●	57.0	40	70	171.0	206	70	276			
580-XP40-SP09-04	●	58.0	40	70	174.0	209	70	279			
590-XP40-SP09-04	●	59.0	40	70	177.0	212	70	282			
600-XP40-SP09-04	●	60.0	40	70	180.0	215	70	285			



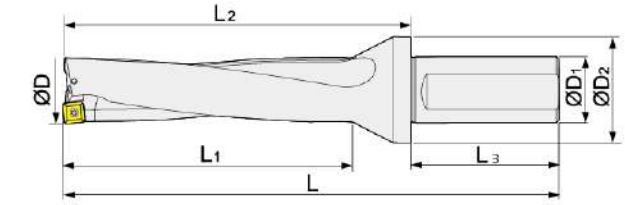
## 4D SP



mm

Designation	Stock	Size								Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L				
<b>ZD04</b> 120-XP20-SP04-02	●	12.0	20	25	48	65	50	115	SP□□040202 SP□□040204	M1.8x3.6 M2.0x5.5	T-6	
125-XP20-SP04-02	●	12.5	20	25	50	67	50	117				
130-XP25-SP05-02	●	13.0	25	32	52	74	56	130	SP□□0502□□	M2.0x5	T-6	
135-XP25-SP05-02	●	13.5	25	32	54	76	56	132				
140-XP25-SP05-02	●	14.0	25	32	56	78	56	134				
145-XP25-SP05-02	●	14.5	25	32	58	80	56	136				
150-XP25-SP05-02	●	15.0	25	32	60	82	56	138				
155-XP25-SP06-02	●	15.5	25	32	62	84	56	140				
160-XP25-SP06-02	●	16.0	20	25	64	86	56	142				
165-XP25-SP06-02	●	16.5	20	25	66	88	56	144				
170-XP25-SP06-02	●	17.0	25	32	68	90	56	146	SP□□0602□□	M2.2x5	T-6	
175-XP25-SP06-02	●	17.5	25	32	70	92	56	148				
180-XP25-SP06-02	●	18.0	25	32	72	94	56	150				
185-XP25-SP06-02	●	18.5	25	32	74	96	56	152				
190-XP25-SP06-02	●	19.0	25	32	76	98	56	154				
195-XP25-SP06-02	●	19.5	25	32	78	100	56	156				
200-XP25-SP06-02	●	20.0	25	32	80	102	56	158				
205-XP25-SP06-02	●	20.5	25	32	82	104	56	160				
210-XP25-SP06-02	●	21.0	25	45	84	106	56	162				
215-XP25-SP06-02	●	21.5	25	45	86	108	56	164				
220-XP25-SP07-02	●	22.0	25	45	88	110	56	166	SP□□07T3□□	M2.5x6	T-8	
225-XP25-SP07-02	●	22.5	25	45	90	112	56	168				
230-XP25-SP07-02	●	23.0	25	45	92	114	56	170				
235-XP25-SP07-02	●	23.5	25	45	94	116	56	172				
240-XP25-SP07-02	●	24.0	25	45	96	118	56	174				
245-XP25-SP07-02	●	24.5	25	45	98	120	56	176				
250-XP32-SP07-02	●	25.0	32	55	100	131	60	191				
255-XP32-SP07-02	●	25.5	32	55	102	133	60	193				
260-XP32-SP07-02	●	26.0	32	55	104	135	60	195				
265-XP32-SP07-02	●	26.5	32	55	106	137	60	197				
270-XP32-SP07-02	●	27.0	32	55	108	139	60	199	SP□□0904□□	M3.5x9	T-15	
275-XP32-SP09-02	●	27.5	32	55	110	141	60	201				
280-XP32-SP09-02	●	28.0	32	55	112	143	60	203				
285-XP32-SP09-02	●	28.5	32	55	114	145	60	205				
290-XP32-SP09-02	●	29.0	32	55	116	147	60	207				
295-XP32-SP09-02	●	29.5	32	55	118	149	60	209				
300-XP32-SP09-02	●	30.0	32	55	120	151	60	211				
305-XP32-SP09-02	●	30.5	32	55	122	153	60	213				

## 4D SP

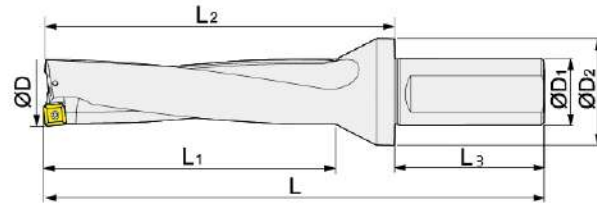


mm

Designation	Stock	Size								Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L				
<b>ZD04</b> 310-XP32-SP09-02	●	31.0	32	55	124	155	60	215	SP□□0904□□	M3.5x9	T-15	
315-XP32-SP09-02	●	31.5	32	55	126	157	60	217				
320-XP32-SP09-02	●	32.0	32	55	128	159	60	219				
325-XP32-SP09-02	●	32.5	32	55	130	161	60	221				
330-XP32-SP09-02	●	33.0	32	55	132	163	60	223				
335-XP32-SP11-02	●	33.5	32	55	134	165	60	225				
340-XP32-SP11-02	●	34.0	32	55	136	167	60	227				
345-XP32-SP11-02	●	34.5	32	55	138	169	60	229				
350-XP32-SP11-02	●	35.0	32	55	140	171	60	231				
355-XP32-SP11-02	●	35.5	32	55	142	173	60	233				
360-XP32-SP11-02	●	36.0	32	55	144	175	60	235	SP□□1104□□	M4.0x10	T-15	
365-XP32-SP11-02	●	36.5	32	55	146	177	60	237				
370-XP32-SP11-02	●	37.0	32	55	148	179	60	239				
375-XP32-SP11-02	●	37.5	32	55	150	181	60	241				
380-XP32-SP11-02	●	38.0	32	55	152	183	60	243				
385-XP32-SP11-02	●	38.5	32	55	154	185	60	245				
390-XP32-SP11-02	●	39.0	32	55	156	187	60	247				
395-XP32-SP11-02	●	39.5	32	55	158	189	60	249				
400-XP32-SP11-02	●	40.0	32	55	160	191	60	251				
410-XP32-SP14-02	●	41.0	32	55	164	195	60	255				SP□□1405□□
420-XP32-SP14-02	●	42.0	32	55	168	199	60	259				
430-XP40-SP14-02	●	43.0	40	60	172	207	70	277				
440-XP40-SP14-02	●	44.0	40	60	176	211	70	281				
450-XP40-SP14-02	●	45.0	40	60	180	215	70	285				
460-XP40-SP14-02	●	46.0	40	60	184	219	70	289				
470-XP40-SP14-02	●	47.0	40	60	188	223	70	293				
480-XP40-SP14-02	●	48.0	40	60	192	227	70	297				
490-XP40-SP14-02	●	49.0	40	60	196	231	70	301				
500-XP40-SP14-02	●	50.0	40	60	200	235	70	305				
510-XP40-SP14-02	●	51.0	40	70	204	239	70	309	SP□□0904□□	M3.5x9	T-15	
520-XP40-SP09-04	●	52.0	40	70	208	243	70	313				
530-XP40-SP09-04	●	53.0	40	70	212	247	70	317				
540-XP40-SP09-04	●	54.0	40	70	216	251	70	321				
550-XP40-SP09-04	●	55.0	40	70	220	255	70	325				
560-XP40-SP09-04	●	56.0	40	70	224	259	70	329				
570-XP40-SP09-04	●	57.0	40	70	228	263	70	333				
580-XP40-SP09-04	●	58.0	40	70	232	267	70	337				
590-XP40-SP09-04	●	59.0	40	70	236	271	70	341				
600-XP40-SP09-04	●	60.0	40	70	240	275	70	345				



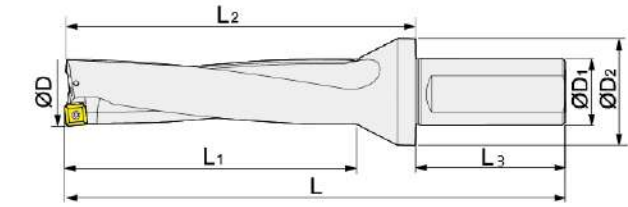
## 5D SP



mm

Designation	Stock	Size								Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L				
<b>ZD05</b> 200-XP25-SP06-02	●	20.0	25	32	100.0	123	56	179	SP□□0602□□	M2.2x5	T-6	
205-XP25-SP06-02	●	20.5	25	32	102.5	126	56	182				
210-XP25-SP06-02	●	21.0	25	45	105.0	128	56	184				
215-XP25-SP06-02	●	21.5	25	45	107.5	131	56	187				
220-XP25-SP07-02	●	22.0	25	45	110.0	133	56	189				
225-XP25-SP07-02	●	22.5	25	45	112.5	136	56	192				
230-XP25-SP07-02	●	23.0	25	45	115.0	138	56	194				
235-XP25-SP07-02	●	23.5	25	45	117.5	141	56	197				
240-XP25-SP07-02	●	24.0	25	45	120.0	143	56	199				
245-XP25-SP07-02	●	24.5	25	45	122.5	146	56	202				
250-XP32-SP07-02	●	25.0	32	55	125.0	156	60	216	SP□□0713□□	M2.5x6	T-8	
255-XP32-SP07-02	●	25.5	32	55	127.5	159	60	219				
260-XP32-SP07-02	●	26.0	32	55	130.0	161	60	221				
265-XP32-SP07-02	●	26.5	32	55	132.5	164	60	224				
270-XP32-SP07-02	●	27.0	32	55	135.0	166	60	226				
275-XP32-SP09-02	●	27.5	32	55	137.5	169	60	229				
280-XP32-SP09-02	●	28.0	32	55	140.0	171	60	231				
285-XP32-SP09-02	●	28.5	32	55	142.5	174	60	234				
290-XP32-SP09-02	●	29.0	32	55	145.0	176	60	236				
295-XP32-SP09-02	●	29.5	32	55	147.5	179	60	239				
300-XP32-SP09-02	●	30.0	32	55	150.0	181	60	241	SP□□0904□□	M3.5x9	T-15	
305-XP32-SP09-02	●	30.5	32	55	152.5	184	60	244				
310-XP32-SP09-02	●	31.0	32	55	155.0	186	60	246				
315-XP32-SP09-02	●	31.5	32	55	157.5	189	60	249				
320-XP32-SP09-02	●	32.0	32	55	160.0	191	60	251				
325-XP32-SP09-02	●	32.5	32	55	162.5	194	60	254				
330-XP32-SP09-02	●	33.0	32	55	165.0	196	60	256				
335-XP32-SP11-02	●	33.5	32	55	167.5	199	60	259				
340-XP32-SP11-02	●	34.0	32	55	170.0	201	60	261				
345-XP32-SP11-02	●	34.5	32	55	172.5	204	60	264				
350-XP32-SP11-02	●	35.0	32	55	175.0	206	60	266	SP□□1104□□	M4.0x10	T-15	
355-XP32-SP11-02	●	35.5	32	55	177.5	209	60	269				
360-XP32-SP11-02	●	36.0	32	55	180.0	211	60	271				
365-XP32-SP11-02	●	36.5	32	55	182.5	214	60	274				
370-XP32-SP11-02	●	37.0	32	55	185.0	216	60	276				
375-XP32-SP11-02	●	37.5	32	55	187.5	219	60	279				

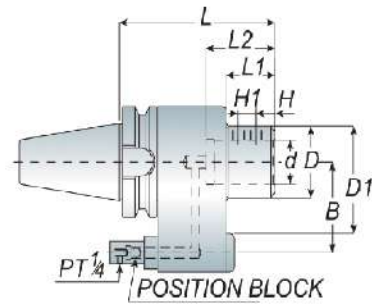
## 5D SP



mm

Designation	Stock	Size								Inserts	Spare Parts	
		D	D1	D2	L1	L2	L3	L				
<b>ZD05</b> 380-XP32-SP11-02	●	38.0	32	55	190.0	221	60	281	SP□□1104□□	M4.0x10	T-15	
385-XP32-SP11-02	●	38.5	32	55	192.5	224	60	284				
390-XP32-SP11-02	●	39.0	32	55	195.0	226	60	286				
395-XP32-SP11-02	●	39.5	32	55	197.5	229	60	289				
400-XP32-SP11-02	●	40.0	32	55	200.0	231	60	291				
410-XP32-SP14-02	●	41.0	32	55	205.0	236	60	296				
420-XP32-SP14-02	●	42.0	32	55	210.0	241	60	301				
430-XP40-SP14-02	●	43.0	40	60	215.0	250	70	320	SP□□1405□□	M5.0x12	T-20	
440-XP40-SP14-02	●	44.0	40	60	220.0	255	70	325				
450-XP40-SP14-02	●	45.0	40	60	225.0	260	70	330				
460-XP40-SP14-02	●	46.0	40	60	230.0	265	70	335				
470-XP40-SP14-02	●	47.0	40	60	235.0	270	70	340				
480-XP40-SP14-02	●	48.0	40	60	240.0	275	70	345				
490-XP40-SP14-02	●	49.0	40	60	245.0	280	70	350				
500-XP40-SP14-02	●	50.0	40	60	250.0	285	70	355				
510-XP40-SP14-02	●	51.0	40	70	255.0	290	70	360				
520-XP40-SP09-04	●	52.0	40	70	260.0	295	70	365				SP□□0904□□
530-XP40-SP09-04	●	53.0	40	70	265.0	300	70	370				
540-XP40-SP09-04	●	54.0	40	70	270.0	305	70	375				
550-XP40-SP09-04	●	55.0	40	70	275.0	310	70	380				
560-XP40-SP09-04	●	56.0	40	70	280.0	315	70	385				
570-XP40-SP09-04	●	57.0	40	70	285.0	320	70	390				
580-XP40-SP09-04	●	58.0	40	70	290.0	325	70	395				
590-XP40-SP09-04	●	59.0	40	70	295.0	330	70	400				
600-XP40-SP09-04	●	60.0	40	70	300.0	335	70	405				

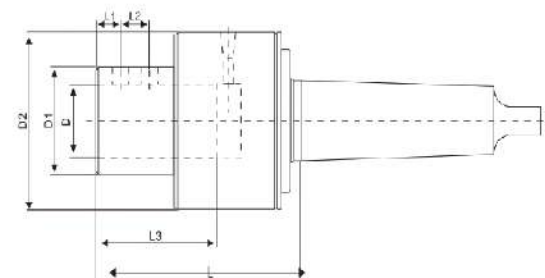
OIL-FEED HOLDER BT



mm

Designation	Designation(mm)									
	D1	D	d	L1	L2	L	H1	H	B	
<b>BT40</b>	OSL32-165	90	53	32	50	60	165	15	15	60/65
	OSL40-165	90	70	40	50	70	165	18	19	60/65
<b>BT50</b>	OSL32-165	100	54	32	50	60	165	15	15	80/82
	OSL40-165	100	64	40	50	70	165	18	19	80/82

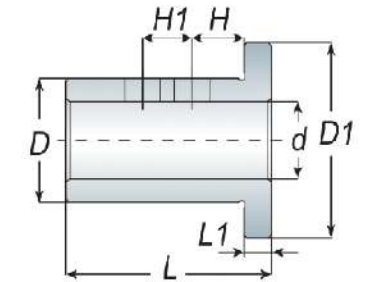
OIL-FEED HOLDER MTA



mm

Designation	Designation(mm)							
	D2	D1	D	L1	L2	L3	L	
<b>MTA4</b>	OSL32	92	60	32	15	18	60	127
<b>MTA5</b>	OSL32	92	60	32	15	18	60	127
	OSL40	98	70	40	15	18	65	127
<b>MTA6</b>	OSL32	92	60	32	15	18	60	127
	OSL40	98	70	40	15	18	65	127

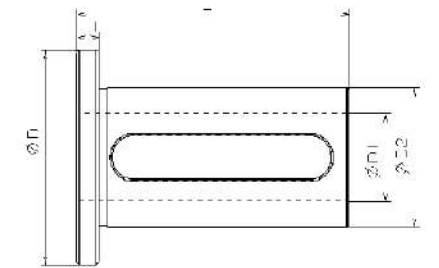
REDUCING SLEEVE



mm

Designation	Designation(mm)							
	D1	d	D	L	L1	H	H1	
<b>COS</b>	32-16	53	16	32	65	10	15	15
	32-20	53	20	32	65	10	15	15
	32-25	53	25	32	65	10	15	15
	40-16	63	16	40	75	10	19	18
	40-20	63	20	40	75	10	19	18
	40-25	63	25	40	75	10	19	18
	40-30	63	32	40	75	10	19	18

REDUCING SLEEVE



mm

Designation	Designation(mm)					
	D	D1	D2	L	L1	
<b>OSL</b>	32-20	49	20	32	62	5
	32-25	49	25	32	62	5
	40-20	58	20	40	65	6
	40-25	58	25	40	65	6
	40-32	58	32	40	65	6
	50-25	65	25	50	70	6
	50-32	65	32	50	70	6
	50-40	65	40	50	70	6

TURN LINE

THREAD LINE

GROOVE LINE

MILL LINE

DRILL LINE

TOOL LINE

TURN LINE

THREAD LINE

GROOVE LINE

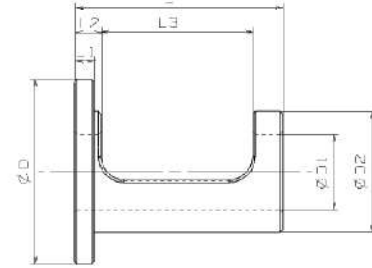
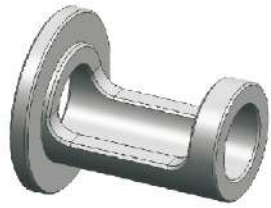
MILL LINE

DRILL LINE

TOOL LINE



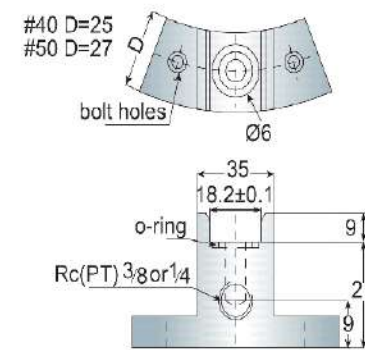
## ECCENTRIC SLEEVE



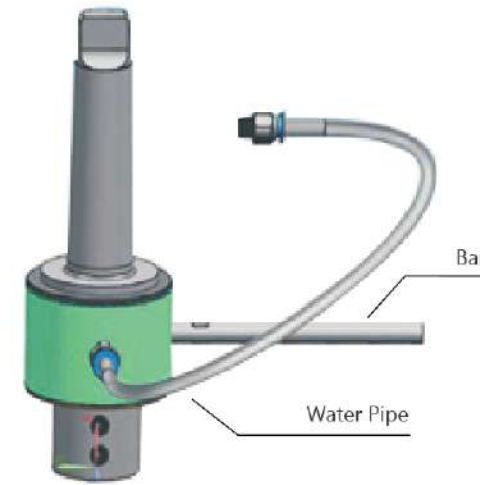
mm

Designation	Designation(mm)							adjustment range for Processing diameter	adjustment range for Center height	
	D	D1	D2	L	L1	L2	L3			
CE	20-25	41	20	25	48	6	11	33	+0.4-0.2	+0.2-0.15
	25-32	49	25	32	60	6	11	45	+0.4-0.2	+0.2-0.15
	32-40	58	32	40	65	6	11	50	+0.4-0.2	+0.2-0.15
	40-50	68	40	50	76	6	11	61	+0.4-0.2	+0.2-0.2

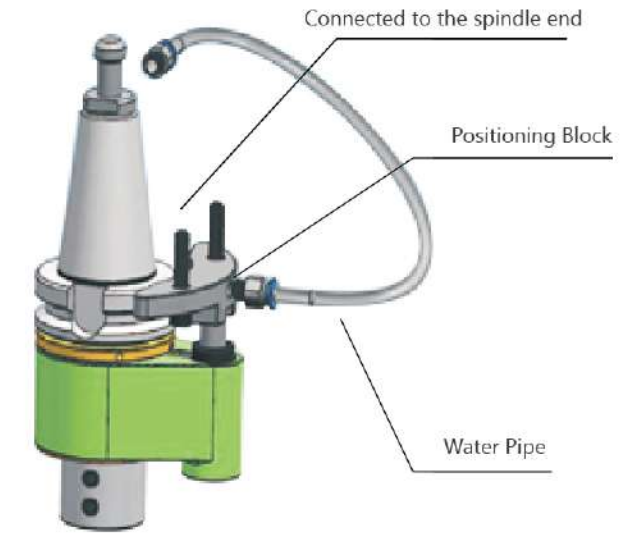
## POSITIONING BLOCK



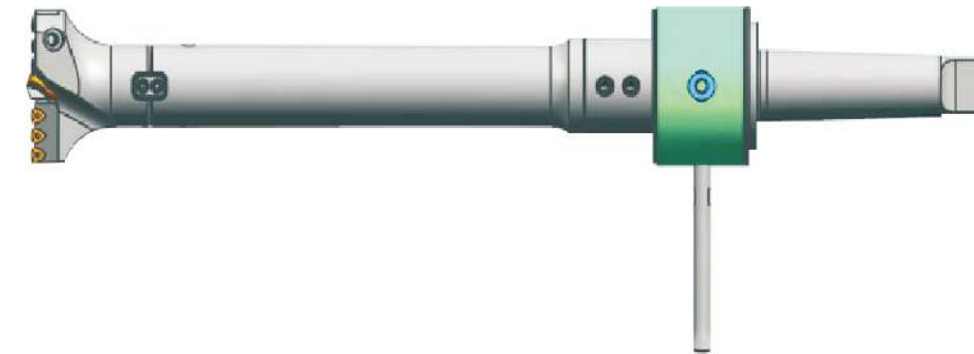
## POSITIONING BLOCK



※ Schematic diagram of Morse handle installation



※ BT handle installation diagram



Reduce your drilling cost by high precision grinding and superior clamping precision  
Reduce your drilling cost by high precision grinding and superior clamping precision

## Original sd DrillV

Spade drill is the new generation product replacement of the traditional twist drills, can be applied to CNC machines and various traditional equipments such as vertical driller and radial drilling machines.

12 holders cover a range of 9.5mm to 114mm.

Through coolant optimizes chip evacuation and improved tool performance.

The reverse double threaded hole and groove design of the insert's connections can make the insert clamping more stable, ensure the machining accuracy and the stability of the inserts.

Processing different materials of the workpieces chose different grade of inserts. Inserts are made of cobalt high speed steel, powder high speed steel and carbide cement, but recommend the inserts made of powder HSS & cobalt HSS for vertical driller and radial drilling machines. These traditional machines have low speed and large gap, it is easy to cause carbide cement chipping.

Inserts of spade drill are combined with various coating, improved 3-5 times longer tool life than normal twist drills, overall efficiency of drilling double improved.

Corner clip allows for effective heat dispersion and increased tool life

New XR edge design can better reduce the cutting resistance, and self-centering point eliminates center drilling

Ground back location ensures accurate positioning



## Features

Two back flank surface

- ◎ Reduce the friction with the workpiece.
- ◎ Better self-centering.
- ◎ Reduce the axial resistance



XR chisel edge regrinding

- ◎ Improve the strength of cutting edges.
- ◎ Increase the stability.

## Features

Core drilling

- ◎ Thinner core drilling, which reduce 20% axial resistance compared with normal drilling products.
- ◎ Better self-centering

Chip breaker

- ◎ Better chip flow.
- ◎ Reduce drilling torque.

Chip breaker

- ◎ Improve the strength of cutting edges.
- ◎ Increase the stability.

Location groove

- ◎ ensure the accuracy of the radial direction

Chip dividing groove

- ◎ Better chip removal.
- ◎ reduce the cutting width and drilling torque.



Flute with excellent chip evacuation

- ◎ better chip flow.

◎ easy to change the insert.

Surface treatment

- ◎ Superior rigidity and wear resistance of holder.



## Key point for application



### I. Correct selection of spade drill

1. When selecting spade drill, users should get the connection type of arbor shank according to spindle connection type of the equipment used. Generally, the spindle connection type of ordinary equipment such as bench drill, vertical drill, radial drilling machine, etc. is in taper shank mode, while as to the numerically controlled equipment, side fixed type flange shank, straight shank and taper shank can be selected according to spindle type of the lathe.
2. Users should determine the maximum drilling length of arbor according to the depth of the machined hole. Usually, the selection of arbor shall follow the principle of the minimum arbor length suitable to the thickness of machining workpiece, so as to improve the drilling rigidity of arbor and give full play to the drilling effects of spade drill to the largest effect.
3. Users should determine the equivalent insert's and arbor's diameter, insert' material and coating type according to the hole diameter, material and hardness of the machined workpiece. Generally, the machining hole by spade drills can be controlled within 0.1mm and relatively high machining precision can guarantee users' requirements on hole diameter and tolerance.

### II. Correct selection of drilling parameters

Aiming at spade drills of different diameters, the requirement on drilling speed is certainly different. Reasonable drilling speed will directly influence the service life of spade drill. Therefore, it's particularly important to select reasonable drilling speed so that the spade drill can match the drilling & machining material.

1. Selection of drilling speed (please refer to the Drilling Speed Recommendation List)

$$\text{RPM} = (\text{Vc} \times 1000) / (\pi \times \text{Dia.})$$

where:

$$\text{RPM} = \text{Revolution per minute (rev/min)}$$

$$\text{Vc} = \text{Cutting speed (m/min)}$$

$$\pi = 3.1416$$

$$\text{Dia.} = \text{Diameter of drill (mm)}$$

$$\text{Vf} = \text{fn} \times \text{RPM (mm/min)}$$

$$\text{Vf} = \text{Feed per minute (mm/min)}$$

$$\text{fn} = \text{Feed per revolution (mm/rev)}$$

$$\text{RPM} = \text{Revolution per minute (rev/min)}$$

$$\text{Tc} = \text{H} / (\text{Vf} \times 60)$$

where:

$$\text{Tc} = \text{Drilling Time (secs.)}$$

$$\text{H} = \text{Drilling depth (mm)}$$

$$\text{Vf} = \text{Feed per minute (mm/min)}$$

2. Selection of feed speed ( please refer to the Drilling Speed Recommendation List).

irons and different scrap irons will change the chip removal performance. Therefore, the control of drilling speed can directly decide the chip removal performance and it's also the decisive factor of the service life os spade drills

If the feed speed is too slow during drilling process, the scrap iron will be too soft to be broken and will twine the arbor. In addition, the excessively slow feed speed will accelerate the abrasion speed of insert. If the feed speed is too fast, the scrap iron is relatively hard, will be removed in fragment shape, and is easy to cause chip blockage and result in tipping, fragmenting. Therefore, it's particularly important to choose appropriate drilling speed..

### III. Selection of cooling liquid

(please refer to the Recommendation List for Pressure and Flow of Cooling Liquid)

Reasonable selection of drilling fluid can reduce the drilling force, decrease drilling temperature, reduce the thermal deformation of processing system, prolong the service life of tools, and improve the quality of processing surface, particularly important to choose appropriate drilling speed.

1. Functions of clling liquid

Cooling function : pour the drilling fluid in the processing area and take advantage of thermal conduction, convection, gasification and other means to decrease the processing temperature and reduce the thermal deformation of processing syste. Lubricating function: the drilling liquid can permeate to the tools and between chip and processing surface to form protective film which can reduce the friction between contact surfaces and improve the quality of processing surface. Chip removal and washing fuctions: it can remove the chip, guide the chip flow direction, and flush the scattered chips on the equipment and processing surface. Antirust function: since the drilling fluid is added antirust additive, it can react with the metal surface to form protective film. So as to play the functions of antirust and anti-corrosion.

2. Kinds and selection of cooling liquid

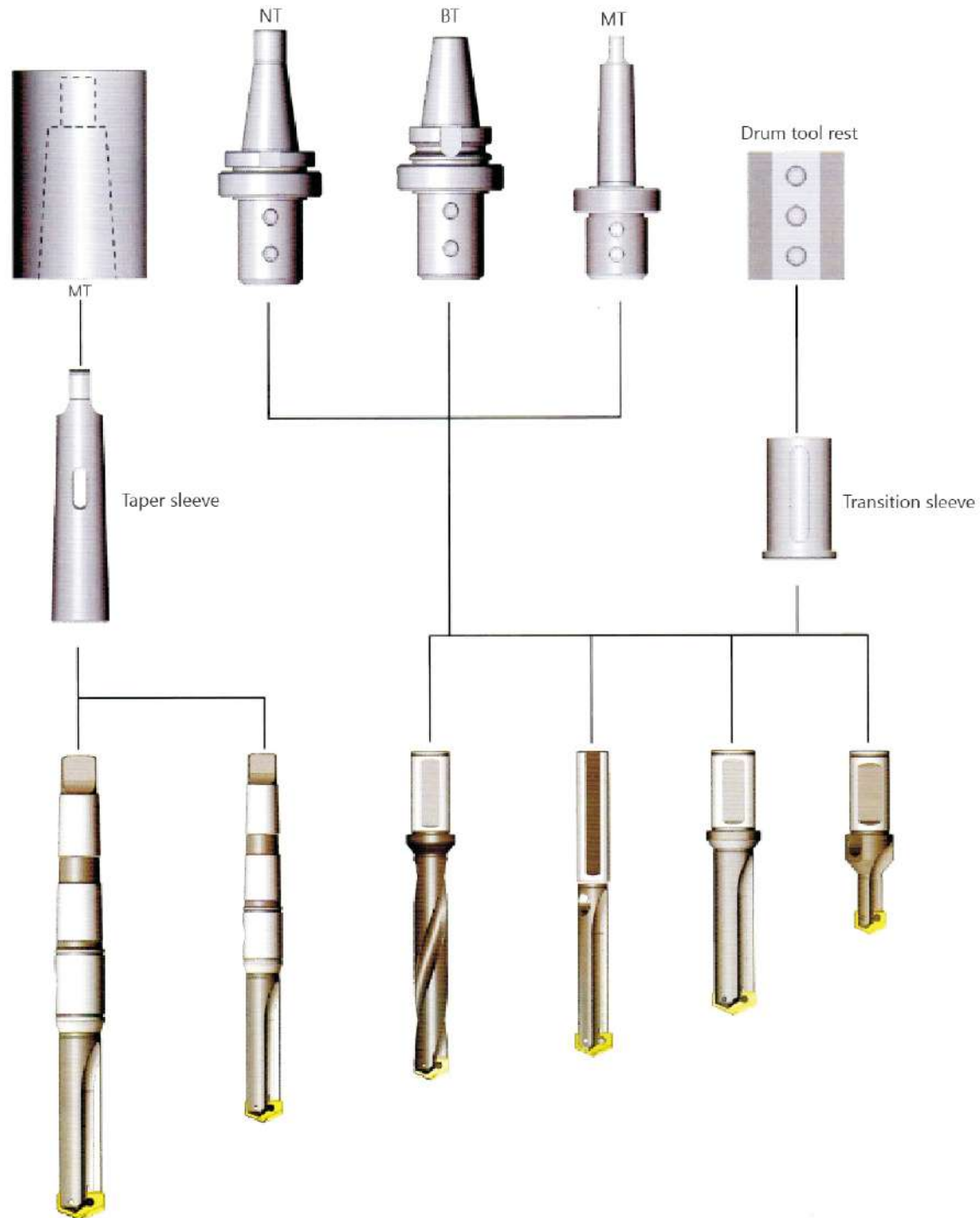
"Water", with almost no direct cost, is the rapidest and the most convenient. The water can be supplied as much as you want. However, the indirect cost is the highest. Since it doesn't have antirust & lubricating functions, the cooling effect is not so good. After using the water, the life of drill bit will be influenced, the drilling machine & drill bit will be oxidized quickly, and the machine will be damaged quickly. Therefore, it's not recommended to use " water" as cooling liquid. "Oily drilling fluid" can reach the maximum in the aspect of various performances. However, the cost is too high and it's often used on high-end equipment and is recycled."Emulsified liquid", with lower economic cost and proportion for mixing with water of 1:20, has lubricating and antirust functions, as well as cooling function. It's featured by high acceptability and economical efficiency. Due to rapid speed and high efficiency of spade drill during drilling process, to realize full cooling and improve the service life of tools, internal cooling method is adopted during the drilling process and there is also certain requirement on the cooling. For example, the drilling pressure of common steel plate (such as Q235, Q345, etc) is 3-4kg, and the flow is about 20-25L/min.

### IV. Matters needing attention

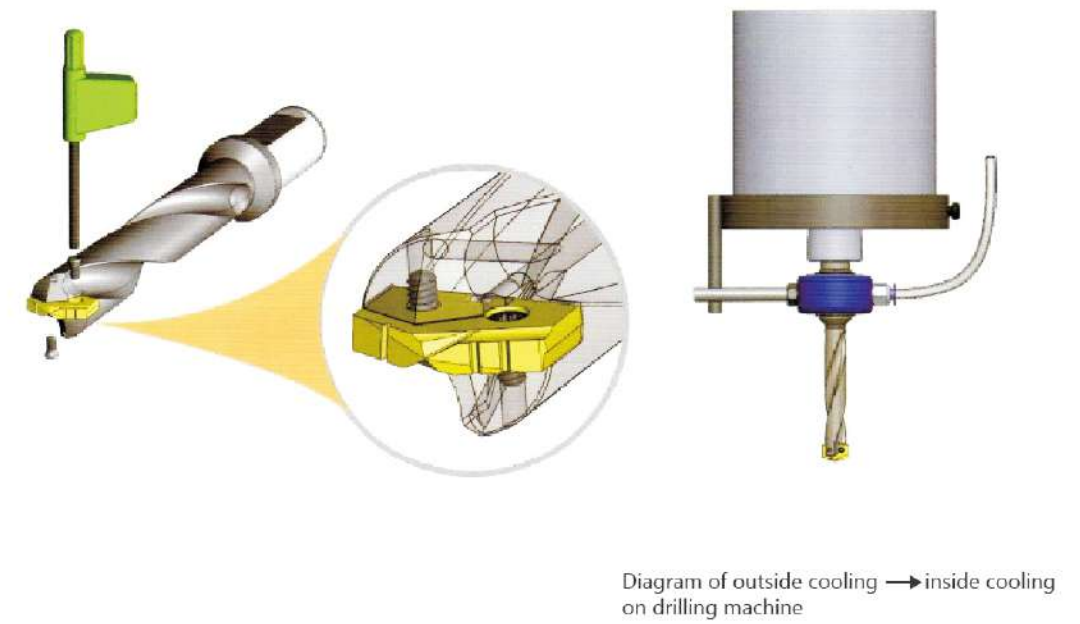
1. When selecting the spade drill, it's required to choose sitable connection type and matching arbor and insert according to requirements on equipment and workpeice materials, so as to give full play to the performances of spade drill.
2. Select correct and reasonable cutting parameters in accordance with workpeice material to avoid mismatching spade drill with drilling parameters of twist drill.
3. Select appropriate cooling liquid and cooling pressure to improve the drilling quality and life of tools.
4. Prevent violent bump during the cutting and spotting to avoid tipping and influence on life of the insert.
5. Prevent the phenomena such as spindle off and reverse rotation of the equipment during the drilling process for such phenomena amy damage the insert easily.



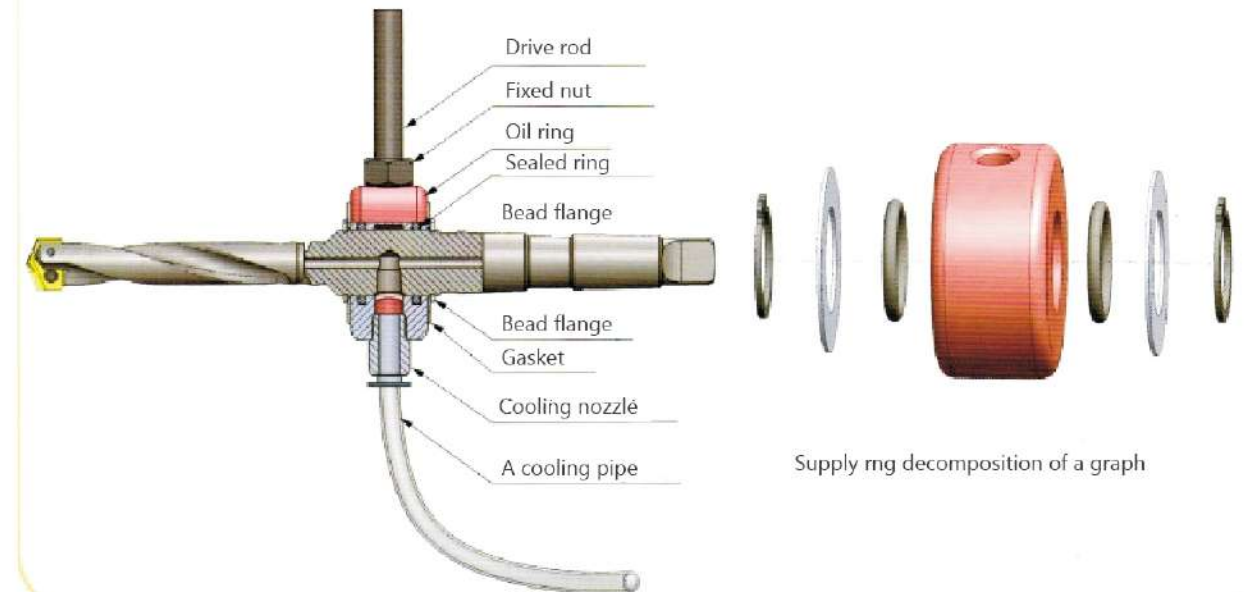
## Holder selection



## Instllation diagram



## Schematic diagram of oil ring assembly



TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



## Using Method

### Preparations

To increase the efficiency of spade drill, workpieces must be fixed tightly on the fixing frame, in case of the workpieces or drilling machines are with poor rigidity, it will reduce the tool life of spade drill or even damage spade drill.

### Coolant

Sufficient coolant supply & pressure is required to increase the quality of the surface of the workpieces and extend tool life. The size of solid particles in the coolant fluid should not exceed to micron use coolant filtration to filter the solid particles exceed to micron.

### Cautions

1. Use lower feed at the very beginning of drilling and at the moment of going through the holes, this will be helpful to increase the quality of holes and tool life of the spade drills.
2. Use lower feed when adopting outer coolant supply, if the ratio between length and diameter exceeds 3 times, inner coolant supply will be quite effective.
3. When drilling roughness, slope, cross hole, you need to reduce the cutting speed and feed, at the same time, shorter holders are preferable, or choose different drill points.
4. When chamfering, reduce cutting parameters appropriately and avoid the chip-breaking grooves cut workpieces first.
5. If the rigidity of working condition is poor, tighten the workpieces or reduce cutting parameters.
6. If the color of chips changes during drilling, increase the coolant fluid and pressure, or reduce cutting parameters to be less heat.
7. Check whether the screws are locked tightly to be sure the reliability of insert clamping.
8. It is recommended to replace the insert before it is completely worn out, this can protect the holders, and the insert can be re-grounded.
9. Better to choose shorter holder, ensure the machines are with good rigidity and high power. The above are the points to be noted, applications on jobsites usually differ, you may meet various problem about tool life, accuracy of holes and so on. Thanks for the interchangeable inserts, which can solve problem by changing inserts and holders. We expect to discuss hole drilling technology with customers and provide our technology and service to customers in order to increase hole drilling efficiency.

## Code system of holder

**SD # S - 48 - XP #**

1 2 3 4 5 6


**1 Spade Drill**

SD # S - 48 - XP #


**3 Flute**

SD # S - 48 - XP #

H = Helical




S = Straight




**5 Shank type**

SD # S - 48 - XP #

XP = Flanged shank



MT = Morse taper shank



**2 Spade Drill**

SD # S - 48 - XP #

Connector	Metric	Inch
Y0	9.5-11.0	3/8"-27/64"
Z0	11.5-12.5	7/16"-1/2"
00	13.0-17.5	33/64"-11/16"
05	15.5-17.5	39/64"-11/16"
10	17.6-24.4	11/16"-15/16"
15	22.00-24.4	7/8"-15/16"
20	24.5-35.00	15/16"-13/8"
25	30.00-35.00	13/16"-13/8"
30	35.10-47.90	13/8"-17/8"
35	42.00-47.90	1 21/32"-1 7/8"
40	48.00-65.28	1 29/32"-2 9/16"
45	56.00-65.28	2 7/32"-2 9/16"
50	65.30-89.08	2 7/32"-3 1/2"
70	89.10-114.48	3 1/32"-4 1/2"

**4 Drill depth**

SD # S - 48 - XP #

**6 Shank dia.**

SD # S - 48 - XP #



## Code system of INSERT

**SI - I - 0750 - S2 DFA**

1                      2                      3                      4                      5

**1 Insert of Spade drill**

SI - I - 0750 - S2 DFA

**2 Connector code**

Connector	Metric	Inch
Y	9.5-11.0	3/8"-27/64"
Z	11.5-12.5	7/16"-1/2"
0	13.0-17.5	33/64"-11/16"
1	18.0-24.0	45/64"-15/16"
2	24.5-35.00	31/32"-1 3/8"
3	36.0-47.0	1 13/32"-1 7/8"
4	48.0-65.0	1 29/32"-2 9/16"
5	66.0-89.0	2 5/8"-3 1/2"
7	90.0-114.0	3 17/32"-4 1/2"

**3 Insert dia.**

SI - I - 0750 - S2 DFA

**4 Material**

SI - I - 0750 - S2 DFA

S2=Cobalt HSS  
S6=Powder HSS  
G2=Carbide

**5 Coating**

SI - I - 0750 - S2 DFA

DFA = TiAlN coating  
DFS = TiSiN coating

## Recommended Cutting Condition

Recommended Speed and Feeds for HSS Drill Inserts

Material	Hardness (BHN)	Grade	Speed			Feed (mm/rev)						
			TiN m/min	TiAlN m/min	TiCN m/min	9.50 to 12.50	13.00 to 17.50	17.60 to 24.40	24.50 to 35.00	35.10 to 47.90	48.00 to 65.28	65.30 to 114.48
Free Machining Steel 1118, 1215, 12L14, etc	100-150	M42	61	85	79	0.18	0.25	0.33	0.41	0.51	0.58	0.71
	150-200	M42	55	79	72	0.18	0.25	0.33	0.41	0.51	0.58	0.71
	200+250	M42	49	73	64	0.15	0.25	0.33	0.41	0.51	0.58	0.71
Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	M42	52	76	67	0.15	0.23	0.30	0.38	0.48	0.58	0.69
	125-175	M42	49	73	64	0.15	0.23	0.30	0.38	0.48	0.58	0.69
	175-225	M42	46	69	59	0.13	0.20	0.25	0.36	0.48	0.53	0.61
Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	M42	49	73	64	0.15	0.23	0.30	0.38	0.48	0.58	0.69
	175-225	M42	46	69	59	0.13	0.20	0.25	0.36	0.46	0.53	0.61
	225-275	M42	43	64	55	0.13	0.20	0.25	0.36	0.46	0.53	0.61
Alloy Steel 4140, 5140, 8640, etc.	275-325	M40	40	59	52	0.10	0.18	0.23	0.30	0.41	0.48	0.56
	125-175	M42	46	64	59	0.15	0.20	0.25	0.36	0.43	0.48	0.56
	175-225	M42	43	59	55	0.13	0.20	0.25	0.36	0.43	0.48	0.56
High Strength Alloy 4340, 4330V, 300M, etc.	225-275	M42	40	55	52	0.13	0.18	0.25	0.36	0.43	0.48	0.56
	275-325	M40	37	52	47	0.10	0.15	0.23	0.30	0.38	0.43	0.51
	325-375	M40	34	47	44	0.08	0.15	0.23	0.30	0.38	0.43	0.51
Structural Steel A36, A516, A285, etc	225-300	M40	24	34	30	0.13	0.18	0.23	0.25	0.36	0.43	0.51
	300-350	M40	18	26	24	0.10	0.18	0.23	0.25	0.36	0.43	0.51
	350-400	M40	15	21	20	0.08	0.15	0.20	0.23	0.30	0.38	0.46
Tool Steel H13, H12, A4, S3, etc	100-150	M42	43	61	55	0.15	0.25	0.30	0.36	0.46	0.53	0.66
	150-250	M42	37	52	47	0.13	0.23	0.25	0.30	0.41	0.48	0.61
	250-350	M40	30	43	40	0.10	0.20	0.23	0.25	0.36	0.43	0.51
High Temp. Alloy Hastelloy B, Inconel 600, etc	150-200	M40	24	34	32	0.10	0.15	0.20	0.25	0.30	0.38	0.43
	200-250	M40	18	27	26	0.10	0.15	0.20	0.25	0.30	0.38	0.43
Titanium Alloy	140-220	M40	9	12	11	0.08	0.18	0.20	0.25	0.30	0.38	--
	220-310	M40	8	11	9	0.08	0.15	0.18	0.20	0.25	0.30	--
Aerospace Alloy S82	140-220	M40	11	11	14	0.08	0.18	0.20	0.25	0.30	0.38	--
	220-310	M40	9	15	11	0.08	0.15	0.18	0.20	0.25	0.30	--
Stainless steel 400 series, 416, 420, etc.	185-275	M40	23	32	29	0.15	0.20	0.23	0.25	0.36	0.41	0.51
	275-350	M40	18	27	24	0.13	0.18	0.20	0.20	0.30	0.36	0.46
Stainless steel 300 series, 304, 316, etc.	185-275	M40	23	32	29	0.08	0.18	0.20	0.25	0.36	0.41	0.51
	185-275	M40	18	27	24	0.08	0.15	0.18	0.20	0.30	0.36	0.46
Nodular, Grey, Ductile Cast Iron	120-150	M42	52	76	67	0.18	0.30	0.41	0.51	0.61	0.69	0.76
	150-200	M42	46	69	59	0.15	0.28	0.36	0.46	0.56	0.64	0.71
	200-220	M42	40	59	52	0.15	0.23	0.30	0.41	0.46	0.53	0.61
	220-260	M40	34	50	44	0.13	0.18	0.23	0.30	0.36	0.43	0.51
260-320	M40	27	41	37	0.10	0.15	0.18	0.23	0.30	0.36	0.41	
Cast Aluminum	30	M42	183	259	229	0.20	0.33	0.41	0.51	0.56	0.64	0.64
	180	M42	91	137	122	0.20	0.33	0.41	0.46	0.56	0.64	0.64
Wrought Aluminum	30	M42	183	259	229	0.10	0.15	0.25	0.30	0.56	0.64	0.64
	180	M42	91	137	122	0.20	0.33	0.41	0.46	0.56	0.64	0.64
Aluminum Bronze	100-200	M40	52	76	67	0.15	0.28	0.36	0.46	0.56	0.66	0.71
	200-250	M40	40	58	52	0.13	0.18	0.23	0.30	0.36	0.43	0.51
Brass	100	M42	91	136	122	0.18	0.30	0.41	0.51	0.61	0.71	0.76
Copper	60	M40	40	50	46	0.05	0.08	0.15	0.20	0.30	0.36	0.41
Hardness Steel	300-400	M40	15	29	21	0.08	0.15	0.20	0.23	0.30	0.41	0.46
	400-500	M40	11	14	12	0.05	0.13	0.18	0.20	0.25	0.30	0.41



## High Speed Drill - UD30

Holder	Extended	Long	XL	3XLV
Speed	0.90	0.85	0.80	0.75
Feed	--	0.95	0.90	0.90

### RECOMMENDED SPEED AND FEED EXAMPLE:

If recommended speed and feed is 50m/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 m/min and 0.18 mm/rev.

$$50 \times 0.75 = 37.5 \text{ m/min} \quad 0.20 \times 0.90 = 0.18 \text{ mm/rev}$$

## Recommended Cutting Condition

Recommended Speed and Feeds for HSS Drill Inserts

Material	Hardness (BHN)	Grade	Speed			Feed (mm/rev)				
			TiN m/min	TiALN m/min	TiCN m/min	9.50 to 12.50	13.00 to 17.50	17.60 to 24.40	24.50 to 35.00	35.10 to 47.90
Free Machining Steel 1118, 1215, 12L14, etc	100-150	G12	96	128	115	0.20	0.30	0.38	0.45	0.53
	150-200	G12	85	110	100	0.18	0.28	0.35	0.40	0.48
	200+250	G12	79	104	90	0.15	0.25	0.33	0.38	0.43
Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	G12	91	119	110	0.20	0.25	0.33	0.43	0.48
	125-175	G12	79	104	90	0.18	0.25	0.33	0.40	0.45
	175-225	G12	73	95	82	0.15	0.23	0.30	0.38	0.43
	225-275	G12	64	83	75	0.13	0.23	0.30	0.38	0.43
Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	G12	79	104	90	0.18	0.25	0.33	0.40	0.45
	175-225	G12	73	95	84	0.15	0.23	0.30	0.38	0.43
	225-275	G12	67	83	72	0.15	0.23	0.30	0.38	0.43
	275-325	G12	55	70	62	0.13	0.20	0.28	0.35	0.40
Alloy Steel 4140, 5140, 8640, etc.	125-175	G12	76	99	87	0.18	0.25	0.33	0.40	0.45
	175-225	G12	70	92	80	0.15	0.23	0.30	0.38	0.43
	225-275	G12	64	83	72	0.15	0.23	0.30	0.38	0.43
	275-325	G12	61	76	68	0.13	0.20	0.28	0.35	0.40
High Strength Alloy 4340, 4330V, 300M, etc.	325-375	G12	52	67	60	0.10	0.18	0.25	0.33	0.38
	225-300	G12	49	61	55	0.15	0.23	0.25	0.30	0.38
	300-350	G12	43	55	49	0.13	0.20	0.23	0.28	0.35
Structural Steel A36, A516, A285, etc	350-400	G12	37	49	43	0.10	0.18	0.20	0.25	0.30
	100-150	G12	73	95	84	0.20	0.28	0.35	0.40	0.45
	150-250	G12	61	76	68	0.15	0.25	0.30	0.35	0.40
Tool Steel H13, H12, A4, S3, etc	250-350	G12	55	70	62	0.13	0.23	0.28	0.30	0.35
	150-200	G12	49	67	58	0.10	0.18	0.23	0.28	0.33
High Temp. Alloy Hastelloy B, Inconel 600, etc	200-250	G12	37	52	45	0.10	0.18	0.23	0.28	0.33
	140-220	G12	24	32	28	0.10	0.18	0.23	0.28	0.33
Titanium Alloy	220-310	G12	18	26	22	0.10	0.15	0.20	0.25	0.30
	140-220	G12	30	38	32	0.10	0.18	0.23	0.28	0.30
Aerospace Alloy S82	220-310	G12	24	33	28	0.10	0.15	0.20	0.25	0.30
	185-275	G12	49	64	57	0.17	0.22	0.29	0.35	0.40
Stainless steel 400 series, 416, 420, etc.	275-350	G12	37	49	43	0.14	0.19	0.27	0.30	0.35
	185-275	G12	49	64	57	0.17	0.22	0.29	0.35	0.40
Stainless steel 300 series, 304, 316, etc.	275-350	G12	37	49	43	0.14	0.19	0.27	0.30	0.45
	135-185	G12	49	64	57	0.13	0.17	0.22	0.26	0.30
Nodular, Grey, Ductile Cast Iron	185-275	G12	37	49	43	0.11	0.14	0.20	0.22	0.25
	120-150	G12	98	141	127	0.20	0.30	0.38	0.48	0.58
	150-200	G12	82	122	102	0.18	0.28	0.33	0.43	0.53
	200-220	G12	73	110	93	0.15	0.23	0.30	0.38	0.45
Cast Aluminum	220-260	G12	64	95	79	0.13	0.20	0.28	0.33	0.38
	260-320	G12	55	83	69	0.13	0.18	0.25	0.28	0.33
Wrought Aluminum	30	G12	366	460	410	0.25	0.38	0.45	0.50	0.55
	180	G12	244	306	275	0.23	0.33	0.40	0.45	0.50
Aluminum Bronze	30	G12	366	460	410	0.10	0.15	0.25	0.30	0.36
	180	G12	244	306	275	0.20	0.28	0.36	0.45	0.40
Brass	100-200	G12	85	110	100	0.13	0.20	0.25	0.36	0.42
	200-250	G12	64	94	79	0.10	0.15	0.18	0.25	0.33
Copper	100	G12	130	184	160	0.15	0.23	0.28	0.38	0.45
	60	G12	80	120	100	0.05	0.08	0.10	0.15	0.25



## High Speed Drill - UD30

Holder	Extended	Long	XL	3XLV
Speed	0.90	0.85	0.80	0.75
Feed	--	0.95	0.90	0.90

### RECOMMENDED SPEED AND FEED EXAMPLE:

If recommended speed and feed is 50m/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 m/min and 0.18 mm/rev.

$$50 \times 0.75 = 37.5 \text{ m/min} \quad 0.20 \times 0.90 = 0.18 \text{ mm/rev}$$

## Coolant RECOMMENDATIONS

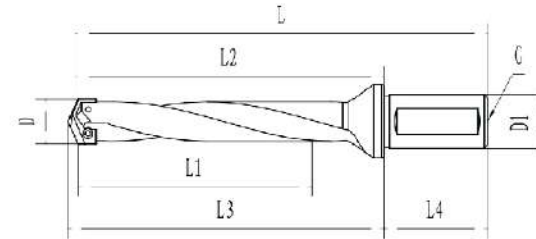
Recommended Speed and Feeds for HSS Drill Inserts

Material	Pressure or Flow rate	HSS							Carbide				
		9.5to 12.5	13to 17	18to 24	25to 35	36to 50	51to 76	76to 102	9.5to 12.5	13to 17	18to 24	25to 35	36to 47
Free Machining Steel 1118, 1215, 12L14, etc	BAR	12-13	7-8	7-10	6-8	5-7	4	5-6	17-20	17	15	15	20
	LPM	9.5-9.8	10.6-11.4	16.7-19.7	26.5-30.3	45.4-53.0	114-125	144-167	12.2	16.3	25.2	41.5	71.9
Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	BAR	11-12	5-6	5-7	4-6	4-5	2-3	3-5	18	11	11	12	9
	LPM	9.1-9.5	9.1-9.8	14.0-15.9	22.7-26.5	41.6-45.4	98-114	125-144	11.4	13.3	20.6	36.5	62.0
Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	BAR	11	5-6	5-6	4-5	3-5	2-3	3-5	17	10	10	10	8
	LPM	8.7-9.1	8.7-9.8	13.6-15.5	18.9-22.7	37.9-45.4	98-114	125-144	11.3	12.5	20.0	33.8	57.0
Alloy Steel 4140, 5140, 8640, etc.	BAR	11	5	5-6	3-5	3-4	2	3	17	9	10	8	7
	LPM	8.7-9.1	8.3-9.1	13.2-14.8	18.9-22.7	31.9-41.6	98-106	114-125	11.1	12.3	19.3	30.0	55.8
High Strength Alloy 4340, 4330V, 300M, etc.	BAR	10-11	4	3	2	2	1-2	2	15	5	4	3	3
	LPM	8.7-9.1	7.9-8.3	11.0-11.7	15.1-18.9	26.5-30.3	79-87	87-98	10.4	9.1	12.6	18.8	33.6
Structural Steel A36, A516, A285, etc	BAR	11	5-6	5-6	3-4	3	2	3	16	9	8	7	5
	LPM	8.7-9.1	9.1-9.8	13.2-14.8	18.9-22.7	34.1-37.9	87-98	114-125	10.8	12.0	17.5	27.8	47.1
Tool Steel H13, H12, A4, S3, etc	BAR	10-11	4	3	2	2	1-2	2	15	5	5	3	3
	LPM	8.7-9.1	7.9-8.3	11.0-11.7	15.1-18.9	26.5-30.3	79-87	87-98	10.4	9.1	13.6	19.7	36.5
High Temp. Alloy Hastelloy B, Inconel 600, etc	BAR	10-11	4-5	3-4	2	2	2	3	17	11	12	11	9
	LPM	8.7-9.1	8.3-8.7	11.7-12.1	15.1-18.9	26.5-30.3	87-98	125	11.1	13.5	21.9	35.4	62.0
Titanium Alloy	BAR	10-11	4-5	3-4	2	2	2	3	17	11	12	11	9
	LPM	8.7-9.1	8.3-8.7	11.7-12.1	15.1-18.9	26.5-30.3	87-98	125	11.1	13.5	21.9	35.4	62.0
Aerospace Alloy S82	BAR	10-11	4-5	3-4	2	2	2	3	17	11	12	11	9
	LPM	8.7-9.1	8.3-8.7	11.7-12.1	15.1-18.9	26.5-30.3	87-98	125	11.1	13.5	21.9	35.4	62.0
Stainless steel 400 series, 416, 420, etc.	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1	22.7	16.5	17.9	17.2	13.1
	LPM	9.5	9.8	14	23	38	98	117	13	16.3	26.3	44.2	75
Stainless steel 300 series, 304, 316, etc.	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1	22.7	16.5	17.9	17.2	13.1
	LPM	9.5	9.8	14	23	38	98	117	13	16.3	26.3	44.2	75
SG/Nodular Cast Iron	BAR	11	4.5	4.2	2.8	2.4	2	2.4	15.5	7.2	6.2	6.2	5.5
	LPM	9.1	8.7	12.5	19	34	98	106	10.7	10.8	15.4	26.5	48.7
Grey/white cast Iron	BAR	11	4.5	4.2	2.8	2.4	2	2.4	15.5	7.2	6.2	6.2	5.5
	LPM	9.1	8.7	12.5	19	34	98	106	10.7	10.8	15.4	26.5	48.7
Cast Aluminum	BAR	14.5	12.4	15.8	11	8.6	3.5	5.5	24.1	22.0	21.7	19.6	13.8
	LPM	10	14	23	34	61	125	159	13.4	18.8	29	47.2	77
Wrought Aluminum	BAR	14.5	12.4	15.8	11	8.6	3.5	5.5	24.1	22.0	21.7	19.6	13.8
	LPM	10	14	23	34	61	125	159	13.4	18.8	29	47.2	77
Aluminum Bronze	BAR	12.8	8.3	9.65	7.95	6.9	3.5	6.2	20	16.5	16.5	15.2	12
	LPM	9.6	11.4	19.7	30.3	53	125	167	12.2	16.3	25.2	41.5	71.9
Brass	BAR	11	4.5	4.2	2.8	2.4	2	2.4	24.1	22.0	21.7	19.6	13.8
	LPM	9.1	8.7	12.5	19	34	98	106	13.4	18.8	29	47.2	77
Copper	BAR	12.8	8.3	9.65	7.95	6.9	3.5	6.2	20	16.5	16.5	15.2	12
	LPM	9.6	11.4	19.7	30.3	53	125	167	12.2	16.3	25.2	41.5	71.9
Hardness Steel	BAR	10.7	4.2	3.5	2	2	1.7	2	14.5	5.2	4.8	3.4	3.1
	LPM	9.1	8.3	11.7	19	30	87	98	10.4	9.1	13.6	19.7	36.5



## Original SD Drill

### Flanged Shank



Y0 Connector (φ 9.5- φ 11.1)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SDY0S-19-XP16	●	19	47.6	50	95.6	16	48	1/8	M2.0x5	T-6
SDY0S-32-XP20	●	32	61.1	63.5	111.1	20	50	1/8	M2.0x5	T-6
SDY0H-60-XP20	●	60	89.7	92.1	139.7	20	50	1/8	M2.0x5	T-6
SDY0H-111-XP20	●	111	140.5	142.9	190.5	20	50	1/8	M2.0x5	T-6
SDY0S-222-XP20	●	222	251.7	254.1	301.7	20	50	1/8	M2.0x5	T-6
SDY0S-290-XP20	●	290	319.9	322.3	369.9	20	50	1/8	M2.0x5	T-6

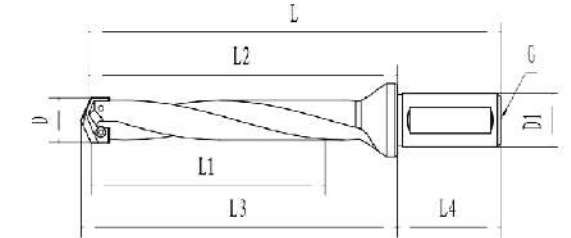
Z0 Connector (φ11.1-φ12.9)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SDZ0S-19-XP16	●	19	47.6	50	95.6	16	48	1/8	M2.0x5	T-6
SDZ0S-32-XP20	●	32	61.1	63.5	111.1	20	50	1/8	M2.0x5	T-6
SDZ0H-60-XP20	●	60	89.7	92.1	139.7	20	50	1/8	M2.0x5	T-6
SDZ0H-111-XP20	●	111	140.5	142.9	190.5	20	50	1/8	M2.0x5	T-6
SDZ0S-222-XP20	●	222	251.7	254.1	301.7	20	50	1/8	M2.0x5	T-6
SDZ0S-290-XP20	●	290	319.9	322.3	369.9	20	50	1/8	M2.0x5	T-6

## Original SD Drill

### Flanged Shank



00 Connector (D = φ 13.0- φ 17.5)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SD00S-23-XP20	●	23	47.6	50.4	97.6	20	50	1/8	M2.5x6	T-8
SD00S-35-XP20	●	35	63.5	66.3	113.5	20	50	1/8	M2.5x6	T-8
SD00H-64-XP20	●	64	92.1	94.9	142.1	20	50	1/8	M2.5x6	T-8
SD00H-114-XP20	●	114	142.9	145.7	192.9	20	50	1/8	M2.5x6	T-8
SD00H-178-XP20	●	178	206.4	209.1	256.4	20	50	1/8	M2.5x6	T-8
SD00S-240-XP20	●	240	268.6	271.3	318.6	20	50	1/8	M2.5x6	T-8
SD00S-295-XP20	●	295	323.9	326.7	373.9	20	50	1/8	M2.5x6	T-8
SD00S-387-XP20	●	387	416.0	418.8	466.0	20	50	1/8	M2.5x6	T-8

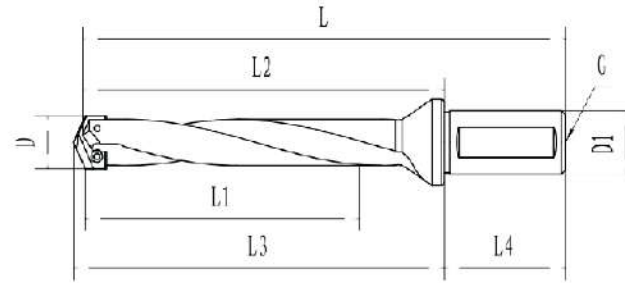
05 Connector (D = φ 15.5- φ 17.5)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SD05S-23-XP20	●	23	47.6	50.4	97.6	20	50	1/8	M2.5x6	T-8
SD05S-35-XP20	●	35	63.5	66.3	113.5	20	50	1/8	M2.5x6	T-8
SD05H-64-XP20	●	64	92.1	94.9	142.1	20	50	1/8	M2.5x6	T-8
SD05H-114-XP20	●	114	142.9	145.7	192.9	20	50	1/8	M2.5x6	T-8
SD05H-178-XP20	●	178	206.4	209.1	256.4	20	50	1/8	M2.5x6	T-8
SD05S-240-XP20	●	240	268.6	271.3	318.6	20	50	1/8	M2.5x6	T-8
SD05S-295-XP20	●	295	323.9	326.7	373.9	20	50	1/8	M2.5x6	T-8
SD05S-387-XP20	●	387	416.0	418.8	466.0	20	50	1/8	M2.5x6	T-8

## Original SD Drill

### Flanged Shank



10 Connector ( D =  $\phi$  17.6-  $\phi$  24.4)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SD10S-48-XP25	●	48	75.8	79.4	131.8	25	56	1/8	M3.0x8	T-8
SD10S-67-XP25	●	67	107.2	110.7	163.1	25	56	1/8	M3.0x8	T-8
SD10H-118-XP25	●	118	154.8	158.4	210.8	25	56	1/8	M3.0x8	T-8
SD10H-168-XP25	●	168	205.6	209.2	261.6	25	56	1/8	M3.0x8	T-8
SD10H-218-XP25	●	218	255.3	258.9	311.3	25	56	1/8	M3.0x8	T-8
SD10H-270-XP25	●	270	307.2	310.8	363.2	25	56	1/8	M3.0x8	T-8
SD10S-365-XP25	●	365	402.2	405.8	458.2	25	56	1/8	M3.0x8	T-8
SD10S-457-XP25	●	457	494.5	498.1	550.5	25	56	1/8	M3.0x8	T-8
SD10S-569-XP25	●	569	602.5	606.1	658.5	25	56	1/8	M3.0x8	T-8

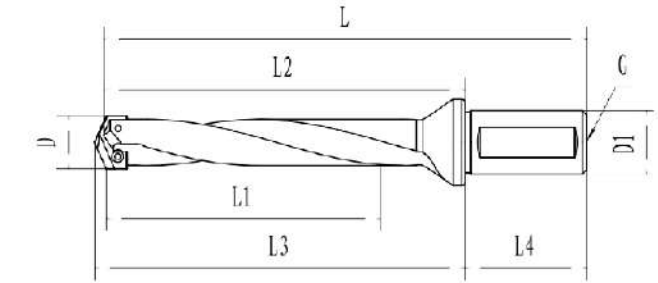
15 Connector ( D =  $\phi$  22.0-  $\phi$  24.4)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SD15S-57-XP25	●	56	88.5	92.1	144.5	25	56	1/8	M3.0x8	T-8
SD15S-67-XP25	●	67	107.2	110.7	163.1	25	56	1/8	M3.0x8	T-8
SD15H-118-XP25	●	118	154.8	158.4	210.8	25	56	1/8	M3.0x8	T-8
SD15H-168-XP25	●	168	205.6	209.2	261.6	25	56	1/8	M3.0x8	T-8
SD15H-218-XP25	●	218	255.3	258.9	311.3	25	56	1/8	M3.0x8	T-8
SD15H-270-XP25	●	270	307.2	310.8	363.2	25	56	1/8	M3.0x8	T-8
SD15S-365-XP25	●	365	402.2	405.8	458.2	25	56	1/8	M3.0x8	T-8
SD15S-457-XP25	●	457	494.5	498.1	550.5	25	56	1/8	M3.0x8	T-8
SD15S-569-XP25	●	569	602.5	606.1	658.5	25	56	1/8	M3.0x8	T-8

## Original SD Drill

### Flanged Shank



20 Connector ( D =  $\phi$  24.5-  $\phi$  35.0)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SD20S-57-XP32	●	57	88.5	92.1	148.5	32	60	1/4	M3.5x10	T-15
SD20S-86-XP32	●	86	128.6	132.2	188.6	32	60	1/4	M3.5x10	T-15
SD20H-137-XP32	●	137	179.4	183.0	239.4	32	60	1/4	M3.5x10	T-15
SD20H-187-XP32	●	187	230.2	233.8	290.2	32	60	1/4	M3.5x10	T-15
SD20H-237-XP32	●	237	279.9	283.5	339.9	32	60	1/4	M3.5x10	T-15
SD20H-289-XP32	●	289	331.8	335.4	391.8	32	60	1/4	M3.5x10	T-15
SD20H-400-XP32	●	400	442.8	446.4	502.8	32	60	1/4	M3.5x10	T-15
SD20S-400-XP32	●	400	442.8	446.4	502.8	32	60	1/4	M3.5x10	T-15
SD20S-511-XP32	●	511	554.1	557.7	614.1	32	60	1/4	M3.5x10	T-15
SD20S-692-XP32	●	692	735.1	738.7	795.1	32	60	1/4	M3.5x10	T-15

25 Connector ( D =  $\phi$  30.0-  $\phi$  35.0)

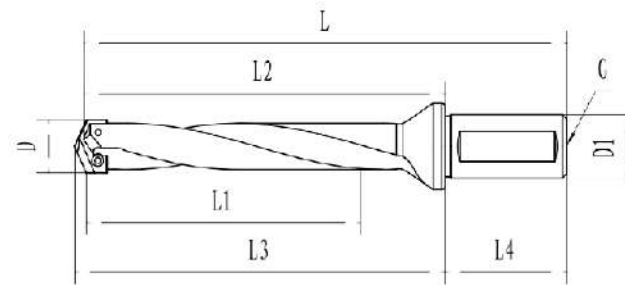
mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L1	D1	L4	G		
SD25S-92-XP32	●	92	123.4	127.0	183.4	32	60	1/4	M3.5x10	T-15
SD25S-86-XP32	●	86	128.6	132.2	188.6	32	60	1/4	M3.5x10	T-15
SD25H-137-XP32	●	137	179.4	183.0	239.4	32	60	1/4	M3.5x10	T-15
SD25H-187-XP32	●	187	230.2	233.8	290.2	32	60	1/4	M3.5x10	T-15
SD25H-237-XP32	●	237	279.9	283.5	339.9	32	60	1/4	M3.5x10	T-15
SD25H-289-XP32	●	289	331.8	335.4	391.8	32	60	1/4	M3.5x10	T-15
SD25H-400-XP32	●	400	442.8	446.4	502.8	32	60	1/4	M3.5x10	T-15
SD25S-400-XP32	●	400	442.8	446.4	502.8	32	60	1/4	M3.5x10	T-15
SD25S-511-XP32	●	511	554.1	557.7	614.1	32	60	1/4	M3.5x10	T-15
SD25S-692-XP32	●	692	735.1	738.7	795.1	32	60	1/4	M3.5x10	T-15



## Original SD Drill

### Flanged Shank



30 Connector ( D =  $\phi$  35.1-  $\phi$  47.9)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L	D1	L4	G		
SD30S-76-XP40	●	76	125.0	129.8	195.0	40	70	1/4	M5.0x10	T-20
SD30S-121-XP40	●	121	173.0	177.8	243.0	40	70	1/4	M5.0x10	T-20
SD30H-165-XP40	●	165	217.5	222.3	287.5	40	70	1/4	M5.0x10	T-20
SD30H-210-XP40	●	210	261.9	266.7	331.9	40	70	1/4	M5.0x10	T-20
SD30H-260-XP40	●	260	312.3	317.1	382.3	40	70	1/4	M5.0x10	T-20
SD30S-349-XP40	●	349	401.6	406.4	471.6	40	70	1/4	M5.0x10	T-20
SD30H-349-XP40	●	349	401.6	406.4	471.6	40	70	1/4	M5.0x10	T-20
SD30S-559-XP40	●	559	611.1	615.9	681.1	40	70	1/4	M5.0x10	T-20
SD30S-787-XP40	●	787	839.7	844.5	909.7	40	70	1/4	M5.0x10	T-20

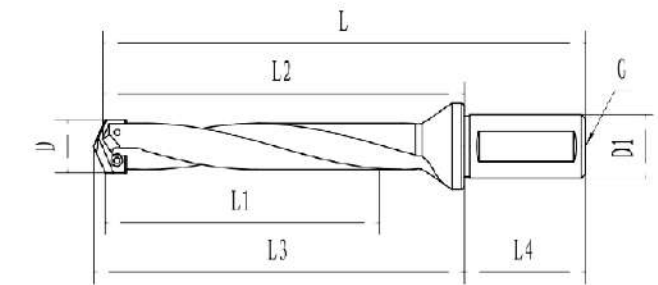
35 Connector ( D =  $\phi$  42.0-  $\phi$  47.9)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L	D1	L4	G		
SD35S-76-XP40	●	76	125.0	129.8	195.0	40	70	1/4	M5.0x10	T-20
SD35S-121-XP40	●	121	173.0	177.8	243.0	40	70	1/4	M5.0x10	T-20
SD35H-165-XP40	●	165	217.5	222.3	287.5	40	70	1/4	M5.0x10	T-20
SD35H-210-XP40	●	210	261.9	266.7	331.9	40	70	1/4	M5.0x10	T-20
SD35H-260-XP40	●	260	312.3	317.1	382.3	40	70	1/4	M5.0x10	T-20
SD35S-349-XP40	●	349	401.6	406.4	471.6	40	70	1/4	M5.0x10	T-20
SD35H-349-XP40	●	349	401.6	406.4	471.6	40	70	1/4	M5.0x10	T-20
SD35S-559-XP40	●	559	611.1	615.9	681.1	40	70	1/4	M5.0x10	T-20
SD35S-787-XP40	●	787	839.7	844.5	909.7	40	70	1/4	M5.0x10	T-20

## Original SD Drill

### Flanged Shank



40 Connector ( D =  $\phi$  48.0-  $\phi$  65.28)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L	D1	L4	G		
SD40S-130-XP40	●	130	179.4	184.2	249.4	40	70	1/4	M5.0x15	T-20
SD40H-232-XP40	●	232	281.0	285.8	351.0	40	70	1/4	M5.0x15	T-20
SD40S-350-XP40	●	350	399.2	404.0	469.2	40	70	1/4	M5.0x15	T-20
SD40H-350-XP40	●	350	399.2	404.0	469.2	40	70	1/4	M5.0x15	T-20
SD40S-422-XP40	●	422	471.5	476.3	541.5	40	70	1/4	M5.0x15	T-20
SD40H-422-XP40	●	422	471.5	476.3	541.5	40	70	1/4	M5.0x15	T-20
SD40S-525-XP40	●	525	574.2	579.0	644.2	40	70	1/4	M5.0x15	T-20
SD40S-625-XP40	●	625	674.7	679.5	744.7	40	70	1/4	M5.0x15	T-20
SD40S-879-XP40	●	879	928.7	933.5	998.7	40	70	1/4	M5.0x15	T-20

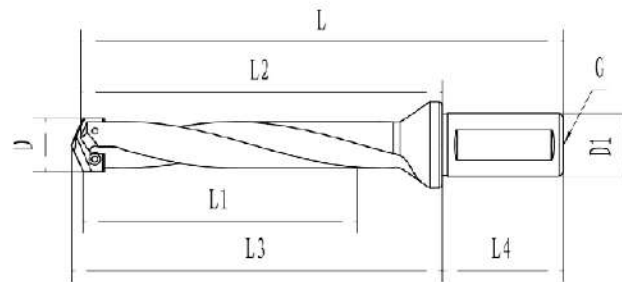
45 Connector ( D =  $\phi$  56.0-  $\phi$  65.28)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L	D1	L4	G		
SD45S-130-XP40	●	130	179.4	184.2	249.4	40	70	1/4	M5.0x15	T-20
SD45H-232-XP40	●	232	281.0	285.8	351.0	40	70	1/4	M5.0x15	T-20
SD45S-350-XP40	●	350	399.2	404.0	469.2	40	70	1/4	M5.0x15	T-20
SD45H-350-XP40	●	350	399.2	404.0	469.2	40	70	1/4	M5.0x15	T-20
SD45H-422-XP40	●	422	471.5	476.3	541.5	40	70	1/4	M5.0x15	T-20
SD45S-422-XP40	●	422	471.5	476.3	541.5	40	70	1/4	M5.0x15	T-20
SD45S-525-XP40	●	525	574.2	579.0	644.2	40	70	1/4	M5.0x15	T-20
SD45S-625-XP40	●	625	674.7	679.5	744.7	40	70	1/4	M5.0x15	T-20
SD45S-879-XP40	●	879	928.7	933.5	998.7	40	70	1/4	M5.0x15	T-20

## Original SD Drill

### Flanged Shank



50 Connector ( D =  $\phi$  65.3-  $\phi$  89.08)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L	D1	L4	G		
SD50S-171-XP50	●	171	235.0	240.0	315.0	50	80	1/2	M6.0X15	T-25
SD50S-350-XP50	●	350	414.0	419.0	494.0	50	80	1/2	M6.0X15	T-25
SD50S-660-XP50	●	660	724.0	729.0	804.0	50	80	1/2	M6.0X15	T-25

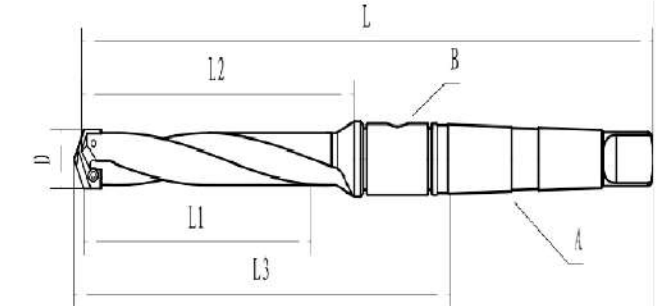
70 Connector ( D =  $\phi$  89.1-  $\phi$  114.48)

mm

Designation	Stock	Size							Spare Parts	
		L1	L2	L3	L	D1	L4	G		
SD70S-200-XP50	●	200	275.0	280.0	355.0	50	80	1/2	M6.0X15	T-25
SD70S-400-XP50	●	400	475.0	480.0	555.0	50	80	1/2	M6.0X15	T-25
SD70S-800-XP50	●	800	875.0	880.0	955.0	50	80	1/2	M6.0X15	T-25

## Original SD Drill

### Morse Taper Shank



Y0 Connector (  $\phi$  9.5-  $\phi$  11.1)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SDY0S-32-MT2	●	32	51.5	88.0	160.3	MT2	1/16	RK-MT2R	M2.0x5	T-6
SDY0H-60-MT2	●	60	80.2	116.7	188.9	MT2	1/16	RK-MT2R	M2.0x5	T-6
SDY0H-111-MT2	●	111	130.9	167.4	239.7	MT2	1/16	RK-MT2R	M2.0x5	T-6

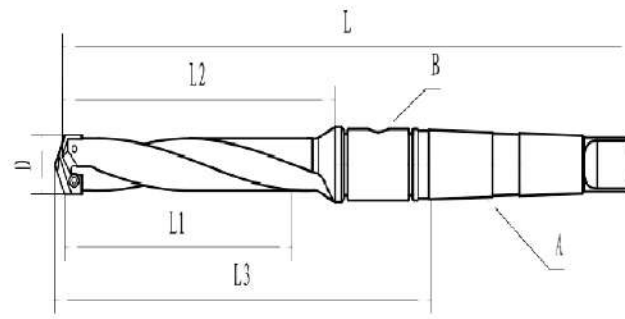
Z0 Connector (  $\phi$  11.1-  $\phi$  12.9)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SDZ0S-32-MT2	●	32	51.5	88.0	160.3	MT2	1/16	1/8	M2.0x5	T-6
SDZ0H-60-MT2	●	60	80.3	116.7	188.9	MT2	1/16	1/8	M2.0x5	T-6
SDZ0H-111-MT2	●	111	130.9	167.4	239.7	MT2	1/16	1/8	M2.0x5	T-6



## Original SD Drill Morse Taper Shank



00 Connector ( D =  $\phi$  13.0-  $\phi$  17.5)

mm

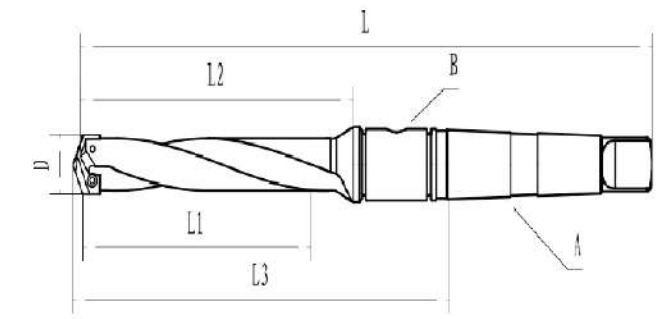
Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD00S-35-MT2	●	35	55.5	95.4	167.3	MT2	1/16	RK-MT2R	M2.5x6	T-8
SD00H-63-MT2	●	63	84.1	124.0	195.9	MT2	1/16	RK-MT2R	M2.5x6	T-8
SD00H-114-MT2	●	114	135.0	174.8	246.7	MT2	1/16	RK-MT2R	M2.5x6	T-8
SD00H-178-MT2	●	178	198.5	238.3	310.2	MT2	1/16	RK-MT2R	M2.5x6	T-8

05 Connector ( D =  $\phi$  15.5-  $\phi$  17.5)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD05S-35-MT2	●	35	55.5	95.4	167.3	MT2	1/16	RK-MT2R	M2.5x6	T-8
SD05H-63-MT2	●	63	84.1	124.0	195.9	MT2	1/16	RK-MT2R	M2.5x6	T-8
SD05H-114-MT2	●	114	135.0	174.8	246.7	MT2	1/16	RK-MT2R	M2.5x6	T-8
SD05H-178-MT2	●	178	198.5	238.3	310.2	MT2	1/16	RK-MT2R	M2.5x6	T-8

## Original SD Drill Morse Taper Shank



10 Connector ( D =  $\phi$  17.6-  $\phi$  24.4)

mm

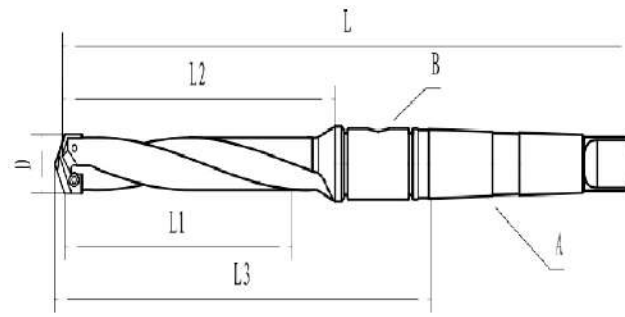
Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD10S-70-MT3	●	70	98.4	149.0	239.0	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD10H-121-MT3	●	121	149.2	199.8	289.8	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD10H-171-MT3	●	171	200.0	250.6	340.7	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD10H-222-MT3	●	222	250.5	301.1	391.2	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD10H-273-MT3	●	273	301.6	352.2	442.3	MT3	1/8	RK-MT3R	M3.0x8	T-8

15 Connector ( D =  $\phi$  22.0-  $\phi$  24.4)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD15S-70-MT3	●	70	98.4	149.0	239.0	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD15H-121-MT3	●	121	149.2	199.8	289.8	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD15H-171-MT3	●	171	200.0	250.6	340.7	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD15H-222-MT3	●	222	250.5	301.1	391.2	MT3	1/8	RK-MT3R	M3.0x8	T-8
SD15H-273-MT3	●	273	301.6	352.2	442.3	MT3	1/8	RK-MT3R	M3.0x8	T-8

## Original SD Drill Morse Taper Shank



20 Connector ( D =  $\phi$  24.5-  $\phi$  35.0)

mm

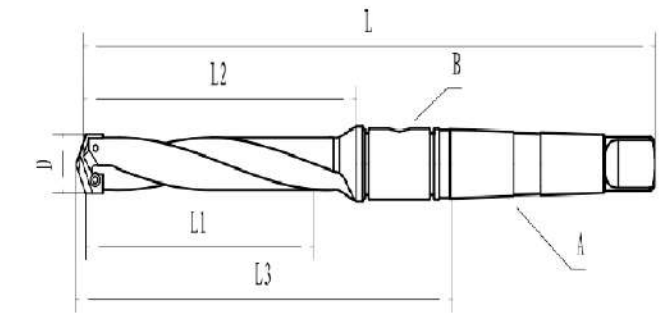
Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD20S-86-MT4	●	86	114.3	172.9	286.3	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD20H-137-MT4	●	137	165.1	223.7	337.1	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD20H-187-MT4	●	187	215.9	274.5	387.9	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD20H-237-MT4	●	237	265.6	324.2	437.6	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD20H-289-MT4	●	289	317.5	376.1	489.5	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD20S-400-MT4	●	400	428.5	487.1	600.0	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD20H-400-MT4	●	400	428.5	487.1	600.0	MT4	1/4	RK-MT4R	M3.5x10	T-15

25 Connector ( D =  $\phi$  30.0-  $\phi$  35.0)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD25S-86-MT4	●	86	114.3	172.9	286.3	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD25H-137-MT4	●	137	165.1	223.7	337.1	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD25H-187-MT4	●	187	215.9	274.5	387.9	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD25H-237-MT4	●	237	265.6	324.2	437.6	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD25H-289-MT4	●	289	317.5	376.1	489.5	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD25S-400-MT4	●	400	428.5	487.1	600.0	MT4	1/4	RK-MT4R	M3.5x10	T-15
SD25H-400-MT4	●	400	428.5	487.1	600.0	MT4	1/4	RK-MT4R	M3.5x10	T-15

## Original SD Drill Morse Taper Shank



30 Connector ( D =  $\phi$  35.1-  $\phi$  47.9)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD30S-121-MT4	●	121	152.4	211.7	324.4	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD30H-165-MT4	●	165	196.9	256.2	368.9	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD30H-209-MT4	●	209	241.3	300.6	413.3	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD30H-260-MT4	●	260	291.8	351.1	463.8	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD30H-349-MT4	●	349	381.0	440.3	553.0	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD30S-349-MT4	●	349	381.0	440.3	553.0	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD30S-559-MT4	●	559	590.6	649.9	762.5	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD30S-787-MT4	●	787	819.2	878.5	991.1	MT4	1/4	RK-MT4R	M5.0x10	T-20

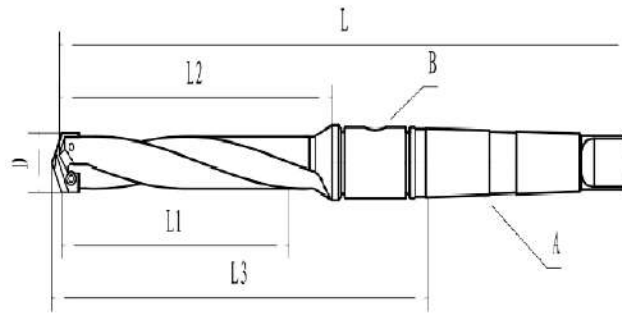
35 Connector ( D =  $\phi$  42.0-  $\phi$  47.9)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD35S-121-MT4	●	121	152.4	211.7	324.4	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD35H-165-MT4	●	165	196.9	256.2	368.9	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD35H-209-MT4	●	209	241.3	300.6	413.3	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD35H-260-MT4	●	260	291.8	351.1	463.8	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD35H-349-MT4	●	349	381.0	440.3	553.0	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD35S-349-MT4	●	349	381.0	440.3	553.0	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD35S-559-MT4	●	559	590.6	649.9	762.5	MT4	1/4	RK-MT4R	M5.0x10	T-20
SD35S-787-MT4	●	787	819.2	878.5	991.1	MT4	1/4	RK-MT4R	M5.0x10	T-20



## Original SD Drill Morse Taper Shank



40 Connector ( D =  $\phi$  48.0-  $\phi$  65.28)

mm

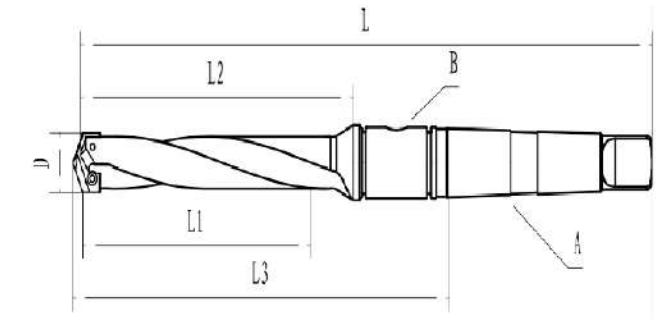
Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD40S-130-MT5	●	130	165.1	225.0	369.4	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD40H-232-MT5	●	232	266.7	326.6	471.0	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD40S-350-MT5	●	350	384.9	444.8	589.2	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD40H-350-MT5	●	350	384.9	444.8	589.2	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD40H-422-MT5	●	422	457.2	517.1	661.5	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD40S-422-MT5	●	422	457.2	517.1	661.5	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD40S-625-MT5	●	625	660.4	720.3	864.7	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD40S-879-MT5	●	879	914.4	974.3	1118.7	MT5	1/4	RK-MT5R1	M5.0x15	T-20

45 Connector ( D =  $\phi$  56.0-  $\phi$  65.28)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD45S-130-MT5	●	130	165.1	225.0	369.4	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD45H-232-MT5	●	232	266.7	326.6	471.0	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD45S-350-MT5	●	350	384.9	444.8	589.2	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD45H-350-MT5	●	350	384.9	444.8	589.2	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD45H-422-MT5	●	422	457.2	517.1	661.5	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD45S-422-MT5	●	422	457.2	517.1	661.5	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD45S-625-MT5	●	625	660.4	720.3	864.7	MT5	1/4	RK-MT5R1	M5.0x15	T-20
SD45S-879-MT5	●	879	914.4	974.3	1118.7	MT5	1/4	RK-MT5R1	M5.0x15	T-20

## Original SD Drill Morse Taper Shank



50 Connector ( D =  $\phi$  65.3-  $\phi$  89.08)

mm

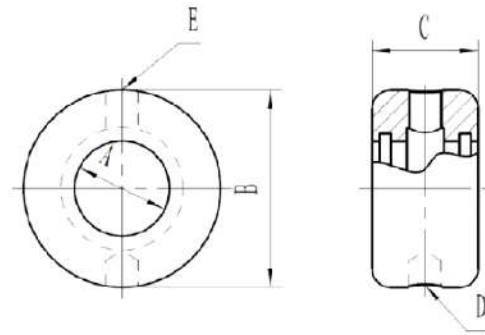
Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD50S-171-MT5	●	171	215.9	287.3	430.2	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD50H-273-MT5	●	273	317.5	388.9	531.8	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD50S-464-MT5	●	464	508.0	579.4	722.3	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD50S-660-MT5	●	660	704.8	776.2	919.1	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD50S-889-MT5	●	889	933.4	1004.8	1147.7	MT5	1/2	RK-MT5R2	M6.0x15	T-25

70 Connector ( D =  $\phi$  89.1-  $\phi$  114.48)

mm

Designation	Stock	Size						Spare Parts		
		L1	L2	L3	L	A	B			
SD70S-171-MT5	●	171	225.4	296.8	439.7	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD70H-273-MT5	●	273	327.0	398.5	541.3	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD70S-556-MT5	●	556	609.6	681.1	823.9	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD70S-685-MT5	●	685	739.7	811.2	954.0	MT5	1/2	RK-MT5R2	M6.0x15	T-25
SD70S-939-MT5	●	939	993.7	1065.2	1208.0	MT5	1/2	RK-MT5R2	M6.0x15	T-25

## Oil Ring

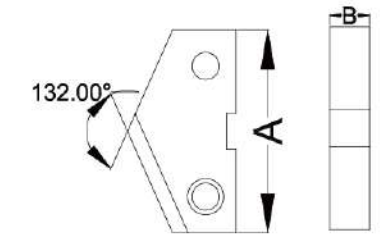


50 Connector ( D =  $\phi$  65.3-  $\phi$  89.08)

mm

Designation	A	B	C	D	E
	Inside Dia	Outside Dia	Thickness	Driving Rod Thread	Cooling nozzle thread
RK-MT2R	19.4	49.0	22.5	M8x1.25	1/8"
RK-MT3R	25.5	53.0	30.0	M8x1.25	1/8"
RK-MT4R	32.5	63.0	36.0	M10x1.5	1/4"
RK-MT5R1	48.5	76.0	36.0	M10x1.5	1/4"
RK-MT5R2	60.1	95.3	44.5	M12x1.75	1/2"

## Available Insert

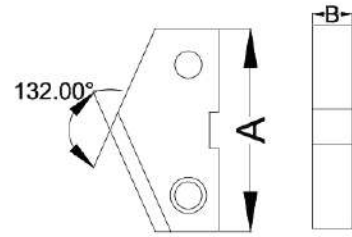


mm

Connector	A	B	Designation		
			S2	S6	G2
Y 9.5 to 11.0	9.5	2.38	SI-Y-0950-S2	SI-Y-0950-S6	SI-Y-0950-G2
	10.0		SI-Y-1000-S2	SI-Y-1000-S6	SI-Y-1000-G2
	10.5		SI-Y-1050-S2	SI-Y-1050-S6	SI-Y-1050-G2
	11.0		SI-Y-1100-S2	SI-Y-1100-S6	SI-Y-1100-G2
Z 11.5 to 12.5	11.5	2.38	SI-Z-1150-S2	SI-Z-1150-S6	SI-Z-1150-G2
	12.0		SI-Y-1200-S2	SI-Z-1200-S6	SI-Z-1200-G2
	12.5		SI-Z-1250-S2	SI-Z-1250-S6	SI-Z-1250-G2
0 13.0 to 17.5	13.0	3.18	SI-0-1300-S2	SI-0-1300-S6	SI-0-1300-G2
	13.5		SI-0-1350-S2	SI-0-1350-S6	SI-0-1350-G2
	14.0		SI-0-1400-S2	SI-0-1400-S6	SI-0-1400-G2
	14.5		SI-0-1450-S2	SI-0-1450-S6	SI-0-1450-G2
	15.0		SI-0-1500-S2	SI-0-1500-S6	SI-0-1500-G2
	15.5		SI-0-1550-S2	SI-0-1550-S6	SI-0-1550-G2
	16.0		SI-0-1600-S2	SI-0-1600-S6	SI-0-1600-G2
	16.5		SI-0-1650-S2	SI-0-1650-S6	SI-0-1650-G2
	17.0		SI-0-1700-S2	SI-0-1700-S6	SI-0-1700-G2
1 18.0 to 24.0	17.5	3.97	SI-0-1750-S2	SI-0-1750-S6	SI-0-1750-G2
	18.0		SI-1-1800-S2	SI-1-1800-S6	SI-1-1800-G2
	18.5		SI-1-1850-S2	SI-1-1850-S6	SI-1-1850-G2
	19.0		SI-1-1900-S2	SI-1-1900-S6	SI-1-1900-G2
	19.5		SI-1-1950-S2	SI-1-1950-S6	SI-1-1950-G2
	20.0		SI-1-2000-S2	SI-1-2000-S6	SI-1-2000-G2
	20.5		SI-1-2050-S2	SI-1-2050-S6	SI-1-2050-G2
	21.0		SI-1-2100-S2	SI-1-2100-S6	SI-1-2100-G2
	21.5		SI-1-2150-S2	SI-1-2150-S6	SI-1-2150-G2
	22.0		SI-1-2200-S2	SI-1-2200-S6	SI-1-2200-G2
	22.5		SI-1-2250-S2	SI-1-2250-S6	SI-1-2250-G2
	23.0		SI-1-2300-S2	SI-1-2300-S6	SI-1-2300-G2
23.5	SI-1-2350-S2	SI-1-2350-S6	SI-1-2350-G2		
24.0	SI-1-2400-S2	SI-1-2400-S6	SI-1-2400-G2		



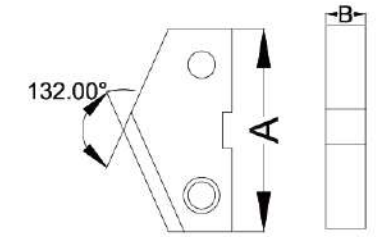
## Available Insert



mm

Connector	A	B	Designation		
			S2	S6	G2
2 24.50 to 35.0	24.5	4.76	SI-2-2450-S2	SI-2-2450-S6	SI-2-2450-G2
	25.0		SI-2-2500-S2	SI-2-2500-S6	SI-2-2500-G2
	25.5		SI-2-2550-S2	SI-2-2550-S6	SI-2-2550-G2
	26.0		SI-2-2600-S2	SI-2-2600-S6	SI-2-2600-G2
	26.5		SI-2-2650-S2	SI-2-2650-S6	SI-2-2650-G2
	27.0		SI-2-2700-S2	SI-2-2700-S6	SI-2-2700-G2
	27.5		SI-2-2750-S2	SI-2-2750-S6	SI-2-2750-G2
	28.0		SI-2-2800-S2	SI-2-2800-S6	SI-2-2800-G2
	28.5		SI-2-2850-S2	SI-2-2850-S6	SI-2-2850-G2
	29.0		SI-2-2900-S2	SI-2-2900-S6	SI-2-2900-G2
	29.5		SI-2-2950-S2	SI-2-2950-S6	SI-2-2950-G2
	30.0		SI-2-3000-S2	SI-2-3000-S6	SI-2-3000-G2
	30.5		SI-2-3050-S2	SI-2-3050-S6	SI-2-3050-G2
	31.0		SI-2-3100-S2	SI-2-3100-S6	SI-2-3100-G2
	31.5		SI-2-3150-S2	SI-2-3150-S6	SI-2-3150-G2
	32.0		SI-2-3200-S2	SI-2-3200-S6	SI-2-3200-G2
	32.5		SI-2-3250-S2	SI-2-3250-S6	SI-2-3250-G2
	33.0		SI-2-3300-S2	SI-2-3300-S6	SI-2-3300-G2
	33.5		SI-2-3350-S2	SI-2-3350-S6	SI-2-3350-G2
	34.0		SI-2-3400-S2	SI-2-3400-S6	SI-2-3400-G2
34.5	SI-2-3450-S2	SI-2-3450-S6	SI-2-3450-G2		
35.0	SI-2-3500-S2	SI-2-3500-S6	SI-2-3500-G2		

## Available Insert



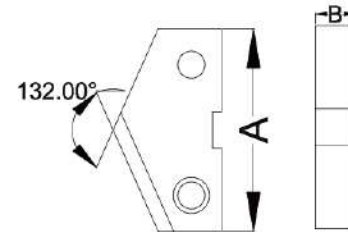
mm

Connector	A	B	Designation		
			S2	S6	G2
3 36.0 to 47.0	35.5	6.35	SI-3-3550-S2	SI-3-3550-S6	SI-3-3550-G2
	36.0		SI-3-3600-S2	SI-3-3600-S6	SI-3-3600-G2
	36.5		SI-3-3650-S2	SI-3-3650-S6	SI-3-3650-G2
	37.0		SI-3-3700-S2	SI-3-3700-S6	SI-3-3700-G2
	37.5		SI-3-3750-S2	SI-3-3750-S6	SI-3-3750-G2
	38.0		SI-3-3800-S2	SI-3-3800-S6	SI-3-3800-G2
	38.5		SI-3-3850-S2	SI-3-3850-S6	SI-3-3850-G2
	39.0		SI-3-3900-S2	SI-3-3900-S6	SI-3-3900-G2
	39.5		SI-3-3950-S2	SI-3-3950-S6	SI-3-3950-G2
	40.0		SI-3-4000-S2	SI-3-4000-S6	SI-3-4000-G2
	40.5		SI-3-4050-S2	SI-3-4050-S6	SI-3-4050-G2
	41.0		SI-3-4100-S2	SI-3-4100-S6	SI-3-4100-G2
	42.0		SI-3-4200-S2	SI-3-4200-S6	SI-3-4200-G2
	43.0		SI-3-4300-S2	SI-3-4300-S6	SI-3-4300-G2
	44.0		SI-3-4400-S2	SI-3-4400-S6	SI-3-4400-G2
	45.0		SI-3-4500-S2	SI-3-4500-S6	SI-3-4500-G2
	46.0		SI-3-4600-S2	SI-3-4600-S6	SI-3-4600-G2
	47.0		SI-3-4700-S2	SI-3-4700-S6	SI-3-4700-G2

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

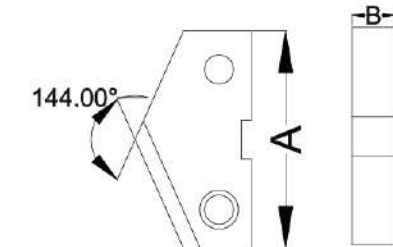
## Available Insert



mm

Connector	A	B	Designation		
			S2	S6	G2
4 48.0 to 65.0	48.0	7.94	SI-4-4800-S2	SI-4-4800-S6	
	49.0		SI-4-4900-S2	SI-4-4900-S6	
	50.0		SI-4-5000-S2	SI-4-5000-S6	
	51.0		SI-4-5100-S2	SI-4-5100-S6	
	52.0		SI-4-5200-S2	SI-4-5200-S6	
	53.0		SI-4-5300-S2	SI-4-5300-S6	
	54.0		SI-4-5400-S2	SI-4-5400-S6	
	55.0		SI-4-5500-S2	SI-4-5500-S6	
	56.0		SI-4-5600-S2	SI-4-5600-S6	
	57.0		SI-4-5700-S2	SI-4-5700-S6	
	58.0		SI-4-5800-S2	SI-4-5800-S6	
	59.0		SI-4-5900-S2	SI-4-5900-S6	
	60.0		SI-4-6000-S2	SI-4-6000-S6	
	61.0		SI-4-6100-S2	SI-4-6100-S6	
	62.0		SI-4-6200-S2	SI-4-6200-S6	
	63.0		SI-4-6300-S2	SI-4-6300-S6	
	64.0		SI-4-6400-S2	SI-4-6400-S6	
	65.0		SI-4-6500-S2	SI-4-6500-S6	

## Available Insert



mm

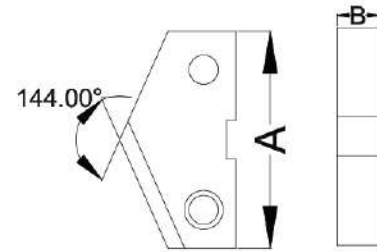
Connector	A	B	Designation		
			S2	S6	G2
5 66.0 to 89.0	66.0	11.10	SI-5-6600-S2	SI-5-6600-S6	
	67.0		SI-5-6700-S2	SI-5-6700-S6	
	68.0		SI-5-6800-S2	SI-5-6800-S6	
	69.0		SI-5-6900-S2	SI-5-6900-S6	
	70.0		SI-5-7000-S2	SI-5-7000-S6	
	71.0		SI-5-7100-S2	SI-5-7100-S6	
	72.0		SI-5-7200-S2	SI-5-7200-S6	
	73.0		SI-5-7300-S2	SI-5-7300-S6	
	74.0		SI-5-7400-S2	SI-5-7400-S6	
	75.0		SI-5-7500-S2	SI-5-7500-S6	
	76.0		SI-5-7600-S2	SI-5-7600-S6	
	77.0		SI-5-7700-S2	SI-5-7700-S6	
	78.0		SI-5-7800-S2	SI-5-7800-S6	
	79.0		SI-5-7900-S2	SI-5-7900-S6	
	80.0		SI-5-8000-S2	SI-5-8000-S6	
	81.0		SI-5-8100-S2	SI-5-8100-S6	
	82.0		SI-5-8200-S2	SI-5-8200-S6	
	83.0		SI-5-8300-S2	SI-5-8300-S6	
	84.0		SI-5-8400-S2	SI-5-8400-S6	
	85.0		SI-5-8500-S2	SI-5-8500-S6	
	86.0		SI-5-8600-S2	SI-5-8600-S6	
	87.0		SI-5-8700-S2	SI-5-8700-S6	
	88.0		SI-5-8800-S2	SI-5-8800-S6	
	89.0		SI-5-8900-S2	SI-5-8900-S6	

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE



## Available Insert



mm

Connector	A	B	Designation		
			S2	S6	G2
7 90.0 to 114.0	90.0	11.10	SI-7-9000-S2	SI-7-9000-S6	
	91.0		SI-7-9100-S2	SI-7-9100-S6	
	92.0		SI-7-9200-S2	SI-7-9200-S6	
	93.0		SI-7-9300-S2	SI-7-9300-S6	
	94.0		SI-7-9400-S2	SI-7-9400-S6	
	95.0		SI-7-9500-S2	SI-7-9500-S6	
	96.0		SI-7-9600-S2	SI-7-9600-S6	
	97.0		SI-7-9700-S2	SI-7-9700-S6	
	98.0		SI-7-9800-S2	SI-7-9800-S6	
	99.0		SI-7-9900-S2	SI-7-9900-S6	
	100.0		SI-7-10000-S2	SI-7-10000-S6	
	101.0		SI-7-10100-S2	SI-7-10100-S6	
	102.0		SI-7-10200-S2	SI-7-10200-S6	
	103.0		SI-7-10300-S2	SI-7-10300-S6	
	104.0		SI-7-10400-S2	SI-7-10400-S6	
	105.0		SI-7-10500-S2	SI-7-10500-S6	
	106.0		SI-7-10600-S2	SI-7-10600-S6	
	107.0		SI-7-10700-S2	SI-7-10700-S6	
108.0	SI-7-10800-S2	SI-7-10800-S6			

► The application of V-max indexable drill can greatly improve the machining efficiency.

## V-Max Indexable Drill



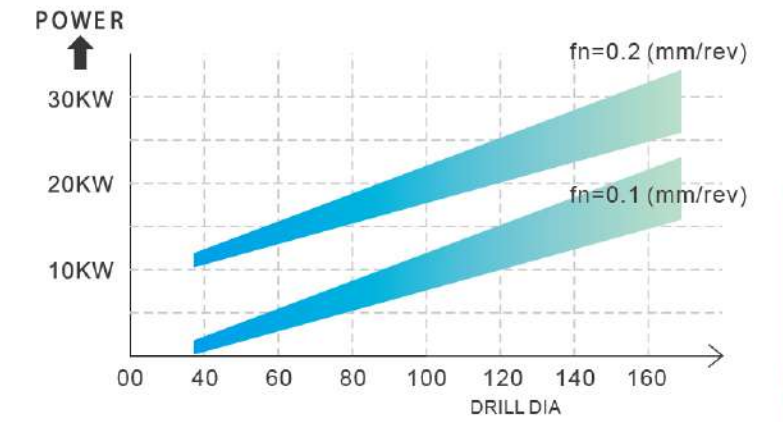
**EFFICIENT V-MAX DRILL !  
IMPROVED V-MAX DRILL !**

- The drill has good centering effect with center pilot drill structure, so as to ensure the hole with good straightness.
- The inner and outer edges are used in insertable cartridge. In actual application, the most easily damaged is outer edge, by replacing the cartridge to avoid the scrap of the whole drill, saving the cost of tools.
- By adjusting the outer cartridge, the drilling size can be changed within 0-5mm
- The drill head and the adaptor adopt modular structure. By changing the adaptor of various lengths to drill the hole of different depths.
- With through coolant hole, the drill can increase the life of inserts by better cooling the inserts ,also it will be good for chip flow.
- In the process of drilling, the chips are all broken, without the slender winding iron chips like traditional twist drill processing, thereby improving the security greatly.
- In the process of drilling, by automatic feeding continuously, it doesn't need to return back each chip off, so that significantly enhance machining efficiency.

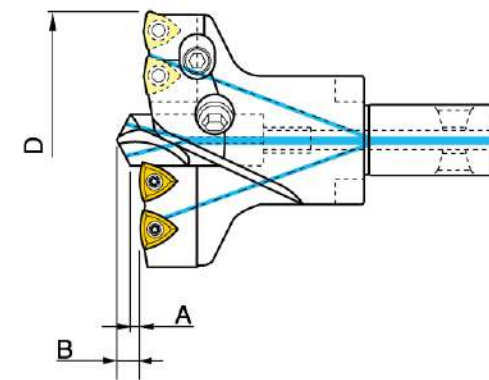


·The connecting strength by the drill modular system is excellent and the drilling depth is freely adjustable by connecting adaptor

## POWER REQUIRMENTS



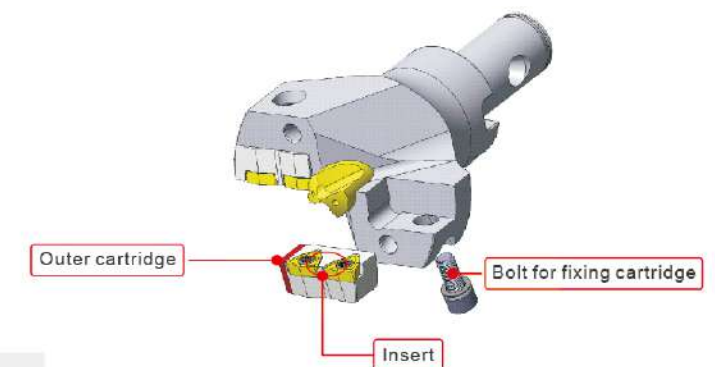
## PILOT DRILL (PLD) SETTING



D	2-4XD		4-6XD		6-8XD	
	A	B	A	B	A	B
45-55	1.6	4.0	1.8	4.2	2.0	4.4
55-75	1.8	5.4	2.0	5.6	2.2	5.8
75-100	2.2	6.5	2.5	6.8	2.8	7.1
100-120	2.4	7.7	2.8	8.1	3.2	8.5
120-170	3.2	9.9	3.6	10.3	4.0	10.7
170-180	3.5	12.2	3.9	12.6	4.3	13.0

## THE DIAMETER ADJUSTING PROCEDURES OF VMD

1. Loosen the clamping bolt of the outer cartridge and remove it from the drill body.
2. Cut off the inside part, the contacted side of the outer cartridge by milling after calculating the drilling diameter.
3. Slick the sharp corner of the cut cartridge.
4. Clamp the bolt for fixing cartridge without any gap in between the holder and the machined outer cartridge.

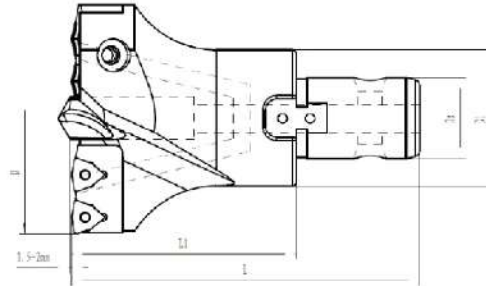


### Example

If setting VMD-135140 to  $\phi 136$  seat  
The standard drill diameter is  $\phi 140$  so  $\phi 140 - \phi 136 = 4 \rightarrow 4 \div 2 = 2$  (calculation by semidiameter)  
2mm is cut off.



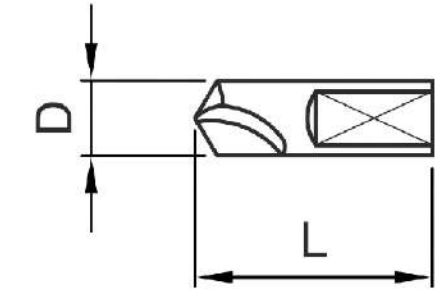
## Modular Shank Type



mm

Designation	Dimension					Cartridge		Pilot Drill	No. of Insert	Insert	Spare Parts	
	D	DS	D1	L1	L	Inner	Outer					
VMD-045050	45-50	16	30	60	95	VMC-045050N	VMC-045050T	PLD-1035-H	2	WCMX030208	M2.5x6	T-8
VMD-050055	50-55					VMC-050055N	VMC-050055T					
VMD-055060	55-60					VMC-055060N	VMC-055060T					
VMD-060065	60-65	25	45	82	127	VMC-060065N	VMC-060065T	PLD-1238-H	2	WCMX050308	M3.0x7	T-8
VMD-065070	65-70					VMC-065070N	VMC-065070T					
VMD-070075	70-75					VMC-070075N	VMC-070075T					
VMD-075080	75-80	30	50	82	139	VMC-075080N	VMC-075080T	PLD-1645-H	2	WCMX06T308	M3.5x9	T-15
VMD-080085	80-85					VMC-080085N	VMC-080085T					
VMD-085090	85-90					VMC-085090N	VMC-085090T					
VMD-090095	90-95	32	58	94	154	VMC-090095N	VMC-090095T	PLD-2045-H	2	WCMX050308	M3.0x7	T-8
VMD-095100	95-100					VMC-095100N	VMC-095100T					
VMD-100105	100-105					VMC-100105N	VMC-100105T					
VMD-105110	105-110	40	70	104	154	VMC-105110N	VMC-105110T	PLD-2556-H	3	WCMX06T308	M3.5x9	T-15
VMD-110115	110-115					VMC-110115N	VMC-110115T					
VMD-115120	115-120					VMC-115120N	VMC-115120T					
VMD-120125	120-125	50	80	116	176	VMC-120125N	VMC-120125T	PLD-2556-H	3	WCMX06T308	M3.5x9	T-15
VMD-125130	125-130					VMC-125130N	VMC-125130T					
VMD-130135	130-135					VMC-130135N	VMC-130135T					
VMD-135140	135-140	50	80	116	176	VMC-135140N	VMC-135140T	PLD-2556-H	4	WCMX080408	M4.0x10	T-15
VMD-140145	140-145					VMC-140145N	VMC-140145T					
VMD-145150	145-150					VMC-145150N	VMC-145150T					
VMD-150155	150-155	50	80	116	176	VMC-150155N	VMC-150155T	PLD-2556-H	3	WCMX080408	M4.0x10	T-15
VMD-155160	155-160					VMC-155160N	VMC-155160T					
VMD-160165	160-165					VMC-160165N	VMC-160165T					
VMD-165170	165-170	50	80	116	176	VMC-165170N	VMC-165170T	PLD-2556-H	5	WCMX06T308	M3.5x9	T-15
VMD-170175	170-175					VMC-170175N	VMC-170175T					
VMD-175180	175-180					VMC-175180N	VMC-175180T					

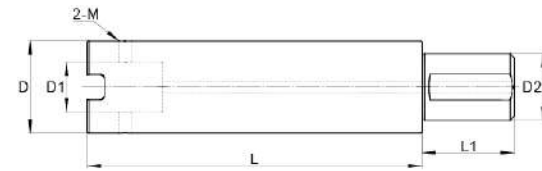
## Pilot Drill



mm

Designation	Coated		Dimension (mm)	
	TiN	TiAlN	ØD	L
PLD-1035-H	●	●	10	35
PLD-1238-H	●	●	12	38
PLD-1645-H	●	●	16	45
PLD-2045-H	●	●	20	45
PLD-2556-H	●	●	25	56
PLD-3068-H	●	●	30	68

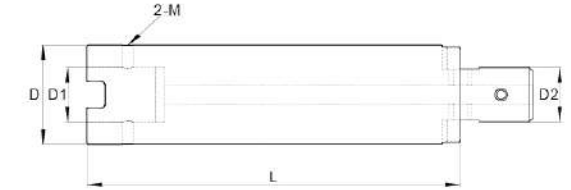
Cylindrical Adaptor



mm

Designation	Dimension					M	Drilling Range
	D	D1	D2	L	L1		
DXZ-3016100	30	16	32	100	75	M8X0.75	φ45-φ55
DXZ-3013150	30	16	32	150	75	M8X0.75	
DXZ-3016200	30	16	32	200	75	M8X0.75	
DXZ-3016250	30	16	32	250	75	M8X0.75	
DXZ-3016300	30	16	32	300	75	M8X0.75	
DXZ-3016400	30	16	32	400	75	M8X0.75	φ60-φ80
DXZ-4525100	45	25	40	100	75	M10X1	
DXZ-4525150	45	25	40	150	75	M10X1	
DXZ-4525200	45	25	40	200	75	M10X1	
DXZ-4525250	45	25	40	250	75	M10X1	
DXZ-4525300	45	25	40	300	75	M10X1	φ85-φ95
DXZ-4525400	45	25	40	400	75	M10X1	
DXZ-5030100	50	30	40	100	75	M12X1	
DXZ-5030150	50	30	40	150	75	M12X1	
DXZ-5030200	50	30	40	200	75	M12X1	
DXZ-5030250	50	30	40	250	75	M12X1	φ100-φ110
DXZ-5030300	50	30	40	300	75	M12X1	
DXZ-5030400	50	30	40	400	75	M12X1	
DXZ-5832100	58	32	40	100	75	M12X1	
DXZ-5832150	58	32	40	150	75	M12X1	
DXZ-5832200	58	32	40	200	75	M12X1	φ115-φ135
DXZ-5832250	58	32	40	250	75	M12X1	
DXZ-5832300	58	32	40	300	75	M12X1	
DXZ-5832400	58	32	40	400	75	M12X1	
DXZ-7040100	70	40	50	100	80	M12X1	
DXZ-7040150	70	40	50	150	80	M12X1	φ140-φ195
DXZ-7040200	70	40	50	200	80	M12X1	
DXZ-7040250	70	40	50	250	80	M12X1	
DXZ-7040300	70	40	50	300	80	M12X1	
DXZ-7040400	70	40	50	400	80	M12X1	
DXZ-8050100	80	50	50	100	80	M12X1	φ140-φ195
DXZ-8050150	80	50	50	150	80	M12X1	
DXZ-8050200	80	50	50	200	80	M12X1	
DXZ-8050250	80	50	50	250	80	M12X1	
DXZ-8050300	80	50	50	300	80	M12X1	
DXZ-8050400	80	50	50	400	80	M12X1	

Cylindrical Adaptor



mm

Designation	Dimension				M	Drilling Range
	D	D1	D2	L		
YXZ-3016100	30	16	16	100	M8X0.75	φ45-φ55
YXZ-3016200	30	16	16	200	M8X0.75	
YXZ-3016300	30	16	16	300	M8X0.75	
YXZ-4525100	45	25	25	100	M10X1	φ60-φ80
YXZ-4525200	45	25	25	200	M10X1	
YXZ-4525300	45	25	25	300	M10X1	
YXZ-5030100	50	30	30	100	M12X1	φ85-φ95
YXZ-5030200	50	30	30	200	M12X1	
YXZ-5030300	50	30	30	300	M12X1	
YXZ-5832100	58	32	32	100	M12X1	φ100-φ110
YXZ-5832200	58	32	32	200	M12X1	
YXZ-5832300	58	32	32	300	M12X1	
YXZ-7040200	70	40	40	200	M12X1	φ115-φ135
YXZ-7040300	70	40	40	300	M12X1	
YXZ-7040400	70	40	40	400	M12X1	
YXZ-8050200	80	50	50	200	M12X1	φ140-φ195
YXZ-8050300	80	50	50	300	M12X1	
YXZ-8050400	80	50	50	400	M12X1	

Cutting Condition Formula

$$RPM = (Vc \times 1000) / (\pi \times Dia.)$$

where:

RPM = Revolution per minute (rev/min)

Vc = Cutting speed (m/min)

$\pi = 3.1416$

Dia. = Diameter of drill (mm)

$$Tc = H / (Vf \times 60)$$

where:

Tc = Drilling Time (secs.)

H = Drilling depth (mm)

Vf = Feed per minute (mm/min)

$$Vf = fn \times RPM \text{ (mm/min)}$$

where:

Vf = Feed per minute (mm/min)

fn = Feed per revolution (mm/rev)

RPM = Revolution per minute (rev/min)



## Feature AND BENEFITS

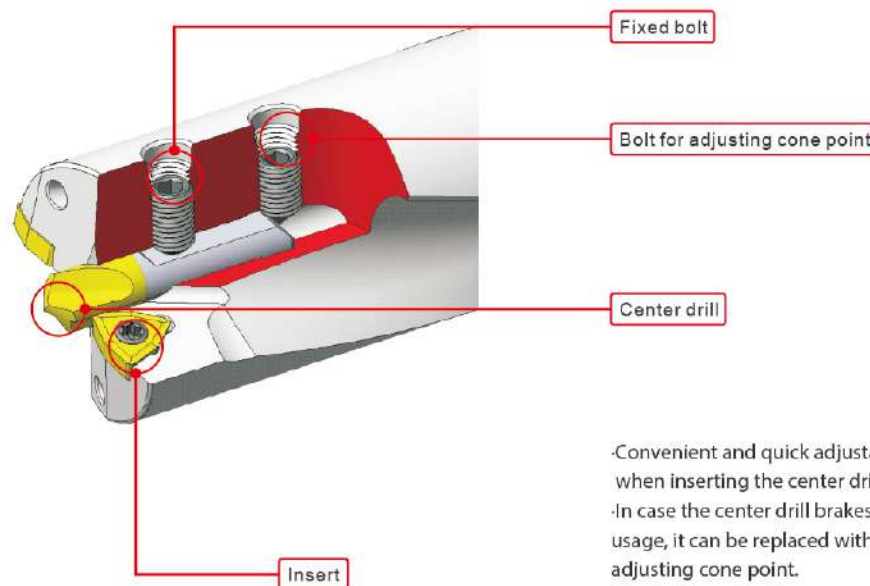


The turbo drill delivers the strength and versatility needed for any deep hole drilling application. The excellent geometry is designed to increase penetration rates and tool life, providing the lowest cost per hole among deep hole drilling lines.

- The Turbo Drill uses the pilot drill to stabilize the tool through the cut, and outboard carbide inserts to achieve the final cutting diameter
- Allows for higher spindle speeds and taking advantage of the power curve on modern CNC machines for maximum penetration rates on deep holes.

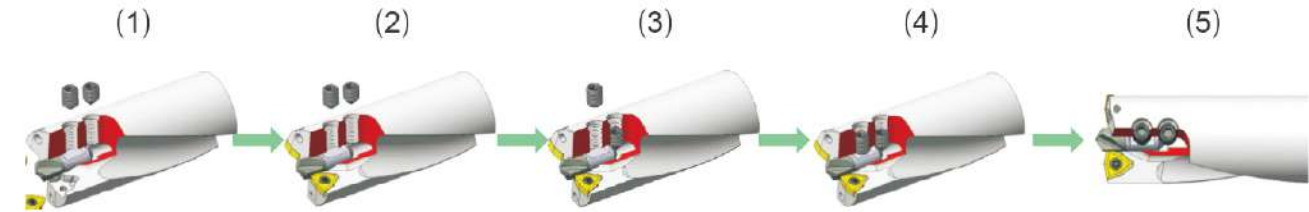
- Diameter Range: 25.00 – 80.00mm.
- Available in 4xD, 5xD, 6.5xD, 8xD & 10xD
- Utilizes Standard WCMX & SPMG Inserts

## Feature of corn-point system



- Convenient and quick adjustable heights when inserting the center drill.
- In case the center drill brakes while in usage, it can be replaced with the bolt for adjusting cone point.
- The bolt for adjusting cone point prevents chattering on the center drill.

## CLAMPING



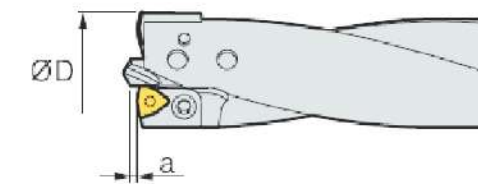
- 1) Place a center drill.
- 2) Clamp insert and cartridge.
- 3) Adjust the center drill with the bolt for adjusting cone point.
- 4) Clamp the center drill firmly with fixing bolt.
- 5) Reassure the clamp with bolt for adjusting cone point.

**Caution**

- ① Use safety covers for your safety when clamping the center drill and insert.
- ② When machining, be careful of the drill disk.

## Length of the 'a' part of center drill

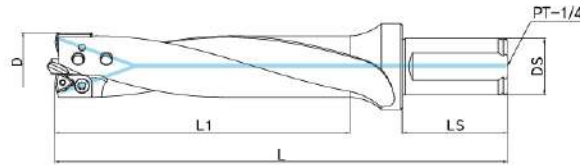
The length of 'a' being too short can cause bad surface finish or high cutting load. On the other hand, the length of 'a' being too long can make tool failure and chattering while drilling.



Designation	Length of the "a" part of center drill		
	Steel	Alloy steel	Non-ferrous metal
25-30	1.2	1.0	1.5
31-40	1.5	1.3	1.8
41-50	1.8	1.5	2.2
51-59	2.2	1.8	2.5
60-75	2.5	2.0	2.8
76-80	3.0	2.5	3.5

## VLT 5xD/6xD/8xD/10xD

### Standard Type



Shank	DS	LS
S32	32	60

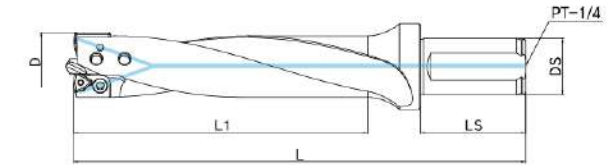
mm

Designation	D	5D		6D		8D		10D		Insert	Pilot Drill
		L1	L	L1	L	L1	L	L1	L		
VLT-250-32-□	25	125	211	150	236	200	286	-	-	WCMX030204	PLD-0630
VLT-260-32-□	26	130	216	156	242	208	294	-	-	WCMX040204	
VLT-270-32-□	27	135	221	162	248	216	302	-	-		
VLT-280-32-□	28	140	226	168	254	224	310	-	-		
VLT-290-32-□	29	145	231	174	260	232	318	-	-		
VLT-300-32-□	30	150	236	180	266	240	326	300	386		WCMX050308
VLT-310-32-□	31	155	241	186	272	248	334	310	396		
VLT-320-32-□	32	160	246	192	278	256	342	320	406		
VLT-330-32-□	33	165	251	198	284	264	350	330	416		
VLT-340-32-□	34	170	256	204	290	272	358	340	426		
VLT-350-32-□	35	175	261	210	296	280	366	350	436		
VLT-360-32-□	36	180	266	216	302	288	374	360	446		
VLT-370-32-□	37	185	271	222	308	296	382	370	456		
VLT-380-32-□	38	190	276	228	314	304	390	380	466		
VLT-390-32-□	39	195	281	234	320	312	398	390	476		
VLT-400-32-□	40	200	286	240	326	320	406	400	486		

☆ Ex) machining hole 32.5mm \* 6D -> VLT-325-32-6D

## VLT 5xD/6xD/8xD/10xD

### Standard Type



Shank	DS	LS
S32	32	60

mm

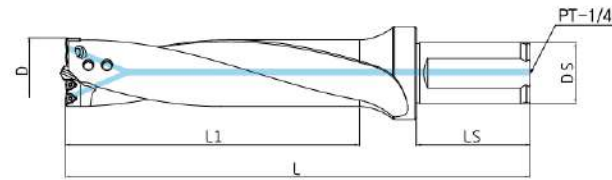
Designation	D	5D		6D		8D		10D		Insert	Pilot Drill
		L1	L	L1	L	L1	L	L1	L		
VLT-400-40-□	40	200	286	240	326	320	406	400	486	WCMX050308	PLD-0835
VLT-410-40-□	41	205	291	246	332	328	414	410	496	WCMX06T308	PLD-1035-H
VLT-420-40-□	42	210	296	252	338	336	422	420	506		
VLT-430-40-□	43	215	301	258	344	344	430	430	516		
VLT-440-40-□	44	220	306	264	350	352	438	440	526		
VLT-450-40-□	45	225	311	270	356	360	446	450	536		
VLT-460-40-□	46	230	316	276	362	368	454	460	546		
VLT-470-40-□	47	235	321	282	368	376	462	470	556		
VLT-480-40-□	48	240	326	288	374	384	470	480	566		
VLT-490-40-□	49	245	331	294	380	392	478	490	576		
VLT-500-40-□	50	250	336	300	386	400	486	500	586		
VLT-510-40-□	51	255	341	306	392	408	494	510	596		
VLT-520-40-□	52	260	346	312	398	416	502	520	606		
VLT-530-40-□	53	265	351	318	404	424	510	530	616		
VLT-540-40-□	54	270	356	324	410	432	518	540	626		
VLT-550-40-□	55	275	361	330	416	440	526	550	636		
VLT-560-40-□	56	280	366	336	422	448	534	560	646		
VLT-570-40-□	57	285	371	342	428	456	542	570	656		
VLT-580-40-□	58	290	376	348	434	464	550	580	666		
VLT-590-40-□	59	295	381	354	440	472	558	590	676		

☆ Ex) machining hole 32.5mm \* 6D -> VLT-325-32-6D



## VLT 5xD/6.5xD/8xD

### Dual insert cartridge type



Shank	DS	LS
S40	40	70

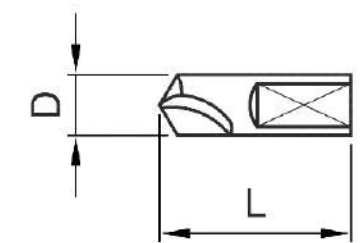
Designation	D	5D		6D		8D		10D		Insert	Pilot Drill
		L1	L	L1	L	L1	L	L1	L		
VLT-6065-40-□	60-65	325	430	390	495	520	625	650	755	WCMX050308	PLD-1238-H
VLT-6570-40-□	65-70	350	455	420	525	560	665	700	805		
VLT-7075-40-□	70-75	375	480	450	555	600	705	750	855		
VLT-7580-40-□	75-80	400	505	485	585	640	745	800	905	WCMX06T308	PLD-1645-H

☆ Ex) machining hole 70.5mm \* 6D -> VLT-7075-40-6D  
 ø60~ø80 : Cut the outer cartridge and setting.(adjust 5mm)

## Parts

TYPE		
	Insert screw	Wrench
VLT-250~300	L065SSSTX2.5-3.6P	TPF-08
VLT-310~400	L0750SSTX3.0-4.0P	TPF-08
VLT-410~500	L0960SSTX3.5-5.3P	TPF-15
VLT-510~590	L1160SSTX4.0-5.7P	TPF-15
VLT-6065~7075	L0750SSTX3.0-4.0P	TPF-08
VLT-7580	L0960SSTX3.5-5.3P	TPF-15

## Pilot Drill



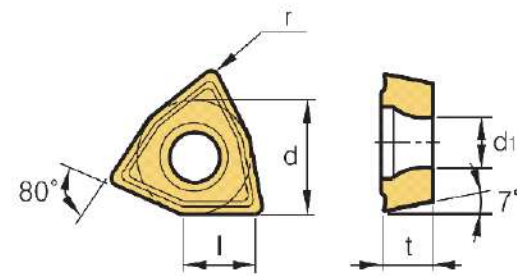
Designation	Coated		Dimension(mm)		Oil-hole
	TiN	TiAlN	D	L	
PLD-0630			6	30	NO
PLD-0835			8	35	YES
PLD-1035-H	●	●	10	35	YES
PLD-1238-H	●	●	12	39	YES
PLD-1645-H	●	●	16	45	YES

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

## Available inserts

### WCMX



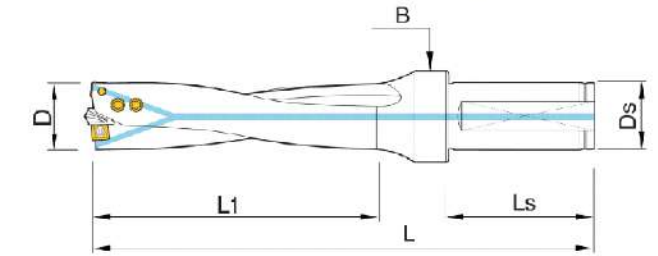
Workpiece	Machining Type	Machining Type											
		●	●	●	●	●	●	●	●	●	●	●	●
Steel	P	●	●	●	●	●	●	●	●	●	●	●	●
Stainless steel	M	●	●	●	●	●	●	●	●	●	●	●	●
Cast iron	K	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous metal	N	●	●	●	●	●	●	●	●	●	●	●	●
Heat resistant alloy, Titanium alloy	S	●	●	●	●	●	●	●	●	●	●	●	●
Hardened steel	H	●	●	●	●	●	●	●	●	●	●	●	●

● Continuous cutting  
 ● General cutting  
 ● Interrupted cutting

Designations	Dimensions(mm)					CVD Coated						PVD Coated						
	l	d	t	r	d1	TCP9330	TCP9340	TCP9350	TCK5215	TCK5315	TCK5225	TCK5325	TPM8115	TPM8125	TPM8225	TPM8135	TPG4235	TPK4235H
WCMX-Z	030204-Z	3.80	5.56	2.38	0.4	2.5								●				
	030208-Z	3.80	5.56	2.38	0.8	2.8								●				
	040204-Z	4.30	6.35	2.38	0.4	2.8								●	●			
	040208-Z	4.30	6.35	2.38	0.8	3.0								●	●			
	050308-Z	5.40	7.94	3.18	0.8	3.4								●	●			
	06T308-Z	6.50	9.525	3.97	0.8	4.4								●	●			
	080408-Z	8.70	12.70	4.76	0.8	4.3								●	●			
080412-Z	8.70	12.70	4.76	1.2	4.3								●	●				
WCMX-ZN	040208-ZN	4.30	6.35	2.38	0.8	3.0								●	●			
	050308-ZN	5.40	7.94	3.18	0.8	3.4								●	●			
	06T308-ZN	6.50	9.525	3.97	0.8	4.4								●	●			
	080412-ZN	8.70	12.70	4.76	1.2	4.3								●	●			

## FXD 5xD/6xD/8xD/10xD

### Standard Type



Shank	DS	LS	B
S32	32	60	PT-1/4

mm

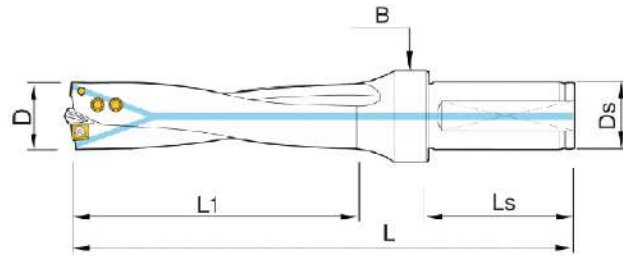
Designation	D	5D		6D		8D		10D		Insert	Pilot Drill
		L1	L	L1	L	L1	L	L1	L		
FXD-250-32-□	25	125	211	150	236	200	286	-	-	SPMG060204	
FXD-260-32-□	26	130	216	156	242	208	294	-	-		PLD-0620
FXD-270-32-□	27	135	221	162	248	216	302	-	-		
FXD-280-32-□	28	140	226	168	254	224	310	-	-		
FXD-290-32-□	29	145	231	174	260	232	318	-	-		
FXD-300-32-□	30	150	236	180	266	240	326	300	386		
FXD-310-32-□	31	155	241	186	272	248	334	310	396	SPMG07T308	
FXD-320-32-□	32	160	246	192	278	256	342	320	406		
FXD-330-32-□	33	165	251	198	284	264	350	330	416		
FXD-340-32-□	34	170	256	204	290	272	358	340	426		
FXD-350-32-□	35	175	261	210	296	280	366	350	436		
FXD-360-32-□	36	180	266	216	302	288	374	360	446		
FXD-370-32-□	37	185	271	222	308	296	382	370	456		
FXD-380-32-□	38	190	276	228	314	304	390	380	466	SPMG090408	
FXD-390-32-□	39	195	281	234	320	312	398	390	476		
FXD-400-32-□	40	200	286	240	326	320	406	400	486		

☆ FXD Drill is capable of working laminated boards. Please reduce the feed rate by 30%~50% when performing penetration work.



## FXD 5xD/6xD/8xD/10xD

### Standard Type



Shank	DS	LS	B
S32	32	60	PT-1/4

mm

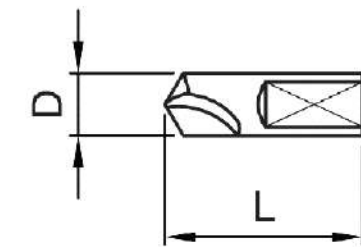
Designation	D	5D		6D		8D		10D		Insert	Pilot Drill
		L1	L	L1	L	L1	L	L1	L		
FXD-400-40-□	40	200	286	240	326	320	406	400	486	SPMG090408	PLD-1035-H
FXD-410-40-□	41	205	291	246	332	328	414	410	496		
FXD-420-40-□	42	210	296	252	338	336	422	420	506		
FXD-430-40-□	43	215	301	258	344	344	430	430	516		
FXD-440-40-□	44	220	306	264	350	352	438	440	526		
FXD-450-40-□	45	225	311	270	356	360	446	450	536	SPMG110408	
FXD-460-40-□	46	230	316	276	362	368	454	460	546		
FXD-470-40-□	47	235	321	282	368	376	462	470	556		
FXD-480-40-□	48	240	326	288	374	384	470	480	566		
FXD-490-40-□	49	245	331	294	380	392	478	490	576		
FXD-500-40-□	50	250	336	300	386	400	486	500	586		

☆ FXD Drill is capable of working laminated boards. Please reduce the feed rate by 30%~50% when performing penetration work.

## Parts

TYPE		
		Insert screw
FXD-250	L0560SSTX2.2-3.0P	TPF-06
FXD-250~350	L0655SSTX2.5-3.6P	TPF-08
FXD-360~440	L0960SSTX3.5-5.3P	TPF-15
FXD-450~500	L1060SSTX4.0-5.7P	TPF-15

## Pilot Drill



mm

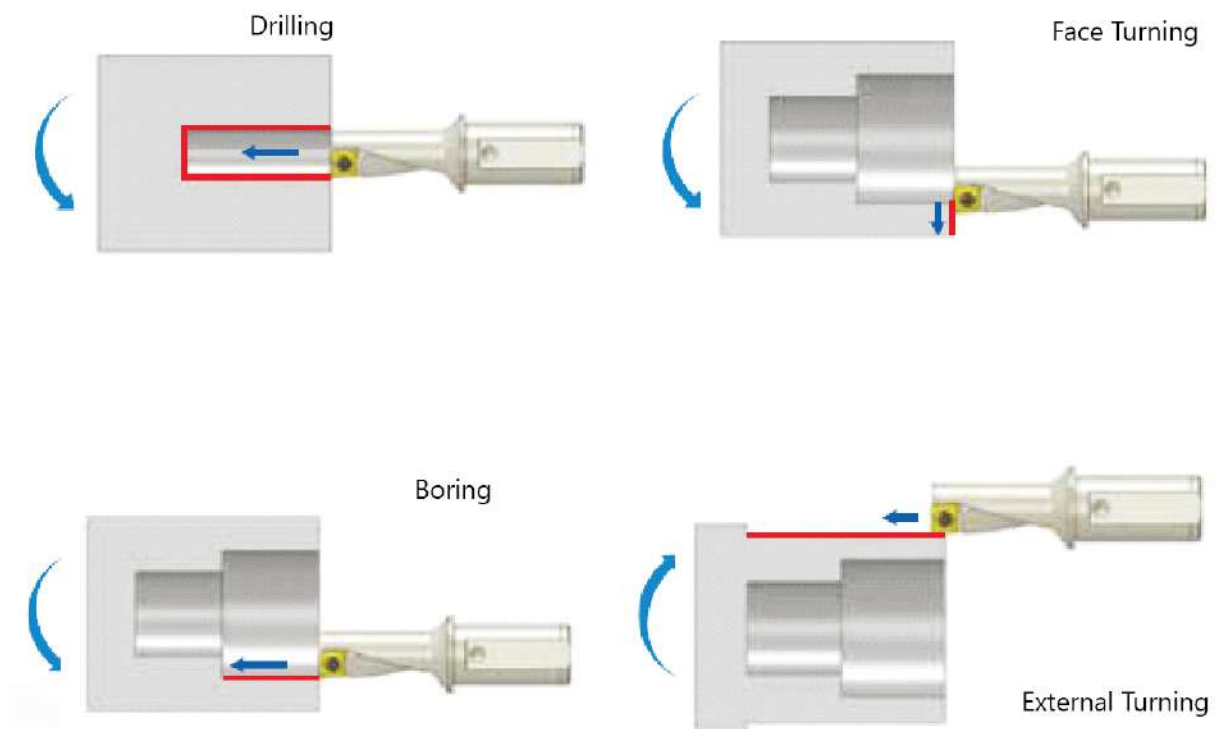
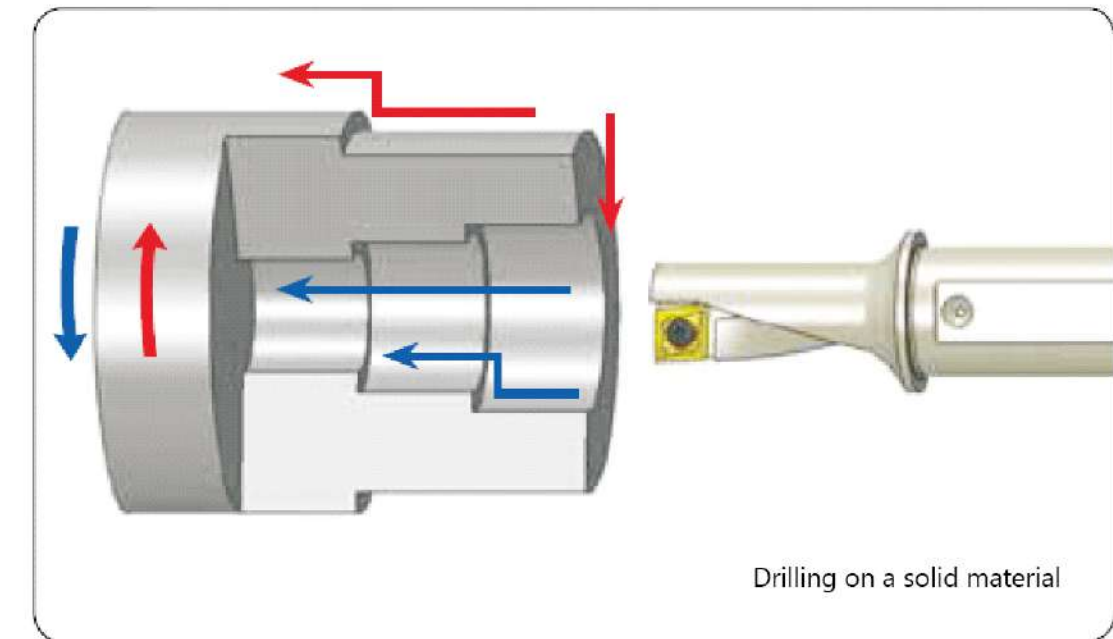
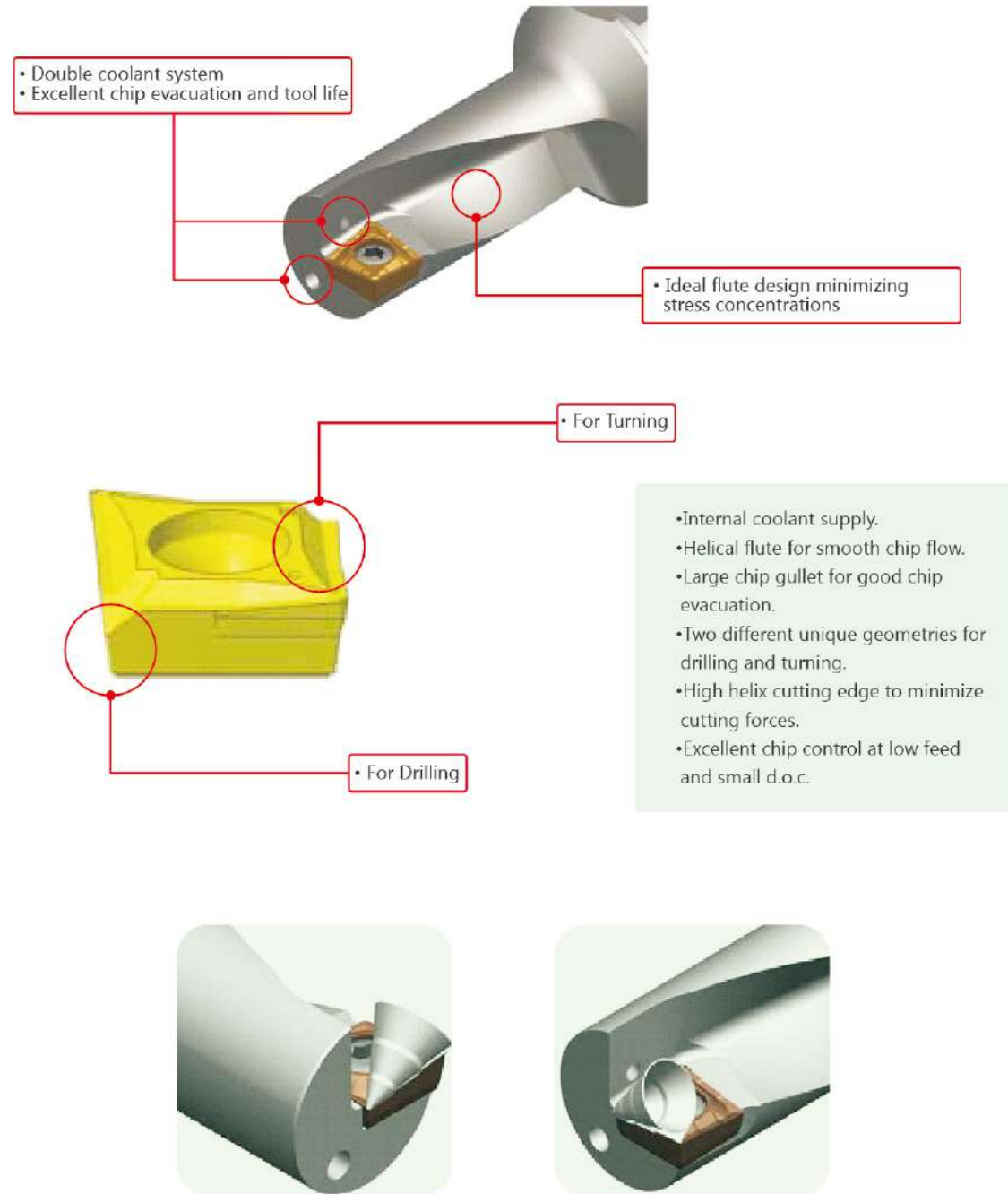
Designation	Coated		Dimension(mm)		Oil-hole
	TiN	TiAlN	D	L	
PLD-0620	●	●	6	20	NO
PLD-0835	●	●	8	35	YES
PLD-1035-H	●	●	10	35	YES





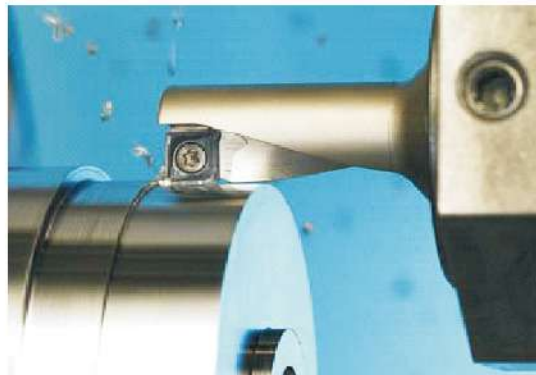
► Substitute the existing solid drill, boring bar and lathe turning holder.

## Multi-function system



## USER'S GUIDE

### External / Internal turning



#### ● Feed

Designation	ap (mm)	f (mm/rev)
TCMT-08	0.6 (0.2~1.8)	0.05 (0.02~0.15)
TCMT-10	0.8(0.2~2.2)	0.08(0.03~0.18)
TCMT-12	1.0(0.3~2.5)	0.08(0.03~0.20)
TCMT-14	1.2(0.4~2.8)	0.12(0.05~0.22)
TCMT-16	1.5(0.4~3.2)	0.12(0.06~0.25)
TCMT-20	1.8(0.5~3.5)	0.12(0.06~0.30)
TCMT-25	2.0(0.6~4.3)	0.15(0.08~0.33)
TCMT-32	3.0(0.7~5.3)	0.20(0.10~0.38)

#### ● Cutting speed

Workpiece Material	Hardness (BHN)	Vc (m/min)
Low Carbon Steel (-0.25% C)	150	150-270
Carbon Steel (0.25% < C)	150-250	100-180
Low Alloy Steel	180	140-230
Medium Alloy Steel	200-250	80-160
High Alloy Steel	250-350	60-120
Martensitic Stainless Steel	200	130-200
Austenitic Stainless Steel	200	100-180
Gray Cast Iron	180-220	120-200
Ductile Cast Iron	200-240	100-180
Aluminum Alloy	60-130	150-600
Copper Alloy	90-100	100-500

#### ● Feed

Designation	ap (mm)	f (mm/rev)
TCMT-08	0.6 (0.2~1.8)	0.05 (0.02~0.15)
TCMT-10	0.8(0.2~2.2)	0.08(0.03~0.18)
TCMT-12	1.0(0.3~2.5)	0.08(0.03~0.20)
TCMT-14	1.2(0.4~2.8)	0.12(0.05~0.22)
TCMT-16	1.5(0.4~3.2)	0.12(0.06~0.25)
TCMT-20	1.8(0.5~3.5)	0.12(0.06~0.30)
TCMT-25	2.0(0.6~4.3)	0.15(0.08~0.33)
TCMT-32	3.0(0.7~5.3)	0.20(0.10~0.38)



#### ● Cutting speed

Workpiece Material	Hardness (BHN)	Vc (m/min)
Low Carbon Steel (-0.25% C)	150	150-270
Carbon Steel (0.25% < C)	150-250	100-180
Low Alloy Steel	180	140-230
Medium Alloy Steel	200-250	80-160
High Alloy Steel	250-350	60-120
Martensitic Stainless Steel	200	130-200
Austenitic Stainless Steel	200	100-180
Gray Cast Iron	180-220	120-200
Ductile Cast Iron	200-240	100-180
Aluminum Alloy	60-130	150-600
Copper Alloy	90-100	100-500

### Drilling



#### ● Feed

Designation	ap (mm)	f (mm/rev)
TCMT-08		0.06(0.02~0.09)
TCMT-10		0.06(0.02~0.11)
TCMT-12		0.08(0.03~0.12)
TCMT-14		0.08(0.03~0.13)
TCMT-16		0.08(0.03~0.13)
TCMT-20		0.08(0.03~0.13)
TCMT-25		0.08(0.03~0.13)
TCMT-32		0.08(0.03~0.13)

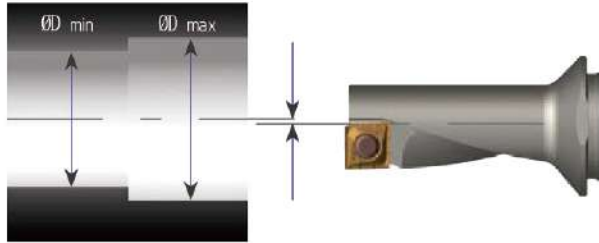
#### ● Cutting speed

Workpiece Material	Hardness (BHN)	Vc (m/min)
Low Carbon Steel (-0.25% C)	150	130-240
Carbon Steel (0.25% < C)	150-250	90-160
Low Alloy Steel	180	120-210
Medium Alloy Steel	200-250	70-140
High Alloy Steel	250-350	50-100
Martensitic Stainless Steel	200	110-180
Austenitic Stainless Steel	200	90-160
Gray Cast Iron	180-220	110-180
Ductile Cast Iron	200-240	90-160
Aluminum Alloy	60-130	100-500
Copper Alloy	90-100	100-400



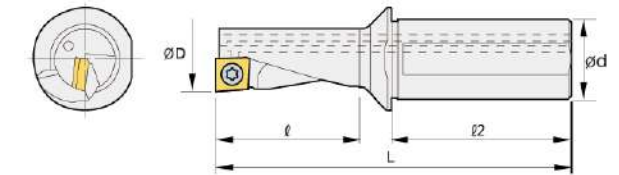
## USER'S GUIDE

### Offset (Diameter compensation)

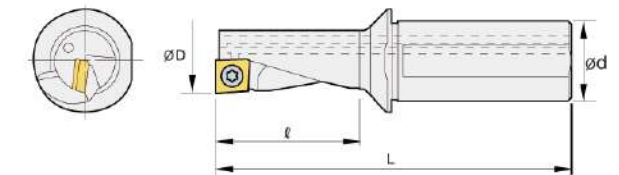


Designation	Machined diameter (mm)	ØDmin(mm)	ØDmax(mm)
TCMT-08	8	7.86	8.35
TCMT-10	10	9.82	10.60
TCMT-12	12	11.82	12.60
TCMT-14	14	13.80	14.60
TCMT-16	16	15.76	16.50
TCMT-20	20	19.80	20.60
TCMT-25	25	24.80	25.80
TCMT-32	32	31.80	33.00

## TCMT ( Multit -Turn) - 2.25xD



Designation	Size					Inserts	Spare parts	
	ØD	Ød	ℓ	ℓ2	L			
<b>TCMT</b> 08R-2.25D-N12-XC	8	12	18.0	38	60.0	XCMT040104	L0455SSTX1.8-2.7P	TPF-06
10R-2.25D-N12-XC	10	12	22.5	42	69.5	XCMT050204	L0420SSTX2.0-2.8P	TPF-06
12R-2.25D-N16-XC	12	16	27.0	45	78.0	XCMT060204	L0560SSTX2.2-3.0P	TPF-06
14R-2.25D-N16-XC	14	16	31.5	45	83.5	XCMT070304	L0655SSTX2.5-3.6P	TPF-08
16R-2.25D-N16-XC	16	16	36.0	50	94.0	XCMT080304	L0750SSTX3.0-4.0P	TPF-08
20R-2.25D-N20-XC	20	20	45.0	56	111.0	XCMT10T304	L0960SSTX3.5-5.5P	TPF-15
25R-2.25D-N25-XC	25	25	56.5	61	130.0	XCMT130404	L1060SSTX4.5-5.7P	TPF-20
32R-2.25D-N32-XC	32	32	72.0	74	160.0	XCMT170508	L1060SSTX4.5-5.7P	TPF-20



Designation	Size				Inserts	Spare parts	
	ØD	Ød	ℓ	L			
<b>TCMT</b> 08R-3D-N12-XC	8	12	24	70	XCMT040104	L0455SSTX1.8-2.7P	TPF-06
10R-3D-N12-XC	10	12	30	75	XCMT050204	L0420SSTX2.0-2.8P	TPF-06
12R-3D-N16-XC	12	16	36	90	XCMT060204	L0560SSTX2.2-3.0P	TPF-06
14R-3D-N16-XC	14	16	42	95	XCMT070304	L0655SSTX2.5-3.6P	TPF-08
16R-3D-N16-XC	16	16	48	100	XCMT080304	L0750SSTX3.0-4.0P	TPF-08
20R-3D-N20-XC	20	20	60	130	XCMT10T304	L0960SSTX3.5-5.5P	TPF-15
25R-3D-N25-XC	25	25	75	150	XCMT130404	L1060SSTX4.5-5.7P	TPF-20
32R-3D-N32-XC	32	32	96	185	XCMT170508	L1060SSTX4.5-5.7P	TPF-20

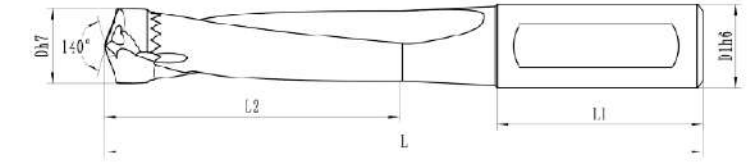
## TC Series

### Replaceable Carbide Head

#### General Features



- The drill head diameter range is 12-32mm, the depth is 1.5/3/5/8/12 times
- Regrinding allowance of 1.5mm to 3.0mm makes further tool cost reductions possible.
- Indexable type drill with exchangeable head, which has a radial serration design, for high precision and strength.
- An exchangeable drill head provides a new cutting edge, higher productivity and cost efficiency with easy tool management.
- The same tool holder can be equipped with different diameter heads, saving tool costs
- Optimized spiral design improves chip control for soft materials.
- Enhanced cutting edge treatment significantly improves tools life.
- Holder shank design suitable for multiple tooling systems
- With the coolant hole design, the drilling is fully cold, makes longer tool life and the smoother chip removal.

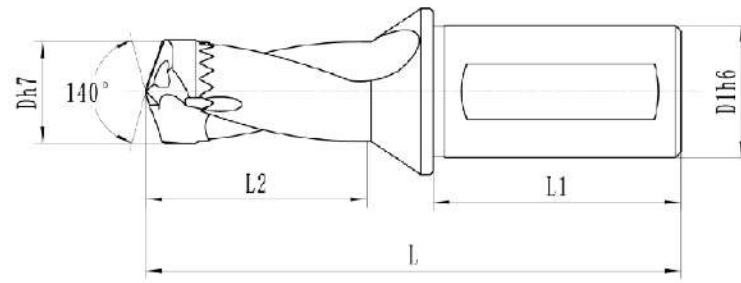


mm

D	3D		5D		8D		D1	L1
	Designations	Dimension L2 L	Designations	Dimension L2 L	Designations	Dimension L2 L		
12.0-12.49	TC03-120-XP16	46 107	TC05-120-XP16	71 132	-	- -	48	16
12.5-13.49	TC03-130-XP16	49 112	TC05-130-XP16	76 142	-	- -	48	16
13.5-14.50	TC03-140-XP16	55 119	TC05-140-XP16	84 149	TC08-140-XP16	127 194	48	16
14.51-15.5	TC03-150-XP20	58 129	TC05-150-XP20	89 159	TC08-150-XP20	136 204	50	20
15.51-16.5	TC03-160-XP20	62 134	TC05-160-XP20	95 169	TC08-160-XP20	144 214	50	20
16.51-17.5	TC03-170-XP20	66 140	TC05-170-XP20	101 175	TC08-170-XP20	154 225	50	20
17.51-18.5	TC03-180-XP20	70 145	TC05-180-XP20	107 180	TC08-180-XP20	162 230	50	20
18.51-19.5	TC03-190-XP25	73 160	TC05-190-XP25	112 195	TC08-190-XP25	171 255	56	25
19.51-20.5	TC03-200-XP25	77 160	TC05-200-XP25	118 200	TC08-200-XP25	179 262	56	25
20.51-21.5	TC03-210-XP25	80 160	TC05-210-XP25	123 200	TC08-210-XP25	188 266	56	25
21.51-22.8	TC03-220-XP25	84 165	TC05-220-XP25	129 205	TC08-220-XP25	196 275	56	25
22.81-23.8	TC03-230-XP25	87 165	TC05-230-XP25	134 215	TC06-230-XP25	205 285	56	25
23.81-24.8	TC03-240-XP32	91 175	TC05-240-XP32	140 225	TC08-240-XP32	213 300	60	32
24.81-25.8	TC03-250-XP32	93 175	TC05-250-XP32	145 230	TC08-250-XP32	222 305	60	32
25.81-26.8	TC03-260-XP32	97 180	TC05-260-XP32	151 235	TC08-260-XP32	230 315	60	32
26.81-27.8	TC03-270-XP32	99 180	TC05-270-XP32	156 240	TC08-270-XP32	239 325	60	32
27.81-28.8	TC03-280-XP32	102 185	TC05-280-XP32	162 245	TC08-280-XP32	247 330	60	32
28.81-29.8	TC03-290-XP32	105 190	TC05-290-XP32	167 250	TC08-290-XP32	256 340	60	32
29.81-30.8	TC03-300-XP32	110 191	TC05-300-XP32	173 261	TC08-300-XP32	265 351	60	32
30.81-32.0	TC03-320-XP32	116 201	TC05-320-XP32	181 266	TC08-320-XP32	276 361	60	32
32.01-33.5	TC03-330-XP32	121 206	TC05-330-XP32	191 276	TC08-330-XP32	291 376	60	32



# TC Type Replaceable Head Drill



- TCEA is most suitable for soft steel, gray cast iron, stainless steel, relative to low rigidity equipment
- TCPA is most suitable for general steel.
- TCFA is flat drill.

mm

D	1.5D		12D			D1	L1	
	Designations	Dimension		Designations	Dimension			
		L2	L		L2			L
12.0-12.49	TC1.5-120 -XP16	28	91	-	-	-	48	16
12.5-13.49	TC1.5-130 -XP16	30	92	-	-	-	48	16
13.5-14.50	TC1.5-140 -XP16	34	96	TC12 -135- XP16	171	239	48	16
14.51-15.5	TC1.5-150 -XP20	35	100	TC12 -145- XP20	183	239	50	20
15.51-16.5	TC1.5-160 -XP20	38	103	TC12 -155- XP20	195	266	50	20
16.51-17.5	TC1.5-170 -XP20	39	105	TC12 -165- XP20	207	278	50	20
17.51-18.5	TC1.5-180 -XP20	43	107	TC12 -175- XP20	219	291	50	20
18.51-19.5	TC1.5-190 -XP25	44	115	TC12 -185- XP25	232	309	56	25
19.51-20.5	TC1.5-200 -XP25	47	118	TC12 -195- XP25	244	321	56	25
20.51-21.5	TC1.5-210 -XP25	48	119	TC12 -205- XP25	256	334	56	25
21.51-22.8	TC1.5-220 -XP25	51	121	TC12 -215- XP25	268	347	56	25
22.81-23.8	TC1.5-230 -XP25	51	122	TC12 -228- XP25	280	359	56	25
23.81-24.8	TC1.5-240 -XP32	54	129	TC12 -238- XP32	292	376	60	32
24.81-25.8	TC1.5-250 -XP32	54	129	TC12 -248- XP32	305	388	60	32
25.81-26.8	TC1.5-260 -XP32	57	132	-	-	-	60	32
26.81-27.8	TC1.5-270 -XP32	58	133	-	-	-	60	32
27.81-28.8	TC1.5-280 -XP32	60	135	-	-	-	60	32
28.81-29.8	TC1.5-290 -XP32	61	136	-	-	-	60	32
29.81-30.8	TC1.5-300 -XP32	64	139	-	-	-	60	32

mm

Dh7(mm)	Designations		L(mm)	Designations		L(mm)
12.0	TCEA -1200	TCPA-1200	9.1	TCFA-1200		7.1
12.5	TCEA -1250	TCPA-1250	9.4	TCFA-1250		7.2
13.0	TCEA -1300	TCPA-1300	9.7	TCFA-1300		7.5
13.5	TCEA -1350	TCPA-1350	10.3	TCFA-1350		7.9
14.0	TCEA -1400	TCPA-1400	10.3	TCFA-1400		7.9
14.5	TCEA -1450	TCPA-1450	10.3	TCFA-1450		7.9
15.0	TCEA -1500	TCPA-1500	11.0	TCFA-1500		8.3
15.5	TCEA -1550	TCPA-1550	11.0	TCFA-1550		8.3
16.0	TCEA -1600	TCPA-1600	11.6	TCFA-1600		8.8
16.5	TCEA -1650	TCPA-1650	11.6	TCFA-1650		8.8
17.0	TCEA -1700	TCPA-1700	12.3	TCFA-1700		9.3
17.5	TCEA -1750	TCPA-1750	12.3	TCFA-1750		9.3
18.0	TCEA -1800	TCPA-1800	12.9	TCFA-1800		9.8
18.5	TCEA -1850	TCPA-1850	12.9	TCFA-1850		9.8
19.0	TCEA -1900	TCPA-1900	13.6	TCFA-1900		10.2
19.5	TCEA -1950	TCPA-1950	13.6	TCFA-1950		10.2
20.0	TCEA -2000	TCPA-2000	14.1	TCFA-2000		10.7
20.5	TCEA -2050	TCPA-2050	14.1	TCFA-2050		10.7
21.0	TCEA -2100	TCPA-2100	14.8	TCFA-2100		11.2
21.5	TCEA -2150	TCPA-2150	14.8	TCFA-2150		11.2
22.0	TCEA -2200	TCPA-2200	15.0	TCFA-2200		11.2
22.5	TCEA -2250	TCPA-2250	15.0	TCFA-2250		11.2
23.0	TCEA -2300	TCPA-2300	15.2	TCFA-2300		11.2
23.5	TCEA -2350	TCPA-2350	15.2	TCFA-2350		11.2
24.0	TCEA -2400	TCPA-2400	15.4	TCFA-2400		11.3
24.5	TCEA -2450	TCPA-2450	15.4	TCFA-2450		11.3
25.0	TCEA -2500	TCPA-2500	15.9	TCFA-2500		11.7
25.5	TCEA -2550	TCPA-2550	15.9	TCFA-2550		11.7
26.0	TCEA -2600	TCPA-2600	16.5	TCFA-2600		12.2
26.5	TCEA -2650	TCPA-2650	16.5	TCFA-2650		12.2
27.0	TCEA -2700	TCPA-2700	17.2	TCFA-2700		12.7
27.5	TCEA -2750	TCPA-2750	17.2	TCFA-2750		12.7
28.0	TCEA -2800	TCPA-2800	17.8	TCFA-2800		13.2
28.5	TCEA -2850	TCPA-2850	17.8	TCFA-2850		13.2
29.0	TCEA -2900	TCPA-2900	18.4	TCFA-2900		13.6
29.5	TCEA -2950	TCPA-2950	18.4	TCFA-2950		13.6
30.0	TCEA -3000	TCPA-3000	19.0	TCFA-3000		14.1
30.5	TCEA -3050	TCPA-3050	19.0	TCFA-3050		14.1
31.0	TCEA -3100	TCPA-3100	21.0			
31.5	TCEA -3150	TCPA-3150	21.0			
32.0	TCEA -3200	TCPA-3200	21.0			
32.5	TCEA -3250	TCPA-3250	21.0			
33.0	TCEA -3300	TCPA-3300	21.0			
33.5	TCEA -3350	TCPA-3350	21.0			

TOOL LINE  
DRILL LINE  
MILL LINE  
GROOVE LINE  
THREAD LINE  
TURN LINE

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THREAD LINE  
TURN LINE

Parts

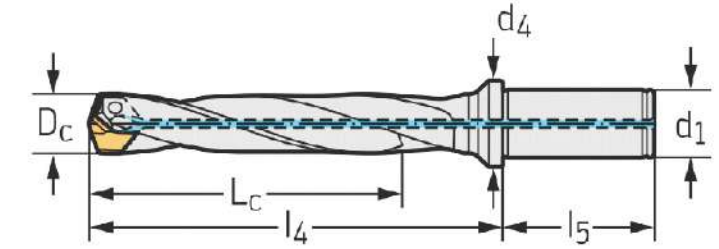
TYPE		
	Insert screw	Wrench
12.0 = D = 15.5	SSTX2.2-3.0PXD	TPF-06
15.5 < D = 18.5	SSTX2.5-3.6PXD	TPF-08
18.5 < D = 21.5	SSTX3.0-4.0PXD	TPF-08
21.5 < D = 24.8	SSTX3.5-5.5PXD	TPF-15
24.8 < D = 27.8	SSTX4.0-5.7PXD	TPF-15
27.8 < D = 33.5	SSTX4.5-5.7PXD	TPF-20

Recommended Cutting Conditions

	Materials	Recommend Inserts	Cutting Speed Vc m/min	Feed Rate fn (mm/rev)		
				12~16	16~20	20~30.8
<b>P</b>	Carbon Steel (SxxC)	TCPA/TCEA	80-110 (50-80)	0.15-0.30	0.15-0.30	0.15-0.35
	Alloy Steel (SCM)	TCPA/TCEA	70-110 (50-80)	0.15-0.30	0.15-0.30	0.15-0.35
	Hardnesssteel (HRC40-50)	TCPA	40-80 (30-70)	0.10-0.20	0.10-0.20	0.15-0.25
<b>M</b>	~200HB Gray	TCEA	50-80 (40-60)	0.10-0.20	0.10-0.20	0.15-0.25
<b>K</b>	Cast Iron (FC)	TCPA/TCEA	50-100 (40-80)	0.15-0.30	0.15-0.35	0.15-0.40
	Nodular Cast Iron (FCD)	TCPA/TCEA	50-90 (40-70)	0.15-0.30	0.15-0.35	0.15-0.35

For 8xD, 12xD machining, it is recommended to use a short diameter holder to process the guide hole. And the processing parameters, use ( ) recommended parameters.

HD Type Replaceable Head Drill 3 x D

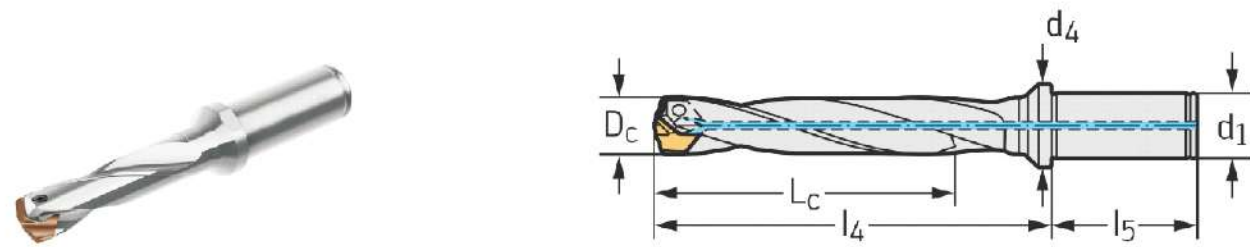


Designation	Size							Spare Parts	
	Dc	Lc	l4	l5	d1	d4	Seat size		
<b>HD-XD</b> 03-120-XP16	12	36	68	48	16	20	A	FS3011D	T-10S
03-130-XP16	13	41	72	48	16	20	A	FS3012D	T-10S
03-140-XP16	14	45	76	48	16	20	B	FS3013D	T-10S
03-150-XP16	15	48	80	48	16	20	B	FS3013D	T-10S
03-160-XP20	16	51	84	50	20	25	C	FS3514D	T-15S
03-170-XP20	17	54	88	50	20	25	C	FS3514D	T-15S
03-180-XP20	18	57	92	50	20	25	D	FS3515D	T-15S
03-190-XP20	19	61	96	50	20	25	D	FS3516D	T-15S
03-200-XP20	20	64	100	50	20	25	E	FS4018D	T-15S
03-210-XP20	21	67	104	50	20	25	E	FS4018D	T-15S
03-220-XP25	22	70	109	56	25	32	F	FS5019D	T-20S
03-230-XP25	23	73	113	56	25	32	F	FS5019D	T-20S
03-240-XP25	24	76	117	56	25	32	G	FS5021D	T-20S
03-250-XP25	25	80	121	56	25	32	G	FS5021D	T-20S
03-260-XP25	26	83	125	56	25	32	H	FS6023D	T-25S
03-270-XP25	27	86	129	56	25	32	H	FS6023D	T-25S
03-280-XP32	28	89	134	60	32	40	J	FS6025D	T-25S
03-290-XP32	29	92	138	60	32	40	J	FS6025D	T-25S
03-300-XP32	30	95	142	60	32	40	K	FS6028D	T-25S
03-310-XP32	31	99	146	60	32	40	K	FS6028D	T-25S
03-320-XP40	32	102	150	70	40	50	M	FS6028D	T-25S
03-330-XP40	33	105	154	70	40	50	M	FS6030D	T-25S
03-340-XP40	34	108	158	70	40	50	N	FS6030D	T-25S
03-350-XP40	35	111	162	70	40	50	N	FS6030D	T-25S
03-360-XP40	36	115	166	70	40	50	P	FS6033D	T-25S
03-370-XP40	37	118	170	70	40	50	P	FS6033D	T-25S
03-380-XP40	38	121	173	70	40	50	Q	FS6035D	T-25S
03-390-XP40	39	124	176	70	40	50	Q	FS6035D	T-25S



# HD Type Replaceable Head Drill

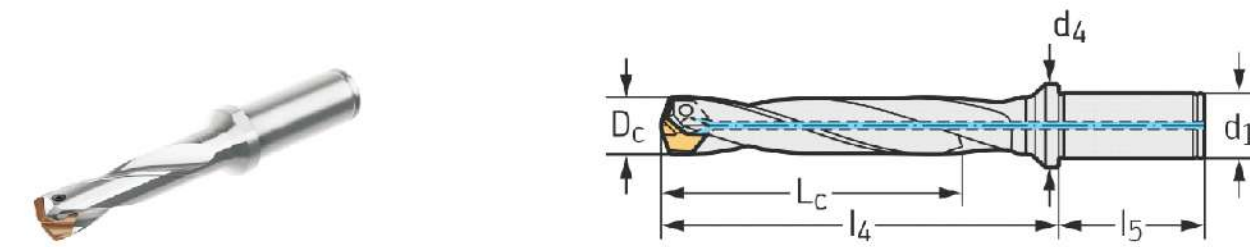
## HD Type Replaceable Head Drill 5 x D



mm

Designation	Size							Spare Parts		
	Dc	Lc	l4	l5	d1	d4	Seat size			
HD XD	05-120-XP16	12	62	92	48	16	20	A	FS3011D	T-10S
	05-130-XP16	13	67	98	48	16	20	A	FS3012D	T-10S
	05-140-XP16	14	73	104	48	16	20	B	FS3013D	T-10S
	05-150-XP16	15	78	110	48	16	20	B	FS3013D	T-10S
	05-160-XP20	16	83	116	50	20	25	C	FS3514D	T-15S
	05-170-XP20	17	88	122	50	20	25	C	FS3514D	T-15S
	05-180-XP20	18	93	128	50	20	25	D	FS3515D	T-15S
	05-190-XP20	19	98	134	50	20	25	D	FS3516D	T-15S
	05-200-XP20	20	104	140	50	20	25	E	FS4018D	T-15S
	05-210-XP20	21	109	146	50	20	25	E	FS4018D	T-15S
	05-220-XP25	22	114	153	56	25	32	F	FS5019D	T-20S
	05-230-XP25	23	119	159	56	25	32	F	FS5019D	T-20S
	05-240-XP25	24	124	165	56	25	32	G	FS5021D	T-20S
	05-250-XP25	25	130	171	56	25	32	G	FS5021D	T-20S
	05-260-XP25	26	135	177	56	25	32	H	FS6023D	T-25S
	05-270-XP25	27	140	183	56	25	32	H	FS6023D	T-25S
	05-280-XP32	28	145	190	60	32	40	J	FS6025D	T-25S
	05-290-XP32	29	150	196	60	32	40	J	FS6025D	T-25S
	05-300-XP32	30	155	202	60	32	40	K	FS6028D	T-25S
	05-310-XP32	31	161	208	60	32	40	K	FS6028D	T-25S
	05-320-XP40	32	166	213	70	40	50	M	FS6028D	T-25S
	05-330-XP40	33	171	218	70	40	50	M	FS6030D	T-25S
	05-340-XP40	34	176	223	70	40	50	N	FS6030D	T-25S
	05-350-XP40	35	181	231	70	40	50	N	FS6030D	T-25S
	05-360-XP40	36	186	236	70	40	50	P	FS6033D	T-25S
	05-370-XP40	37	191	241	70	40	50	P	FS6033D	T-25S
	05-380-XP40	38	196	246	70	40	50	Q	FS6035D	T-25S
	05-390-XP40	39	201	251	70	40	50	Q	FS6035D	T-25S

## HD Type Replaceable Head Drill 7 x D



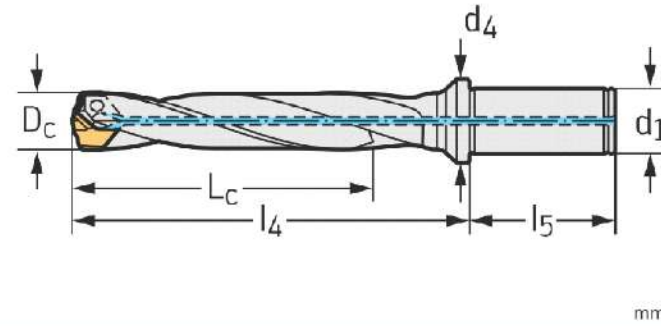
mm

Designation	Size							Spare Parts		
	Dc	Lc	l4	l5	d1	d4	Seat size			
HD XD	07-120-XP16	12	86	116	48	16	20	A	FS3011D	T-10S
	07-130-XP16	13	93	124	48	16	20	A	FS3012D	T-10S
	07-140-XP16	14	101	132	48	16	20	B	FS3013D	T-10S
	07-150-XP16	15	108	140	48	16	20	B	FS3013D	T-10S
	07-160-XP20	16	115	148	50	20	25	C	FS3514D	T-15S
	07-170-XP20	17	122	156	50	20	25	C	FS3514D	T-15S
	07-180-XP20	18	133	164	50	20	25	D	FS3515D	T-15S
	07-190-XP20	19	136	172	50	20	25	D	FS3516D	T-15S
	07-200-XP20	20	144	180	50	20	25	E	FS4018D	T-15S
	07-210-XP20	21	151	188	50	20	25	E	FS4018D	T-15S
	07-220-XP25	22	158	197	56	25	32	F	FS5019D	T-20S
	07-230-XP25	23	165	205	56	25	32	F	FS5019D	T-20S
	07-240-XP25	24	172	213	56	25	32	G	FS5021D	T-20S
	07-250-XP25	25	180	221	56	25	32	G	FS5021D	T-20S
	07-260-XP25	26	187	229	56	25	32	H	FS6023D	T-25S
	07-270-XP25	27	194	237	56	25	32	H	FS6023D	T-25S
	07-280-XP32	28	201	246	60	32	40	J	FS6025D	T-25S
	07-290-XP32	29	208	254	60	32	40	J	FS6025D	T-25S
	07-300-XP32	30	215	262	60	32	40	K	FS6028D	T-25S
	07-310-XP32	31	223	270	60	32	40	K	FS6028D	T-25S
	07-320-XP40	32	230	277	70	40	50	M	FS6028D	T-25S
	07-330-XP40	33	237	285	70	40	50	M	FS6030D	T-25S
	07-340-XP40	34	245	293	70	40	50	N	FS6030D	T-25S
	07-350-XP40	35	252	300	70	40	50	N	FS6030D	T-25S
	07-360-XP40	36	260	308	70	40	50	P	FS6033D	T-25S
	07-370-XP40	37	267	316	70	40	50	P	FS6033D	T-25S
	07-380-XP40	38	274	323	70	40	50	Q	FS6035D	T-25S
	07-390-XP40	39	281	330	70	40	50	Q	FS6035D	T-25S

TOOL LINE  
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GROOVE LINE  
THREAD LINE  
TURN LINE

TOOL LINE  
DRILL LINE  
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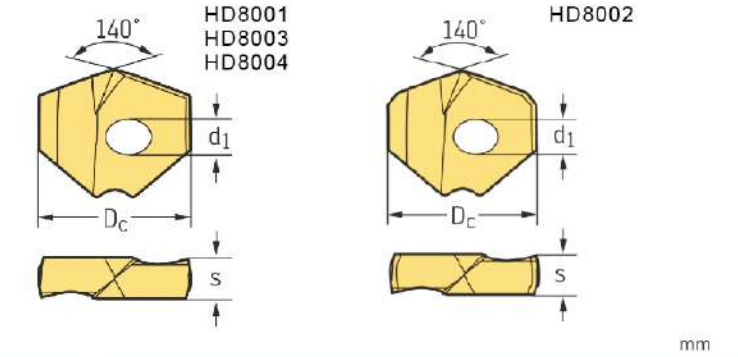
## HD Type Replaceable Head Drill 10 x D



Designation	Size							Spare Parts	
	Dc	Lc	l4	l5	d1	d4	Seat size		
<b>HD XD</b>									
10-120-XP16	12	122	157	48	16	20	A	FS3011D	T-10S
10-130-XP16	13	132	167	48	16	20	A	FS3012D	T-10S
10-140-XP16	14	142	177	48	16	20	B	FS3013D	T-10S
10-150-XP16	15	152	186	48	16	20	B	FS3013D	T-10S
10-160-XP20	16	163	197	50	20	25	C	FS3514D	T-15S
10-170-XP20	17	173	208	50	20	25	C	FS3514D	T-15S
10-180-XP20	18	183	218	50	20	25	D	FS3515D	T-15S
10-190-XP20	19	193	228	50	20	25	D	FS3516D	T-15S
10-200-XP20	20	204	240	50	20	25	E	FS4018D	T-15S
10-210-XP20	21	214	250	50	20	25	E	FS4018D	T-15S
10-220-XP25	22	224	263	56	25	32	F	FS5019D	T-20S
10-230-XP25	23	234	273	56	25	32	F	FS5019D	T-20S
10-240-XP25	24	244	285	56	25	32	G	FS5021D	T-20S
10-250-XP25	25	254	295	56	25	32	G	FS5021D	T-20S
10-260-XP25	26	265	305	56	25	32	H	FS6023D	T-25S
10-270-XP25	27	275	316	56	25	32	H	FS6023D	T-25S
10-280-XP32	28	285	326	60	32	40	J	FS6025D	T-25S
10-290-XP32	29	295	337	60	32	40	J	FS6025D	T-25S
10-300-XP32	30	305	346	60	32	40	K	FS6028D	T-25S
10-310-XP32	31	315	361	60	32	40	K	FS6028D	T-25S
10-320-XP40	32	325	372	70	40	50	M	FS6028D	T-25S
10-330-XP40	33	336	383	70	40	50	M	FS6030D	T-25S
10-340-XP40	34	346	393	70	40	50	N	FS6030D	T-25S
10-350-XP40	35	356	404	70	40	50	N	FS6030D	T-25S
10-360-XP40	36	366	414	70	40	50	P	FS6033D	T-25S
10-370-XP40	37	376	424	70	40	50	P	FS6033D	T-25S
10-380-XP40	38	386	434	70	40	50	p	FS6035D	T-25S
10-390-XP40	39	396	444	70	40	50	p	FS6035D	T-25S

## Available Head

### HD800

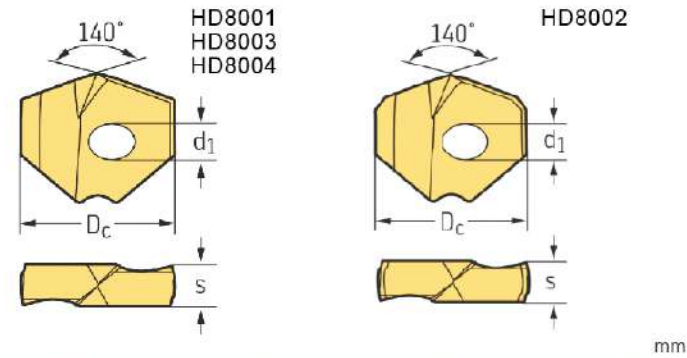


Designations	D1		d1 mm	S mm	Seat size	Designations	D1		d1 mm	S mm	Seat size
	mm	In					mm	In			
HD800..-D12.00	12.00		3.3	3.6	A	HD800..-D14.50	14.50		3.3	4.0	B
HD800..-D12.10	12.10		3.3	3.6	A	HD800..-D14.60	14.60		3.3	4.0	B
HD800..-D12.20	12.20		3.3	3.6	A	HD800..-D14.68	14.68		3.3	4.0	B
HD800..-D12.30	12.30		3.3	3.6	A	HD800..-D14.70	14.70		3.3	4.0	B
HD800..-D12.40	12.40		3.3	3.6	A	HD800..-D14.80	14.80		3.3	4.0	B
HD800..-D12.50	12.50		3.3	3.6	A	HD800..-D14.90	14.90		3.3	4.0	B
HD800..-D12.60	12.60		3.3	3.6	A	HD800..-D15.00	15.00		3.3	4.0	B
HD800..-D12.70	12.70		3.3	3.6	A	HD800..-D15.08	15.08		3.3	4.0	B
HD800..-D12.80	12.80		3.3	3.6	A	HD800..-D15.09	15.09		3.3	4.0	B
HD800..-D12.90	12.90		3.3	3.6	A	HD800..-D15.10	15.10		3.3	4.0	B
HD800..-D12.95	12.95		3.3	3.6	A	HD800..-D15.20	15.20		3.3	4.0	B
HD800..-D13.00	13.00		3.3	3.6	A	HD800..-D15.30	15.30		3.3	4.0	B
HD800..-D13.10	13.10		3.3	3.6	A	HD800..-D15.40	15.40		3.3	4.0	B
HD800..-D13.11	13.11		3.3	3.6	A	HD800..-D15.47	15.47		3.3	4.0	B
HD800..-D13.20	13.20		3.3	3.6	A	HD800..-D15.48	15.48		3.3	4.0	B
HD800..-D13.30	13.30		3.3	3.6	A	HD800..-D15.50	15.50		3.3	4.0	B
HD800..-D13.40	13.40		3.3	3.6	A	HD800..-D15.60	15.60		3.3	4.0	B
HD800..-D13.49	13.49		3.3	3.6	A	HD800..-D15.70	15.70		3.3	4.0	B
HD800..-D13.50	13.50		3.3	3.6	A	HD800..-D15.80	15.80		3.3	4.0	B
HD800..-D13.60	13.60		3.3	3.6	A	HD800..-D15.87	15.87		3.3	4.0	B
HD800..-D13.70	13.70		3.3	3.6	A	HD800..-D15.88	15.88		3.3	4.0	B
HD800..-D13.80	13.80		3.3	3.6	A	HD800..-D15.90	15.90		3.3	4.0	B
HD800..-D13.89	13.89		3.3	3.6	A	HD800..-D16.00	16.00		4	4.5	C
HD800..-D13.90	13.90		3.3	3.6	A	HD800..-D16.13	16.13		4	4.5	C
HD800..-D14.00	14.00		3.3	4.0	B	HD800..-D16.26	16.26		4	4.5	C
HD800..-D14.10	14.10		3.3	4.0	B	HD800..-D16.27	16.27		4	4.5	C
HD800..-D14.20	14.20		3.3	4.0	B	HD800..-D16.43	16.43		4	4.5	C
HD800..-D14.29	14.29		3.3	4.0	B	HD800..-D16.50	16.50		4	4.5	C
HD800..-D14.30	14.30		3.3	4.0	B	HD800..-D16.66	16.66		4	4.5	C
HD800..-D14.40	14.40		3.3	4.0	B	HD800..-D16.67	16.67		4	4.5	C



## Available Head

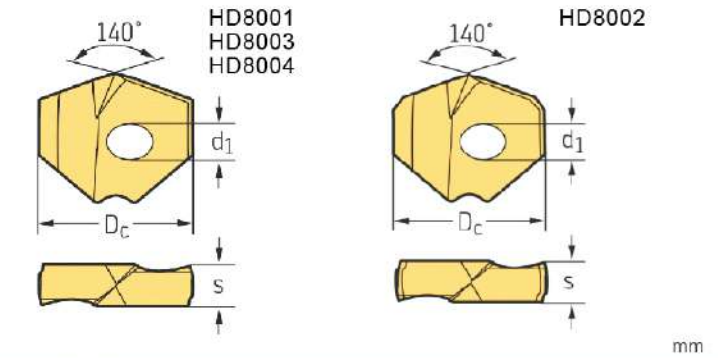
### HD800



Designations	D1		d1 mm	S mm	Seat size	Designations	D1		d1 mm	S mm	Seat size
	mm	In					mm	In			
HD800.-D16.70	16.70		4	4.5	C	HD800.-D20.20	20.20		4.5	5.5	E
HD800.-D16.80	16.80		4	4.5	C	HD800.-D20.24	20.24	51/64"	4.5	5.5	E
HD800.-D17.00	17.00		4	4.5	C	HD800.-D20.50	20.50		4.5	5.5	E
HD800.-D17.07	17.07		4	4.5	C	HD800.-D20.64	20.64		4.5	5.5	E
HD800.-D17.20	17.20		4	4.5	C	HD800.-D20.70	20.70		4.5	5.5	E
HD800.-D17.45	17.45		4	4.5	C	HD800.-D21.00	21.00		4.5	5.5	E
HD800.-D17.50	17.50		4	4.5	C	HD800.-D21.41	21.41		4.5	5.5	E
HD800.-D17.70	17.70		4	4.5	C	HD800.-D21.43	21.43		4.5	5.5	E
HD800.-D17.80	17.80		4	4.5	C	HD800.-D21.50	21.50		4.5	5.5	E
HD800.-D17.86	17.86		4	4.5	C	HD800.-D21.70	21.70		4.5	5.5	E
HD800.-D18.00	18.00		4	5	D	HD800.-D21.83	21.83		4.5	5.5	E
HD800.-D18.24	18.24		4	5	D	HD800.-D22.00	22.00		4.5	5.5	E
HD800.-D18.26	18.26	45/64"	4	5	D	HD800.-D22.22	22.22		5.5	6.0	F
HD800.-D18.50	18.50		4	5	D	HD800.-D22.23	22.23		5.5	6.0	F
HD800.-D18.65	18.65		4	5	D	HD800.-D22.42	22.42		5.5	6.0	F
HD800.-D18.70	18.70		4	5	D	HD800.-D22.47	22.47		5.5	6.0	F
HD800.-D18.80	18.80		4	5	D	HD800.-D22.50	22.50		5.5	6.0	F
HD800.-D19.00	19.00		4	5	D	HD800.-D22.62	22.62		5.5	6.0	F
HD800.-D19.05	19.05		4	5	D	HD800.-D22.70	22.70		5.5	6	F
HD800.-D19.20	19.20		4	5	D	HD800.-D22.77	22.77		5.5	6	F
HD800.-D19.25	19.25		4	5	D	HD800.-D23.00	23.00		5.5	6	F
HD800.-D19.30	19.30	3/4"	4	5	D	HD800.-D23.02	23.02		5.5	6	F
HD800.-D19.43	19.43		4	5	D	HD800.-D23.39	23.39		5.5	6	F
HD800.-D19.45	19.45		4	5	D	HD800.-D23.50	23.50		5.5	6	F
HD800.-D19.50	19.50		4	5	D	HD800.-D23.70	23.70		5.5	6	F
HD800.-D19.60	19.60		4	5	D	HD800.-D23.80	23.80		5.5	6	F
HD800.-D19.70	19.70		4	5	D	HD800.-D23.81	23.81		5.5	6	F
HD800.-D19.80	19.80		4	5	D	HD800.-D24.00	24.00		5	6.5	G
HD800.-D19.84	19.84		4	5	D	HD800.-D24.21	24.21	61/64"	5	6.5	G
HD800.-D20.00	20.00		4.5	5.5	E	HD800.-D24.50	24.50		5	6.5	G

## Available Head

### HD800



Designations	D1		d1 mm	S mm	Seat size	Designations	D1		d1 mm	S mm	Seat size
	mm	In					mm	In			
HD800.-D24.59	24.59		5	6.5	G	HD800.-D31.50	31.50		6.5	8.0	K
HD800.-D24.61	24.61		5	6.5	G	HD800.-D31.75	31.75	1 3/4"	6.5	8.0	K
HD800.-D24.70	24.70		5	6.5	G	HD800.-D31.99	31.99		6.5	8.0	K
HD800.-D25.00	25.00		5	6.5	G	HD800.-D32.00	32.00		6.5	8.3	M
HD800.-D25.25	25.25		5	6.5	G	HD800.-D32.10	32.10		6.5	8.3	M
HD800.-D25.40	25.40	1"	5	6.5	G	HD800.-D33.00	33.00		6.5	8.3	M
HD800.-D25.50	25.50		5	6.5	G	HD800.-D34.00	34.00		6.5	8.3	N
HD800.-D25.65	25.65		5	6.5	G	HD800.-D35.00	35.00		6.5	8.3	N
HD800.-D25.70	25.70		5	6.5	G	HD800.-D36.00	36.00		6.5	8.3	P
HD800.-D25.80	25.80		5	6.5	G	HD800.-D37.00	37.00		6.5	8.3	P
HD800.-D26.00	26.00		6.5	7.1	H	HD800.-D37.99	37.99		6.5	8.3	P
HD800.-D26.25	26.25		6.5	7.1	H	HD800.-D38.00	38.00		6.5	8.3	P
HD800.-D26.50	26.50		6.5	7.1	H	HD800.-D39.00	39.00		6.5	8.3	P
HD800.-D26.59	26.59	1 3/64"	6.5	7.1	H	HD800.-D39.99	39.99		6.5	8.3	P
HD800.-D27.00	27.00		6.5	7.1	H						
HD800.-D27.38	27.38		6.5	7.1	H						
HD800.-D27.50	27.50		6.5	7.1	H						
HD800.-D27.78	27.78		6.5	7.1	H						
HD800.-D28.00	28.00		6.5	7.7	J						
HD800.-D28.17	28.17		6.5	7.7	J						
HD800.-D28.50	28.50		6.5	7.7	J						
HD800.-D28.57	28.57		6.5	7.7	J						
HD800.-D29.00	29.00		6.5	7.7	J						
HD800.-D29.37	29.37		6.5	7.7	J						
HD800.-D29.50	29.50		6.5	7.7	J						
HD800.-D29.77	29.77		6.5	7.7	J						
HD800.-D30.00	30.00		6.5	7.7	J						
HD800.-D30.15	30.15		6.5	7.7	J						
HD800.-D30.50	30.50		6.5	8.0	K						
HD800.-D31.00	31.00		6.5	8.0	K						

## Recommended Cutting Speed

mm

Material	Condition	3xD		5xD		7xD		10xD			
		Vc (m/min)	VRR	Vc (m/min)	VRR	Vc (m/min)	VRR	Vc (m/min)	VRR		
<b>P</b> PSteel	Non-alloy steel and cast steel, free cutting steel	≤0.25%C	Annealed	110	7	100	7	100	7	90	7
		>0.25%C...≤0.55%	Annealed	110	7	100	7	100	7	90	7
		<0.25%...<0.55%C	Quenched & Tempered	100	7	100	7	100	7	80	7
		>0.55%C	Annealed	100	6	90	6	90	6	880	6
		>0.55%C	Quenched & Tempered	80	7	71	7	71	7	63	7
	Free cutting steel (short chips)	Annealed	110	7	100	7	100	7	90	7	
	Low alloy steel (alloying elements ≤5%)	Annealed	110	7	100	7	100	7			
		Quenched & Tempered	71	7	63	7	63	7	56	7	
	High alloy steel (alloying elements >5%), cast steel, and tool steel	Annealed	80	6	80	6	80	6	63	6	
		Quenched & Tempered	80	7	71	7	71	7	63	7	
<b>M</b> stainless steel	Stainless steel & Cast steel	Ferric / Martensitic Annealed									
		Martensitic Quenched & Tempered									
		Austenitic Quenched									
		Austenitic precipitation hardened stainless steel (PH stainless steel)									
		Austenitic-ferritic duplex stainless steel									
<b>K</b> Cast iron	Malleable cast iron	Ferritic	110	8	110	8	110	8	100	8	
		Pearlitic	110	8	110	8	110	8	100	8	
	Grey cast iron (GG)	Low tensile strength	140	9	140	9	120	9	120	9	
		High tensile strength/Austenitic	120	9	120	9	120	9	110	9	
	Cast iron Nodular (GGG)	Ferric	120	8	120	8	120	8	110	8	
Pearlitic		110	8	110	8	110	8	100	8		
<b>N</b> Non-ferrous alloy	Aluminum alloy wrought	Not cureable									
		Cured									
	Aluminum-cast alloy	≤ 12% Si	Not cureable								
		Cured									
	Copper and cooper alloy	> 12% Si	High temperature								
		> 1% Pb	Free cutting								
		Electrolytic Copper									
Magnesium alloy	Brass										
<b>S</b> Heat resistant material	High Temperature Alloys, Super Alloys	Fe based	Annealed								
		Cured									
	Titanium Alloy	Ni or Co based	Annealed								
		Cured									
		Pure 99.5 Ti									
Alpha+Beta Alloys Cured											
<b>H</b> Hardened material	Hardened steel	Hardened 45-50HRC									
		Hardened 51-55HRC									
		Hardened 52-62HRC									
Cast iron	Hardened										

## Recommended Feed Rate

mm

VRR	Diameter (mm) corresponding to feed (mm/rev)				
	12	15	20	25	40
2	0.052	0.058	0.067	0.075	0.094
3	0.077	0.087	0.100	0.110	0.140
4	0.100	0.120	0.130	0.150	0.190
5	0.130	0.140	0.170	0.190	0.240
6	0.150	0.170	0.200	0.220	0.280
7	0.180	0.200	0.230	0.260	0.330
8	0.210	0.230	0.270	0.300	0.380
9	0.230	0.260	0.300	0.340	0.420
10	0.260	0.290	0.330	0.370	0.470
12	0.310	0.350	0.400	0.450	0.570
16	0.410	0.460	0.530	0.600	0.750



**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

1 2 3 4 5 6 7 8 9

**1 Tool group**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**  
 DC Carbide Drill

**2 Tool Type**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

- Cylindrical twist drill
- Chamferdrill
- Small diameter drill
- Straight flute drill
- NC spotting drill

**3 Drilling depth**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

03 ~ 3 x D  
 05 ~ 5 x D  
 08 ~ 8 x D  
 12 ~ 12 x D  
 \*\* mark the actual length of the small diameter drill

**Drilling angle**

60 ~ 60°  
 90 ~ 90°  
 120 ~ 120°

**4 Cutting diameter**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

**5 Shank type**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

A DIN 6535 HA Parallel shank  
 F DIN 6535 HE Parallel shank

**6 Shank diameter**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

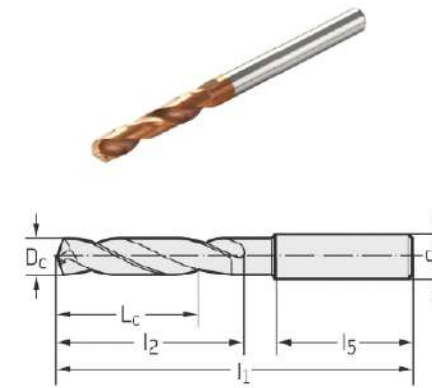
**7 Over length**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

**8 Cooling**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

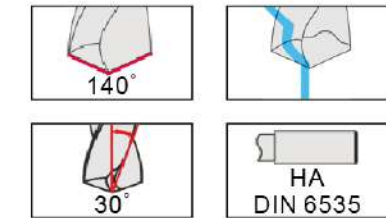
N External coolant  
 C Axial internal coolant

**9 Over length**  
**DC 1 - 03 - 03.175 A 6S - 100L - C DFA**

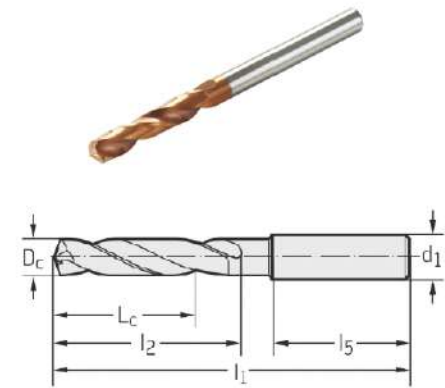
DFA TiAlN Coating  
 DFS TiSiN coating  
 DFC TiAlCrN coating  
 DSS Special coating for stainless steel



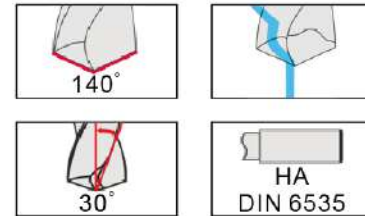
- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.- 03.000A6S-	3.0		6	14	20	62	23	28	66	36
03.100A6S-	3.1		6	14	20	62	23	28	66	36
03.175A6S-	3.175	1/8"	6	14	20	62	23	28	66	36
03.200A6S-	3.2		6	14	20	62	23	28	66	36
03.250A6S-	3.25		6	14	20	62	23	28	66	36
03.300A6S-	3.3		6	14	20	62	23	28	66	36
03.400A6S-	3.4		6	14	20	62	23	28	66	36
03.500A6S-	3.5		6	14	20	62	23	28	66	36
03.572A6S-	3.572	9/64"	6	14	20	62	23	28	66	36
03.600A6S-	3.6		6	14	20	62	23	28	66	36
03.650A6S-	3.65		6	14	20	62	23	28	66	36
03.700A6S-	3.7		6	14	20	62	23	28	66	36
03.800A6S-	3.8		6	17	24	66	29	36	74	36
03.900A6S-	3.9		6	17	24	66	29	36	74	36
03.969A6S-	3.969	5/32"	6	17	24	66	29	36	74	36
04.000A6S-	4.0		6	17	24	66	29	36	74	36
04.100A6S-	4.1		6	17	24	66	29	36	74	36
04.200A6S-	4.2		6	17	24	66	29	36	74	36
04.300A6S-	4.3		6	17	24	66	29	36	74	36
04.366A6S-	4.366	11/64"	6	17	24	66	29	36	74	36
04.400A6S-	4.4		6	17	24	66	29	36	74	36
04.500A6S-	4.5		6	17	24	66	29	36	74	36
04.600A6S-	4.6		6	17	24	66	29	36	74	36
04.650A6S-	4.65		6	17	24	66	29	36	74	36
04.700A6S-	4.7		6	17	24	66	29	36	74	36
04.763A6S-	4.763	3/16"	6	20	28	66	35	44	82	36

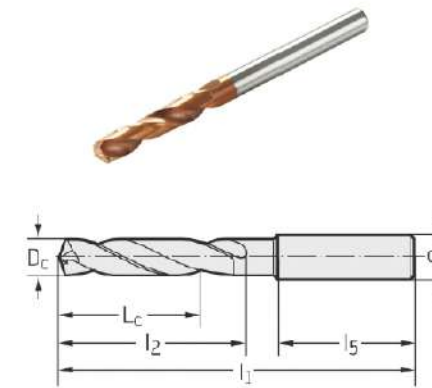


- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

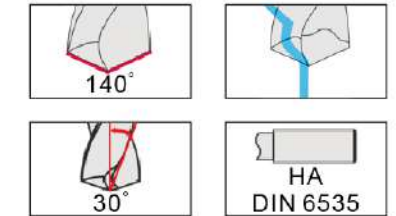


mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		l <sub>c</sub>	l <sub>2</sub>	l <sub>1</sub>	l <sub>c</sub>	l <sub>2</sub>	l <sub>1</sub>	
DCL..- 04.800A6S-	4.8		6	20	28	66	35	44	82	36
04.900A6S-	4.9		6	20	28	66	35	44	82	36
05.000A6S-	5.0		6	20	28	66	35	44	82	36
05.100A6S-	5.1		6	20	28	66	35	44	82	36
05.159A6S-	5.159	13/64"	6	20	28	66	35	44	82	36
05.200A6S-	5.2		6	20	28	66	35	44	82	36
05.300A6S-	5.3		6	20	28	66	35	44	82	36
05.400A6S-	5.4		6	20	28	66	35	44	82	36
05.500A6S-	5.5		6	20	28	66	35	44	82	36
05.550A6S-	5.55		6	20	28	66	35	44	82	36
05.556A6S-	5.556	7/32"	6	20	28	66	35	44	82	36
05.600A6S-	5.6		6	20	28	66	35	44	82	36
05.700A6S-	5.7		6	20	28	66	35	44	82	36
05.800A6S-	5.8		6	20	28	66	35	44	82	36
05.900A6S-	5.9		6	20	28	66	35	44	82	36
05.953A6S-	5.953	15/64"	6	20	28	66	35	44	82	36
06.000A6S-	6.0		6	20	28	66	35	44	82	36
06.100A8S-	6.1		8	24	34	79	43	53	91	36
06.200A8S-	6.2		8	24	34	79	43	53	91	36
06.300A8S-	6.3		8	24	34	79	43	53	91	36
06.350A8S-	6.35	1/4"	8	24	34	79	43	53	91	36
06.400A8S-	6.4		8	24	34	79	43	53	91	36
06.500A8S-	6.5		8	24	34	79	43	53	91	36
06.600A8S-	6.6		8	24	34	79	43	53	91	36
06.700A8S-	6.7		8	24	34	79	43	53	91	36
06.747A8S-	6.747	17/64"	8	24	34	79	43	53	91	36



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



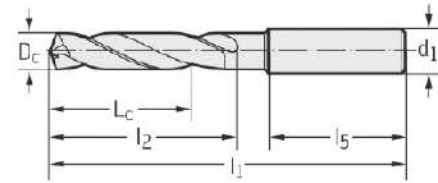
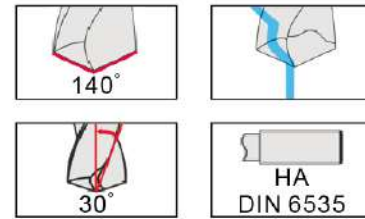
mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		l <sub>c</sub>	l <sub>2</sub>	l <sub>1</sub>	l <sub>c</sub>	l <sub>2</sub>	l <sub>1</sub>	
DCL..- 06.800A8S-	6.8		8	24	34	79	43	53	91	36
06.900A8S-	6.9		8	24	34	79	43	53	91	36
07.000A8S-	7.0		8	24	34	79	43	53	91	36
07.100A8S-	7.1		8	29	41	79	43	53	91	36
07.144A8S-	7.144	9/32"	8	29	41	79	43	53	91	36
07.200A8S-	7.2		8	29	41	79	43	53	91	36
07.300A8S-	7.3		8	29	41	79	43	53	91	36
07.400A8S-	7.4		8	29	41	79	43	53	91	36
07.500A8S-	7.5		8	29	41	79	43	53	91	36
07.541A8S-	7.541		8	29	41	79	43	53	91	36
07.550A8S-	7.55	19/64"	8	29	41	79	43	53	91	36
07.600A8S-	7.6		8	29	41	79	43	53	91	36
07.700A8S-	7.7		8	29	41	79	43	53	91	36
07.800A8S-	7.8		8	29	41	79	43	53	91	36
07.900A8S-	7.9		8	29	41	79	43	53	91	36
07.938A8S-	7.938	5/16"	8	29	41	79	43	53	91	36
08.000A8S-	8.0		8	29	41	79	43	53	91	36
08.100A10S-	8.1		10	35	47	89	49	61	103	40
08.200A10S-	8.2		10	35	47	89	49	61	103	40
08.300A10S-	8.3		10	35	47	89	49	61	103	40
08.344A10S-	8.344	21/64"	10	35	47	89	49	61	103	40
08.400A10S-	8.4		10	35	47	89	49	61	103	40
08.500A10S-	8.5		10	35	47	89	49	61	103	40
08.600A10S-	8.6		10	35	47	89	49	61	103	40
08.700A10S-	8.7		10	35	47	89	49	61	103	40
08.731A10S-	8.731	11/32"	10	35	47	89	49	61	103	40





- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

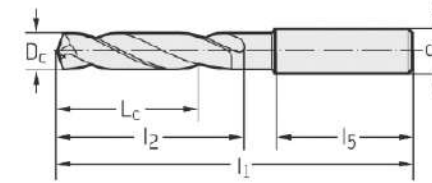
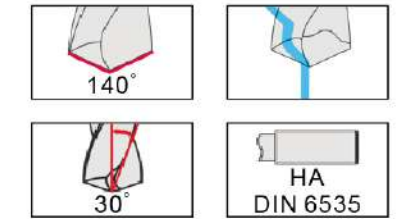


mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.. 08.800A10S-	8.8		10	35	47	89	49	61	103	40
08.900A10S-	8.9		10	35	47	89	49	61	103	40
09.000A10S-	9.0		10	35	47	89	49	61	103	40
09.100A10S-	9.1		10	35	47	89	49	61	103	40
09.128A10S-	9.128	23/64"	10	35	47	89	49	61	103	40
09.200A10S-	9.2		10	35	47	89	49	61	103	40
09.300A10S-	9.3		10	35	47	89	49	61	103	40
09.400A10S-	9.4		10	35	47	89	49	61	103	40
09.500A10S-	9.5		10	35	47	89	49	61	103	40
09.525A10S-	9.525	3/8"	10	35	47	89	49	61	103	40
09.550A10S-	9.55		10	35	47	89	49	61	103	40
09.600A10S-	9.6		10	35	47	89	49	61	103	40
09.700A10S-	9.7		10	35	47	89	49	61	103	40
09.800A10S-	9.8		10	35	47	89	49	61	103	40
09.900A10S-	9.9		10	35	47	89	49	61	103	40
09.922A10S-	9.922	25/64"	10	35	47	89	49	61	103	40
10.000A10S-	10.0		10	35	47	89	49	61	103	40
10.100A12S-	10.1		12	40	55	102	56	71	118	45
10.200A12S-	10.2		12	40	55	102	56	71	118	45
10.300A12S-	10.3		12	40	55	102	56	71	118	45
10.319A12S-	10.319	13/32"	12	40	55	102	56	71	118	45
10.400A12S-	10.4		12	40	55	102	56	71	118	45
10.500A12S-	10.5		12	40	55	102	56	71	118	45
10.600A12S-	10.6		12	40	55	102	56	71	118	45
10.700A12S-	10.7		12	40	55	102	56	71	118	45
10.716A12S-	10.716	27/64"	12	40	55	102	56	71	118	45



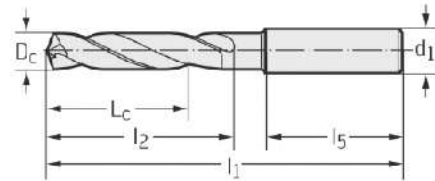
- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



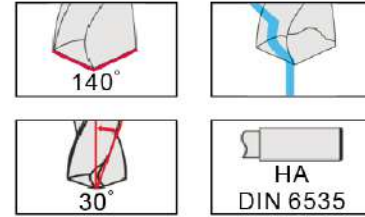
mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.. 10.800A12S-	10.8		12	40	55	102	56	71	118	45
10.900A12S-	10.9		12	40	55	102	56	71	118	45
11.000A12S-	11.0		12	40	55	102	56	71	118	45
11.100A12S-	11.1		12	40	55	102	56	71	118	45
11.113A12S-	11.113	7/16"	12	40	55	102	56	71	118	45
11.200A12S-	11.2		12	40	55	102	56	71	118	45
11.300A12S-	11.3		12	40	55	102	56	71	118	45
11.400A12S-	11.4		12	40	55	102	56	71	118	45
11.500A12S-	11.5		12	40	55	102	56	71	118	45
11.509A12S-	11.509	29/64"	12	40	55	102	56	71	118	45
11.550A12S-	11.55		12	40	55	102	56	71	118	45
11.600A12S-	11.6		12	40	55	102	56	71	118	45
11.700A12S-	11.7		12	40	55	102	56	71	118	45
11.800A12S-	11.8		12	40	55	102	56	71	118	45
11.900A12S-	11.9		12	40	55	102	56	71	118	45
11.906A12S-	11.906	15/32"	12	40	55	102	56	71	118	45
12.000A12S-	12.0		12	40	55	102	56	71	118	45
12.100A14S-	12.1		14	43	60	107	60	77	124	45
12.200A14S-	12.2		14	43	60	107	60	77	124	45
12.250A14S-	12.25		14	43	60	107	60	77	124	45
12.300A14S-	12.3		14	43	60	107	60	77	124	45
12.303A14S-	12.303	31/64"	14	43	60	107	60	77	124	45
12.400A14S-	12.4		14	43	60	107	60	77	124	45
12.500A14S-	12.5		14	43	60	107	60	77	124	45
12.600A14S-	12.6		14	43	60	107	60	77	124	45
12.700A14S-	12.7		14	43	60	107	60	77	124	45

# Solid Carbide Twist Drill

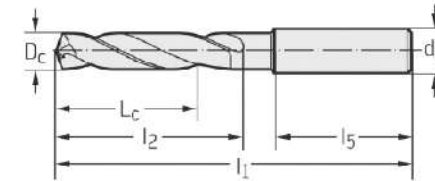


- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

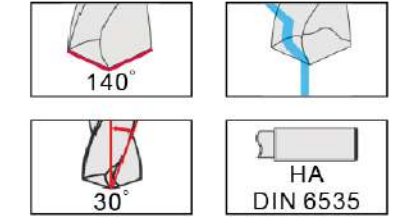


mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.. 12.750A14S-	12.75	1/2"	14	43	60	107	60	77	124	45
12.800A14S-	12.8		14	43	60	107	60	77	124	45
12.900A14S-	12.9		14	43	60	107	60	77	124	45
13.000A14S-	13.0		14	43	60	107	60	77	124	45
13.100A14S-	13.1		14	43	60	107	60	77	124	45
13.200A14S-	13.2		14	43	60	107	60	77	124	45
13.300A14S-	13.3		14	43	60	107	60	77	124	45
13.400A14S-	13.4		14	43	60	107	60	77	124	45
13.494A14S-	13.494	17/32"	14	43	60	107	60	77	124	45
13.500A14S-	13.5		14	43	60	107	60	77	124	45
13.600A14S-	13.6		14	43	60	107	60	77	124	45
13.700A14S-	13.7		14	43	60	107	60	77	124	45
13.800A14S-	13.8		14	43	60	107	60	77	124	45
13.900A14S-	13.9		14	43	60	107	60	77	124	45
14.000A14S-	14.0		14	43	60	107	60	77	124	45
14.100A16S-	14.1		16	45	65	115	63	83	133	48
14.200A16S-	14.2		16	45	65	115	63	83	133	48
14.288A16S-	14.288	9/16"		45	65	115	63	83	133	48
14.300A16S-	14.3			45	65	115	63	83	133	48
14.400A16S-	14.4			45	65	115	63	83	133	48
14.500A16S-	14.5			45	65	115	63	83	133	48
14.600A16S-	14.6			45	65	115	63	83	133	48
14.700A16S-	14.7			45	65	115	63	83	133	48
14.750A16S-	14.75			45	65	115	63	83	133	48
14.800A16S-	14.8			45	65	115	63	83	133	48
15.000A16S-	15.0			45	65	115	63	83	133	48



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

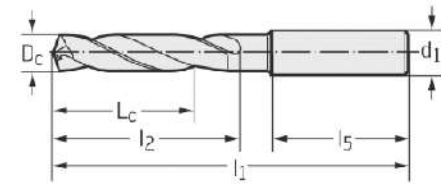


mm

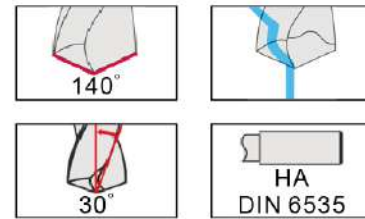
Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.. 15.100A16S-	15.1			45	65	115	63	83	133	48
15.200A16S-	15.2			45	65	115	63	83	133	48
15.300A16S-	15.3			45	65	115	63	83	133	48
15.500A16S-	15.5			45	65	115	63	83	133	48
15.600A16S-	15.6			45	65	115	63	83	133	48
15.700A16S-	15.7			45	65	115	63	83	133	48
15.800A16S-	15.8			45	65	115	63	83	133	48
15.875A16S-	15.875	5/8"		45	65	115	63	83	133	48
15.900A16S-	15.9			45	65	115	63	83	133	48
16.000A16S-	16.0			45	65	115	63	83	133	48
16.100A18S-	16.1			51	73	123	71	93	143	48
16.200A18S-	16.2			51	73	123	71	93	143	48
16.300A18S-	16.3		18	51	73	123	71	93	143	48
16.400A18S-	16.4		18	51	73	123	71	93	143	48
16.500A18S-	16.5		18	51	73	123	71	93	143	48
16.600A18S-	16.6		18	51	73	123	71	93	143	48
16.700A18S-	16.7		18	51	73	123	71	93	143	48
16.750A18S-	16.75		18	51	73	123	71	93	143	48
16.800A18S-	16.8		18	51	73	123	71	93	143	48
17.000A18S-	17.0		18	51	73	123	71	93	143	48
17.200A18S-	17.2		18	51	73	123	71	93	143	48
17.300A18S-	17.3		18	51	73	123	71	93	143	48
17.500A18S-	17.5		18	51	73	123	71	93	143	48
17.600A18S-	17.6		18	51	73	123	71	93	143	48
17.700A18S-	17.7		18	51	73	123	71	93	143	48
17.800A18S-	17.8		18	51	73	123	71	93	143	48



# Solid Carbide Twist Drill

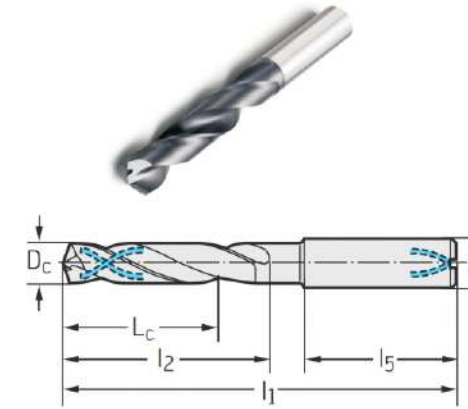


- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

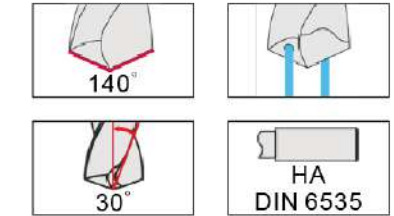


mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.- 18.00A18S-	18.0		18	51	73	123	71	93	143	48
18.200A20S-	18.2		20	55	79	131	77	101	153	50
18.500A20S-	18.5		20	55	79	131	77	101	153	50
18.700A20S-	18.7		20	55	79	131	77	101	153	50
18.800A20S-	18.8		20	55	79	131	77	101	153	50
19.000A20S-	19.0		20	55	79	131	77	101	153	50
19.050A20S-	19.05	3/4"	20	55	79	131	77	101	153	50
19.500A20S-	19.5		20	55	79	131	77	101	153	50
19.700A20S-	19.7		20	55	79	131	77	101	153	50
19.800A20S-	19.8		20	55	79	131	77	101	153	50
20.000A20S-	20.0		20	55	79	131	77	101	153	50
20.500A25S-	20.5		25	-	-	-	86	108	166	56
21.000A25S-	21.0		25	-	-	-	86	108	166	56
21.500A25S-	21.5		25	-	-	-	86	108	166	56
22.000A25S-	22.0		25	-	-	-	86	108	166	56
22.500A25S-	22.5		25	-	-	-	91	115	173	56
23.000A25S-	23.0		25	-	-	-	91	115	173	56
23.500A25S-	23.5		25	-	-	-	91	115	173	56
24.000A25S-	24.0		25	-	-	-	91	115	173	56
24.500A25S-	24.5		25	-	-	-	97	122	180	56
25.000A25S-	25.0		25	-	-	-	97	122	180	56



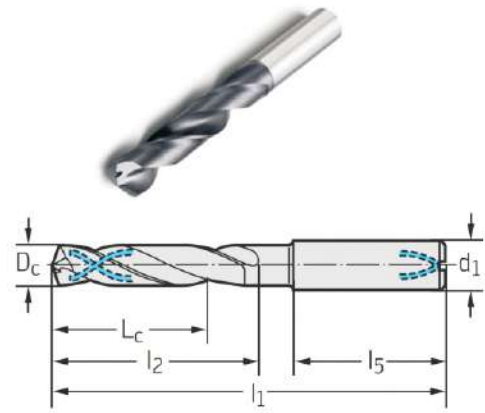
- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



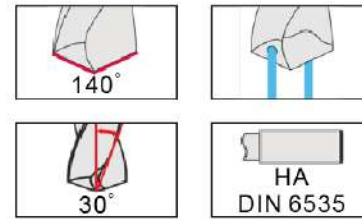
mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.- 03.000A6S- C	3.0		6	14	20	62	23	28	66	36
03.100A6S- C	3.1		6	14	20	62	23	28	66	36
03.175A6S- C	3.175	1/8"	6	14	20	62	23	28	66	36
03.200A6S- C	3.2		6	14	20	62	23	28	66	36
03.250A6S- C	3.25		6	14	20	62	23	28	66	36
03.300A6S- C	3.3		6	14	20	62	23	28	66	36
03.400A6S- C	3.4		6	14	20	62	23	28	66	36
03.500A6S- C	3.5		6	14	20	62	23	28	66	36
03.572A6S- C	3.572	9/64"	6	14	20	62	23	28	66	36
03.600A6S- C	3.6		6	14	20	62	23	28	66	36
03.650A6S- C	3.65		6	14	20	62	23	28	66	36
03.700A6S- C	3.7		6	14	20	62	23	28	66	36
03.800A6S- C	3.8		6	17	24	66	29	36	74	36
03.900A6S- C	3.9		6	17	24	66	29	36	74	36
03.969A6S- C	3.969	5/32"	6	17	24	66	29	36	74	36
04.000A6S- C	4.0		6	17	24	66	29	36	74	36
04.100A6S- C	4.1		6	17	24	66	29	36	74	36
04.200A6S- C	4.2		6	17	24	66	29	36	74	36
04.300A6S- C	4.3		6	17	24	66	29	36	74	36
04.366A6S- C	4.366	11/64"	6	17	24	66	29	36	74	36
04.400A6S- C	4.4		6	17	24	66	29	36	74	36
04.500A6S- C	4.5		6	17	24	66	29	36	74	36
04.600A6S- C	4.6		6	17	24	66	29	36	74	36
04.650A6S- C	4.65		6	17	24	66	29	36	74	36
04.700A6S- C	4.7		6	17	24	66	29	36	74	36
04.763A6S- C	4.763	3/16"	6	20	28	66	35	44	82	36

# Solid Carbide Twist Drill

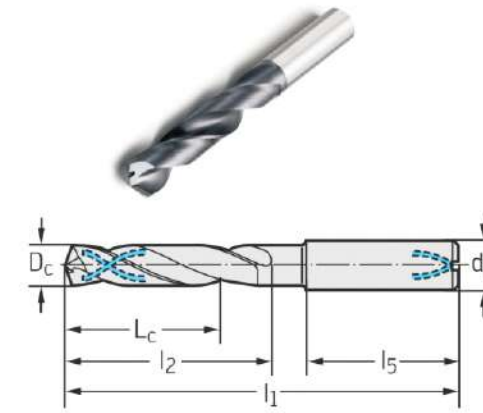


- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

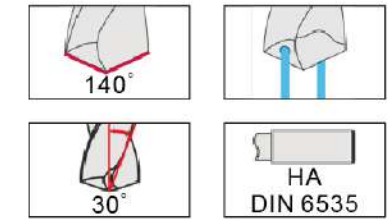


mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1..- 04.800A6S-C	4.8		6	20	28	66	35	44	82	36
04.900A6S-C	4.9		6	20	28	66	35	44	82	36
05.000A6S-C	5.0		6	20	28	66	35	44	82	36
05.100A6S-C	5.1		6	20	28	66	35	44	82	36
05.159A6S-C	5.159	13/64"	6	20	28	66	35	44	82	36
05.200A6S-C	5.2		6	20	28	66	35	44	82	36
05.300A6S-C	5.3		6	20	28	66	35	44	82	36
05.400A6S-C	5.4		6	20	28	66	35	44	82	36
05.500A6S-C	5.5		6	20	28	66	35	44	82	36
05.550A6S-C	5.55		6	20	28	66	35	44	82	36
05.556A6S-C	5.556	7/32"	6	20	28	66	35	44	82	36
05.600A6S-C	5.6		6	20	28	66	35	44	82	36
05.700A6S-C	5.7		6	20	28	66	35	44	82	36
05.800A6S-C	5.8		6	20	28	66	35	44	82	36
05.900A6S-C	5.9		6	20	28	66	35	44	82	36
05.953A6S-C	5.953	15/64"	6	20	28	66	35	44	82	36
06.000A6S-C	6.0		6	20	28	66	35	44	82	36
06.100A8S-C	6.1		8	24	34	79	43	53	91	36
06.200A8S-C	6.2		8	24	34	79	43	53	91	36
06.300A8S-C	6.3		8	24	34	79	43	53	91	36
06.350A8S-C	6.35	1/4"	8	24	34	79	43	53	91	36
06.400A8S-C	6.4		8	24	34	79	43	53	91	36
06.500A8S-C	6.5		8	24	34	79	43	53	91	36
06.600A8S-C	6.6		8	24	34	79	43	53	91	36
06.700A8S-C	6.7		8	24	34	79	43	53	91	36
06.747A8S-C	6.747	17/64"	8	24	34	79	43	53	91	36



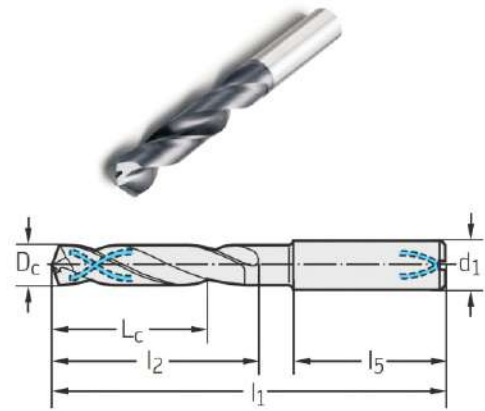
- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



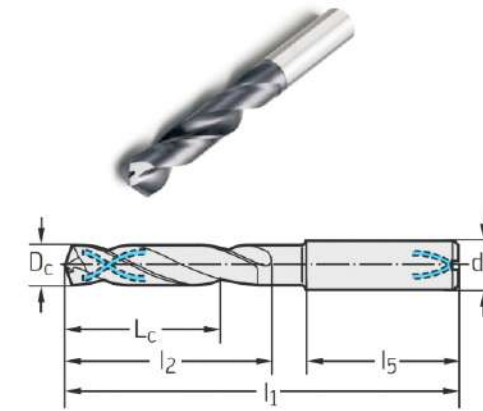
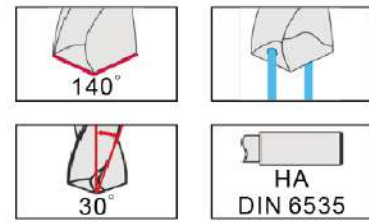
mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1..- 06.800A8S-C	6.8		8	24	34	79	43	53	91	36
06.900A8S-C	6.9		8	24	34	79	43	53	91	36
07.000A8S-C	7.0		8	24	34	79	43	53	91	36
07.100A8S-C	7.1		8	29	41	79	43	53	91	36
07.144A8S-C	7.144	9/32"	8	29	41	79	43	53	91	36
07.200A8S-C	7.2		8	29	41	79	43	53	91	36
07.300A8S-C	7.3		8	29	41	79	43	53	91	36
07.400A8S-C	7.4		8	29	41	79	43	53	91	36
07.500A8S-C	7.5		8	29	41	79	43	53	91	36
07.541A8S-C	7.541		8	29	41	79	43	53	91	36
07.550A8S-C	7.55	19/64"	8	29	41	79	43	53	91	36
07.600A8S-C	7.6		8	29	41	79	43	53	91	36
07.700A8S-C	7.7		8	29	41	79	43	53	91	36
07.800A8S-C	7.8		8	29	41	79	43	53	91	36
07.900A8S-C	7.9		8	29	41	79	43	53	91	36
07.938A8S-C	7.938	5/16"	8	29	41	79	43	53	91	36
08.000A8S-C	8.0		8	29	41	79	43	53	91	36
08.100A10S-C	8.1		10	35	47	89	49	61	103	40
08.200A10S-C	8.2		10	35	47	89	49	61	103	40
08.300A10S-C	8.3		10	35	47	89	49	61	103	40
08.344A10S-C	8.344	21/64"	10	35	47	89	49	61	103	40
08.400A10S-C	8.4		10	35	47	89	49	61	103	40
08.500A10S-C	8.5		10	35	47	89	49	61	103	40
08.600A10S-C	8.6		10	35	47	89	49	61	103	40
08.700A10S-C	8.7		10	35	47	89	49	61	103	40
08.731A10S-C	8.731	11/32"	10	35	47	89	49	61	103	40

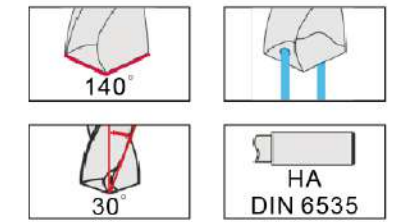




- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



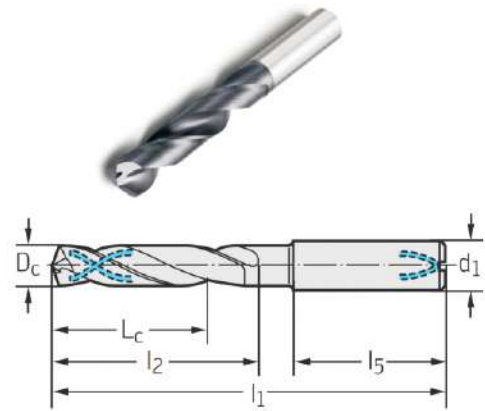
mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.- 08.800A10S-C	8.8		10	35	47	89	49	61	103	40
08.900A10S-C	8.9		10	35	47	89	49	61	103	40
09.000A10S-C	9.0		10	35	47	89	49	61	103	40
09.100A10S-C	9.1		10	35	47	89	49	61	103	40
09.128A10S-C	9.128	23/64"	10	35	47	89	49	61	103	40
09.200A10S-C	9.2		10	35	47	89	49	61	103	40
09.300A10S-C	9.3		10	35	47	89	49	61	103	40
09.400A10S-C	9.4		10	35	47	89	49	61	103	40
09.500A10S-C	9.5		10	35	47	89	49	61	103	40
09.525A10S-C	9.525	3/8"	10	35	47	89	49	61	103	40
09.550A10S-C	9.55		10	35	47	89	49	61	103	40
09.600A10S-C	9.6		10	35	47	89	49	61	103	40
09.700A10S-C	9.7		10	35	47	89	49	61	103	40
09.800A10S-C	9.8		10	35	47	89	49	61	103	40
09.900A10S-C	9.9		10	35	47	89	49	61	103	40
09.922A10S-C	9.922	25/64"	10	35	47	89	49	61	103	40
10.000A10S-C	10.0		10	35	47	89	49	61	103	40
10.100A12S-C	10.1		12	40	55	102	56	71	118	45
10.200A12S-C	10.2		12	40	55	102	56	71	118	45
10.300A12S-C	10.3		12	40	55	102	56	71	118	45
10.319A12S-C	10.319	13/32"	12	40	55	102	56	71	118	45
10.400A12S-C	10.4		12	40	55	102	56	71	118	45
10.500A12S-C	10.5		12	40	55	102	56	71	118	45
10.600A12S-C	10.6		12	40	55	102	56	71	118	45
10.700A12S-C	10.7		12	40	55	102	56	71	118	45
10.716A12S-C	10.716	27/64"	12	40	55	102	56	71	118	45

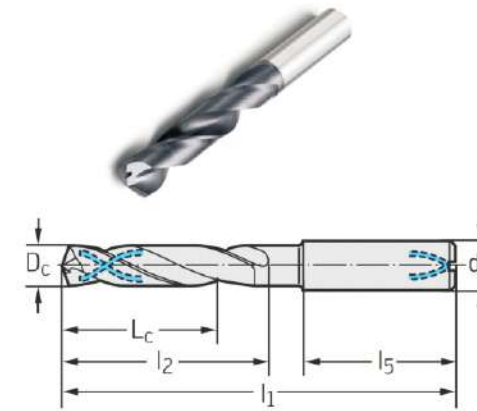
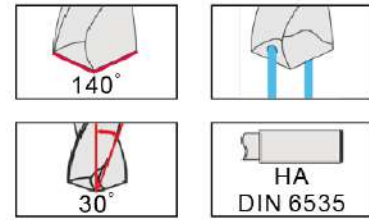
mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.- 10.800A12S-C	10.8		12	40	55	102	56	71	118	45
10.900A12S-C	10.9		12	40	55	102	56	71	118	45
11.000A12S-C	11.0		12	40	55	102	56	71	118	45
11.100A12S-C	11.1		12	40	55	102	56	71	118	45
11.113A12S-C	11.113	7/16"	12	40	55	102	56	71	118	45
11.200A12S-C	11.2		12	40	55	102	56	71	118	45
11.300A12S-C	11.3		12	40	55	102	56	71	118	45
11.400A12S-C	11.4		12	40	55	102	56	71	118	45
11.500A12S-C	11.5		12	40	55	102	56	71	118	45
11.509A12S-C	11.509	29/64"	12	40	55	102	56	71	118	45
11.550A12S-C	11.55		12	40	55	102	56	71	118	45
11.600A12S-C	11.6		12	40	55	102	56	71	118	45
11.700A12S-C	11.7		12	40	55	102	56	71	118	45
11.800A12S-C	11.8		12	40	55	102	56	71	118	45
11.900A12S-C	11.9		12	40	55	102	56	71	118	45
11.906A12S-C	11.906	15/32"	12	40	55	102	56	71	118	45
12.000A12S-C	12.0		12	40	55	102	56	71	118	45
12.100A14S-C	12.1		14	43	60	107	60	77	124	45
12.200A14S-C	12.2		14	43	60	107	60	77	124	45
12.250A14S-C	12.25		14	43	60	107	60	77	124	45
12.300A14S-C	12.3		14	43	60	107	60	77	124	45
12.303A14S-C	12.303	31/64"	14	43	60	107	60	77	124	45
12.400A14S-C	12.4		14	43	60	107	60	77	124	45
12.500A14S-C	12.5		14	43	60	107	60	77	124	45
12.600A14S-C	12.6		14	43	60	107	60	77	124	45
12.700A14S-C	12.7		14	43	60	107	60	77	124	45

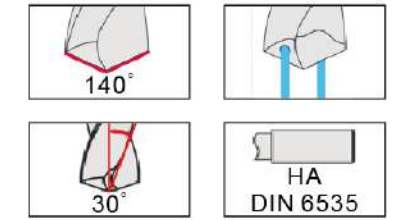
# Solid Carbide Twist Drill



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



- Manufacturing standard: DIN 6537
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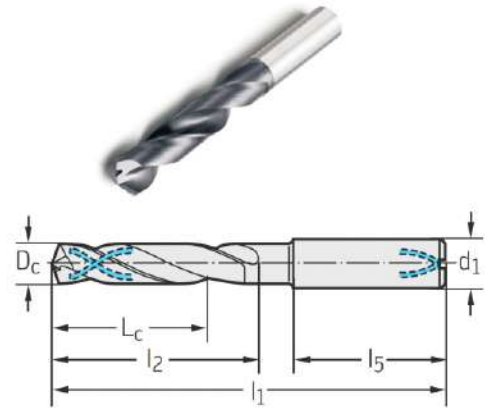


Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1..- 12.750A14S-C	12.75	1/2"	14	43	60	107	60	77	124	45
12.800A14S-C	12.8		14	43	60	107	60	77	124	45
12.900A14S-C	12.9		14	43	60	107	60	77	124	45
13.000A14S-C	13.0		14	43	60	107	60	77	124	45
13.100A14S-C	13.1		14	43	60	107	60	77	124	45
13.200A14S-C	13.2		14	43	60	107	60	77	124	45
13.300A14S-C	13.3		14	43	60	107	60	77	124	45
13.400A14S-C	13.4		14	43	60	107	60	77	124	45
13.494A14S-C	13.494	17/32"	14	43	60	107	60	77	124	45
13.500A14S-C	13.5		14	43	60	107	60	77	124	45
13.600A14S-C	13.6		14	43	60	107	60	77	124	45
13.700A14S-C	13.7		14	43	60	107	60	77	124	45
13.800A14S-C	13.8		14	43	60	107	60	77	124	45
13.900A14S-C	13.9		14	43	60	107	60	77	124	45
14.000A14S-C	14.0		14	43	60	107	60	77	124	45
14.100A16S-C	14.1		16	45	65	115	63	83	133	48
14.200A16S-C	14.2		16	45	65	115	63	83	133	48
14.288A16S-C	14.288	9/16"	16	45	65	115	63	83	133	48
14.300A16S-C	14.3		16	45	65	115	63	83	133	48
14.400A16S-C	14.4		16	45	65	115	63	83	133	48
14.500A16S-C	14.5		16	45	65	115	63	83	133	48
14.600A16S-C	14.6		16	45	65	115	63	83	133	48
14.700A16S-C	14.7		16	45	65	115	63	83	133	48
14.750A16S-C	14.75		16	45	65	115	63	83	133	48
14.800A16S-C	14.8		16	45	65	115	63	83	133	48
15.000A16S-C	15.0		16	45	65	115	63	83	133	48

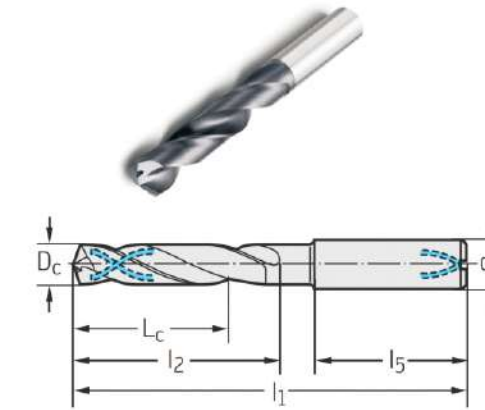
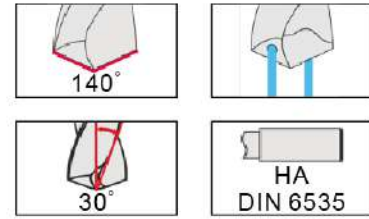
Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1..- 15.100A16S-C	15.1		16	45	65	115	63	83	133	48
15.200A16S-C	15.2		16	45	65	115	63	83	133	48
15.300A16S-C	15.3		16	45	65	115	63	83	133	48
15.500A16S-C	15.5		16	45	65	115	63	83	133	48
15.600A16S-C	15.6		16	45	65	115	63	83	133	48
15.700A16S-C	15.7		16	45	65	115	63	83	133	48
15.800A16S-C	15.8		16	45	65	115	63	83	133	48
15.875A16S-C	15.875	5/8"	16	45	65	115	63	83	133	48
15.900A16S-C	15.9		16	45	65	115	63	83	133	48
16.000A16S-C	16.0		16	45	65	115	63	83	133	48
16.100A18S-C	16.1		18	51	73	123	71	93	143	48
16.200A18S-C	16.2		18	51	73	123	71	93	143	48
16.300A18S-C	16.3		18	51	73	123	71	93	143	48
16.400A18S-C	16.4		18	51	73	123	71	93	143	48
16.500A18S-C	16.5		18	51	73	123	71	93	143	48
16.600A18S-C	16.6		18	51	73	123	71	93	143	48
16.700A18S-C	16.7		18	51	73	123	71	93	143	48
16.750A18S-C	16.75		18	51	73	123	71	93	143	48
16.800A18S-C	16.8		18	51	73	123	71	93	143	48
17.000A18S-C	17.0		18	51	73	123	71	93	143	48
17.200A18S-C	17.2		18	51	73	123	71	93	143	48
17.300A18S-C	17.3		18	51	73	123	71	93	143	48
17.500A18S-C	17.5		18	51	73	123	71	93	143	48
17.600A18S-C	17.6		18	51	73	123	71	93	143	48
17.700A18S-C	17.7		18	51	73	123	71	93	143	48
17.800A18S-C	17.8		18	51	73	123	71	93	143	48



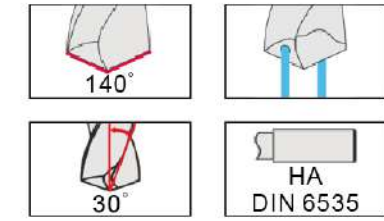
# Solid Carbide Twist Drill



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



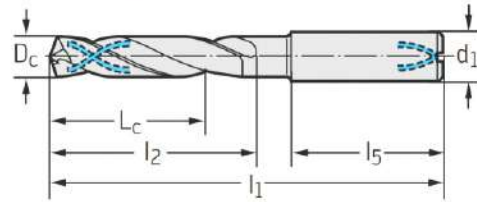
mm

Designation	Dc		d1	3 x D			5 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1... 18.000A18S-C	18.0		18	51	73	123	71	93	143	48
18.200A20S-C	18.2		20	55	79	131	77	101	153	50
18.500A20S-C	18.5		20	55	79	131	77	101	153	50
18.700A20S-C	18.7		20	55	79	131	77	101	153	50
18.800A20S-C	18.8		20	55	79	131	77	101	153	50
19.000A20S-C	19.0		20	55	79	131	77	101	153	50
19.050A20S-C	19.05	3/4"	20	55	79	131	77	101	153	50
19.500A20S-C	19.5		20	55	79	131	77	101	153	50
19.700A20S-C	19.7		20	55	79	131	77	101	153	50
19.800A20S-C	19.8		20	55	79	131	77	101	153	50
20.000A20S-C	20.0		20	55	79	131	77	101	153	50
20.500A25S-C	20.5		25	-	-	-	86	108	166	56
21.000A25S-C	21.0		25	-	-	-	86	108	166	56
21.500A25S-C	21.5		25	-	-	-	86	108	166	56
22.000A25S	22.0		25	-	-	-	86	108	166	56
22.500A25S	22.5		25	-	-	-	91	115	173	56
23.000A25S	23.0		25	-	-	-	91	115	173	56
23.500A25S	23.5		25	-	-	-	91	115	173	56
24.000A25S	24.0		25	-	-	-	91	115	173	56
24.500A25S	24.5		25	-	-	-	97	122	180	56
25.000A25S	25.0		25	-	-	-	97	122	180	56

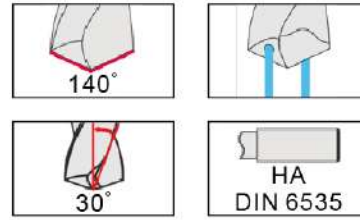
mm

Designation	Dc		d1	8 x D			12 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1... 03.000A6S-C	3.0		6	28	34	74	48	54	92	36
03.100A6S-C	3.1		6	28	34	74	48	54	92	36
03.175A6S-C	3.175	1/8"	6	28	34	74	48	54	92	36
03.200A6S-C	3.2		6	28	34	74	48	54	92	36
03.300A6S-C	3.3		6	28	34	74	48	54	92	36
03.400A6S-C	3.4		6	28	34	74	48	54	92	36
03.500A6S-C	3.5		6	28	34	74	48	54	92	36
03.572A6S-C	3.572	9/64"	6	28	34	74	48	54	92	36
03.600A6S-C	3.6		6	28	34	74	48	54	92	36
03.700A6S-C	3.7		6	28	34	74	48	54	92	36
03.800A6S-C	3.8		6	37	45	85	56	64	102	36
03.900A6S-C	3.9		6	37	45	85	56	64	102	36
03.969A6S-C	3.969	5/32"	6	37	45	85	56	64	102	36
04.000A6S-C	4.0		6	37	45	85	56	64	102	36
04.100A6S-C	4.1		6	37	45	85	56	64	102	36
04.200A6S-C	4.2		6	37	45	85	56	64	102	36
04.300A6S-C	4.3		6	37	45	85	56	64	102	36
04.366A6S-C	4.366	11/64"	6	37	45	85	56	64	102	36
04.400A6S-C	4.4		6	37	45	85	56	64	102	36
04.500A6S-C	4.5		6	37	45	85	56	64	102	36
04.600A6S-C	4.6		6	37	45	85	56	64	102	36
04.700A6S-C	4.7		6	37	45	85	56	64	102	36
04.763A6S-C	4.763		6	48	57	97	74	83	121	36
04.800A6S-C	4.8	3/16"	6	48	57	97	74	83	121	36
04.900A6S-C	4.9		6	48	57	97	74	83	121	36
05.000A6S-C	5.0		6	48	57	97	74	83	121	36

# Solid Carbide Twist Drill

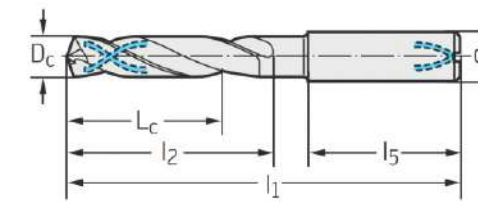


- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

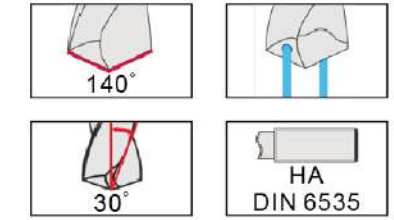


mm

Designation	Dc		d1	8 x D			12 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1..- 05.100A6S-C	5.1		6	48	57	97	74	83	121	36
05.159A6S-C	5.159	13/64"	6	48	57	97	74	83	121	36
05.200A6S-C	5.2		6	48	57	97	74	83	121	36
05.300A6S-C	5.3		6	48	57	97	74	83	121	36
05.400A6S-C	5.4		6	48	57	97	74	83	121	36
05.500A6S-C	5.5		6	48	57	97	74	83	121	36
05.556A6S-C	5.556	7/32"	6	48	57	97	74	83	121	36
05.600A6S-C	5.6		6	48	57	97	74	83	121	36
05.700A6S-C	5.7		6	48	57	97	74	83	121	36
05.800A6S-C	5.8		6	48	57	97	74	83	121	36
05.900A6S-C	5.9		6	48	57	97	74	83	121	36
05.953A6S-C	5.953	15/64"	6	48	57	97	74	83	121	36
06.000A6S-C	6.0		6	48	57	97	74	83	121	36
06.100A8S-C	6.1		8	55	66	106	98	110	148	36
06.200A8S-C	6.2		8	55	66	106	98	110	148	36
06.300A8S-C	6.3		8	55	66	106	98	110	148	36
06.350A8S-C	6.35	1/4"	8	55	66	106	98	110	148	36
06.400A8S-C	6.4		8	55	66	106	98	110	148	36
06.500A8S-C	6.5		8	55	66	106	98	110	148	36
06.600A8S-C	6.6		8	55	66	106	98	110	148	36
06.700A8S-C	6.7		8	55	66	106	98	110	148	36
06.747A8S-C	6.747	17/64"	8	55	66	106	98	110	148	36
06.800A8S-C	6.8		8	55	66	106	98	110	148	36
06.900A8S-C	6.9		8	55	66	106	98	110	148	36
07.000A8S-C	7.0		8	55	66	106	98	110	148	36
07.100A8S-C	7.1		8	64	76	116	98	110	148	36



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



mm

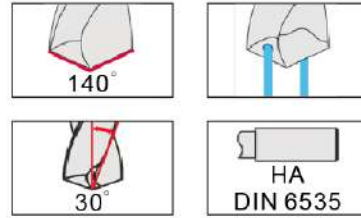
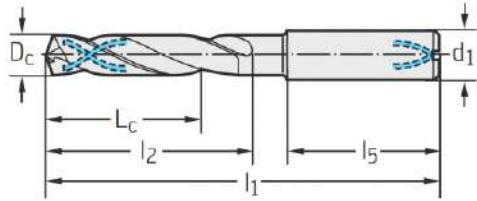
Designation	Dc		d1	8 x D			12 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1..- 07.144A8S-C	7.144	9/32"	8	64	76	116	98	110	148	36
07.200A8S-C	7.2		8	64	76	116	98	110	148	36
07.300A8S-C	7.3		8	64	76	116	98	110	148	36
07.400A8S-C	7.4		8	64	76	116	98	110	148	36
07.500A8S-C	7.5		8	64	76	116	98	110	148	36
07.541A8S-C	7.541	19/64"	8	64	76	116	98	110	148	36
07.600A8S-C	7.6		8	64	76	116	98	110	148	36
07.700A8S-C	7.7		8	64	76	116	98	110	148	36
07.800A8S-C	7.8		8	64	76	116	98	110	148	36
07.900A8S-C	7.9		8	64	76	116	98	110	148	36
07.938A8S-C	7.938	5/16"	8	64	76	116	98	110	148	36
08.000A8S-C	8.0		8	64	76	116	98	110	148	36
08.100A10S-C	8.1		10	80	95	139	123	138	180	40
08.200A10S-C	8.2		10	80	95	139	123	138	180	40
08.300A10S-C	8.3		10	80	95	139	123	138	180	40
08.344A10S-C	8.344	21/64"	10	80	95	139	123	138	180	40
08.400A10S-C	8.4		10	80	95	139	123	138	180	40
08.500A10S-C	8.5		10	80	95	139	123	138	180	40
08.600A10S-C	8.6		10	80	95	139	123	138	180	40
08.700A10S-C	8.7		10	80	95	139	123	138	180	40
08.731A10S-C	8.731	11/32"	10	80	95	139	123	138	180	40
08.800A10S-C	8.8		10	80	95	139	123	138	180	40
08.900A10S-C	8.9		10	80	95	139	123	138	180	40
09.000A10S-C	9.0		10	80	95	139	123	138	180	40
09.100A10S-C	9.1		10	80	95	139	123	138	180	40
09.128A10S-C	9.128	23/64"	10	80	95	139	123	138	180	40



# Solid Carbide Twist Drill



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

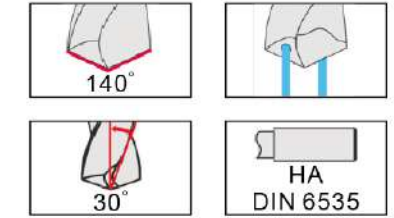
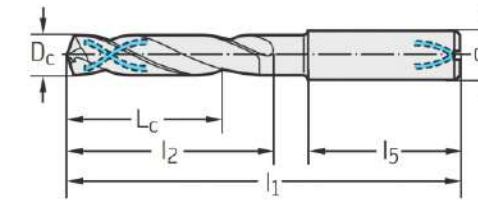


mm

Designation	Dc		d1	8 x D			12 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.- 09.200A10S-C	9.2		10	80	95	139	123	138	180	40
09.300A10S-C	9.3		10	80	95	139	123	138	180	40
09.400A10S-C	9.4		10	80	95	139	123	138	180	40
09.500A10S-C	9.5		10	80	95	139	123	138	180	40
09.525A10S-C	9.525	3/8"	10	80	95	139	123	138	180	40
09.600A10S-C	9.6		10	80	95	139	123	138	180	40
09.700A10S-C	9.7		10	80	95	139	123	138	180	40
09.800A10S-C	9.8		10	80	95	139	123	138	180	40
09.900A10S-C	9.9		10	80	95	139	123	138	180	40
09.922A10S-C	9.922	25/64"	10	80	95	139	123	138	180	40
10.000A10S-C	10.0		10	80	95	139	123	138	180	40
10.100A12S-C	10.1		12	96	114	163	140	158	206	45
10.200A12S-C	10.2		12	96	114	163	140	158	206	45
10.300A12S-C	10.3		12	96	114	163	140	158	206	45
10.319A12S-C	10.319	13/32"	12	96	114	163	140	158	206	45
10.400A12S-C	10.4		12	96	114	163	140	158	206	45
10.500A12S-C	10.5		12	96	114	163	140	158	206	45
10.600A12S-C	10.6		12	96	114	163	140	158	206	45
10.700A12S-C	10.7		12	96	114	163	140	158	206	45
10.716A12S-C	10.716	27/64"	12	96	114	163	140	158	206	45
10.800A12S-C	10.8		12	96	114	163	140	158	206	45
10.900A12S-C	10.9		12	96	114	163	140	158	206	45
11.000A12S-C	11.0		12	96	114	163	140	158	206	45
11.100A12S-C	11.1		12	96	114	163	140	158	206	45
11.113A12S-C	11.113	7/16"	12	96	114	163	140	158	206	45
11.200A12S-C	11.2		12	96	114	163	140	158	206	45



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation

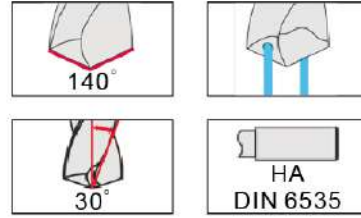
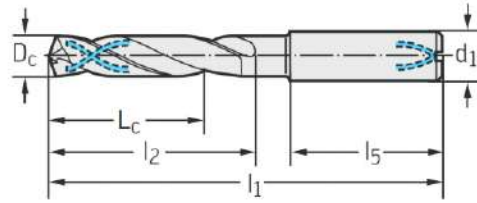


mm

Designation	Dc		d1	8 x D			12 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
DC1.- 11.300A12S-C	11.3		12	96	114	163	140	158	206	45
11.400A12S-C	11.4		12	96	114	163	140	158	206	45
11.500A12S-C	11.5		12	96	114	163	140	158	206	45
11.509A12S-C	11.509	29/64"	12	96	114	163	140	158	206	45
11.600A12S-C	11.6		12	96	114	163	140	158	206	45
11.700A12S-C	11.7		12	96	114	163	140	158	206	45
11.800A12S-C	11.8		12	96	114	163	140	158	206	45
11.900A12S-C	11.9		12	96	114	163	140	158	206	45
11.906A12S-C	11.906	15/32"	12	96	114	163	140	158	206	45
12.000A12S-C	12.0		12	96	114	163	140	158	206	45
12.100A14S-C	12.1		14	119	133	182	168	182	230	45
12.200A14S-C	12.2		14	119	133	182	168	182	230	45
12.303A14S-C	12.303	31/64"	14	119	133	182	168	182	230	45
12.250A14S-C	12.25		14	119	133	182	168	182	230	45
12.500A14S-C	12.5		14	119	133	182	168	182	230	45
12.600A14S-C	12.6		14	119	133	182	168	182	230	45
12.700A14S-C	12.7		14	119	133	182	168	182	230	45
13.000A14S-C	13.0		14	119	133	182	168	182	230	45
13.494A14S-C	13.494	17/32"	14	119	133	182	168	182	230	45
13.500A14S-C	13.5		14	119	133	182	168	182	230	45
14.000A14S-C	14.0		14	119	133	182	168	182	230	45
14.288A16S-C	14.288	9/16"	14	136	133	204	192	208	260	48
14.500A16S-C	14.5		14	136	133	204	192	208	260	48
15.000A16S-C	15.0		14	136	133	204	192	208	260	48
15.500A16S-C	15.5		14	136	133	204	192	208	260	48
15.875A16S-C	15.875	5/8"	14	136	133	204	192	208	260	48



- Manufacturing standard: DIN 6537
- Chisel edge grinding: TOOTOOL standard
- Tolerance of cutting edge diameter: m7
- Chip evacuation flute special designed, easy evacuation



mm

Designation	Dc		d1	8 x D			12 x D			l5
	mm	inch		Lc	l2	l1	Lc	l2	l1	
<b>DCL..-</b> 16.000A16S-C	16.0		16	136	152	204	192	208	260	48
16.500A18S-C	16.5		18	153	171	223	216	234	285	48
17.000A18S-C	17.0		18	153	171	223	216	234	285	48
17.500A18S-C	17.5		18	153	171	223	216	234	285	48
18.000A18S-C	18.0		18	153	171	223	216	234	285	48
18.500A20S-C	18.5		20	170	171	244	238	258	310	50
19.000A20S-C	19.0		20	170	190	244	238	258	310	50
19.050A20S-C	19.05	¾"	20	170	190	244	238	258	310	50
19.500A20S-C	19.5		20	170	190	244	238	258	310	50
20.000A20S-C	20.0		20	170	190	244	238	258	310	50