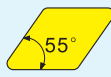
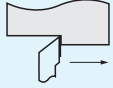
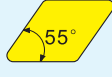
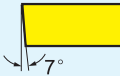
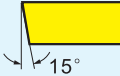
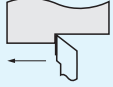
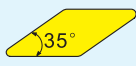
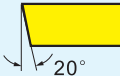
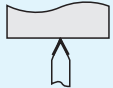
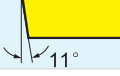
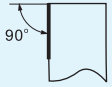
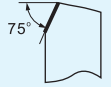
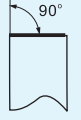
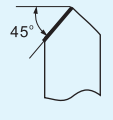
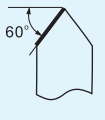
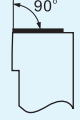
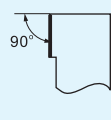
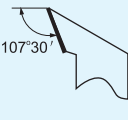
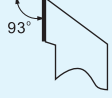
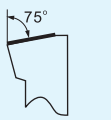
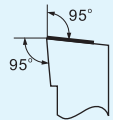
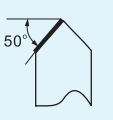
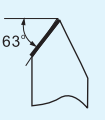
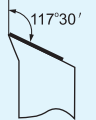
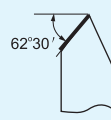
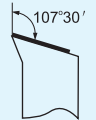
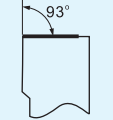
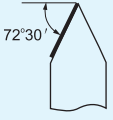
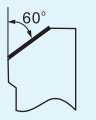


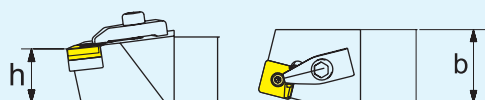
External turning toolholders code key

Insert mounting method	Insert shape		Insert clearance angle	Cutting direction
 D-Double clamping	 C	 D	 B	 L-Left hand
 P-Lever Clamp	 K	 R	 C	
 M-Multi Clamp	 S	 T	 D	 R-Right hand
 S-Screw Clamp	 V	 W	 E	
 C-Top Clamp			 N	 N-Neutral
			 P	

M C L N R

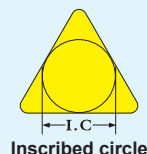
Tool holder style							
A	B	C	D	E	F	G	H
							
J	K	L	M	N	O	P	Q
							
R	S	T	U	V	W	X	
							

Tool holder height and width



NO.	b	h	NO.	b	h
05	0.3125	0.3125	24	1.50	1.50
06	0.375	0.375	32	2.00	2.00
08	0.50	0.50	64	0.75	1.00
10	0.625	0.625	66	0.75	1.50
12	0.75	0.75	85	1.00	1.25
16	1.00	1.00	86	1.00	1.50
20	1.25	1.25	91	1.25	1.50

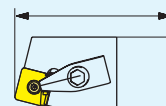
Insert I.C size



Inscribed circle

2 = 0.250"
 3 = 0.375"
 4 = 0.500"
 5 = 0.625"
 6 = 0.750"
 7 = 0.875"
 8 = 1.000"

Tool Length



A = 4"
 B = 4.5"
 C = 5"
 D = 6"
 E = 7"
 F = 8"
 *J = 3.5"
 *K = 2.75"
 *L = 2.36"
 *ZCC-CT standard only

16 - 4 D

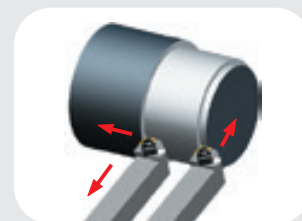
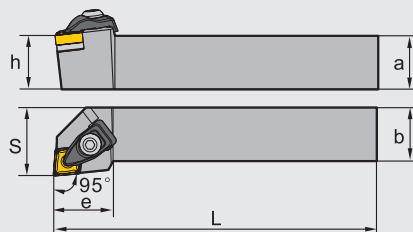


Applicable toolholders to CN□□

D-type clamping

DCLNR/L

95°



Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Shim screw	Spring
	a	b	L	h	s	e	 A30-35,A82-83						
DCLNR/L 10-3A	0.625	0.625	4.00	0.625	0.75	0.945							
DCLNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	0.945	CN□□32□□	CM5×22C	C09BM	WH30L	C1RA	SM5×8.65XA1	SPR6
DCLNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	0.945							
DCLNR/L 12-4C	0.75	0.75	5.00	0.75	1.00	1.102							
DCLNR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.102	CN□□43□□	CM6×25C	C12BM	WH40L	C2RA	SM6×10XA1	SPR4
DCLNR/L 85-4E	1.25	1.00	7.00	1.25	1.25	1.102							

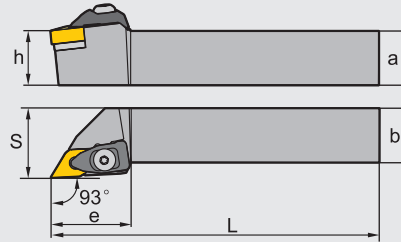


Applicable toolholders to DN ☐ ☐

D-type clamping

DDJNR/L

93°



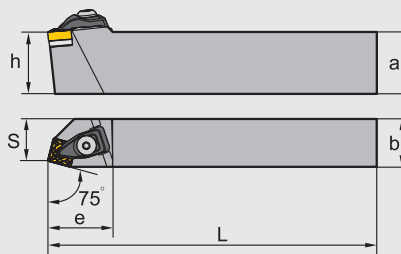
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Shim screw	Spring
	a	b	L	h	s	e							
DDJNR/L 10-3A	0.625	0.625	4.00	0.625	0.75	1.180	 A33-41, A84-86 DN ☐ ☐ 33 ☐ ☐	CM5×22C	D11BM	WH30L	C1RA	SM5×8.65XA1	SPR6
DDJNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.180							
DDJNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.180							
DDJNR/L 85-3E	1.25	1.00	7.00	1.25	1.25	1.180							
DDJNR/L 12-4C	0.75	0.75	5.00	0.75	1.00	1.378	 DN ☐ ☐ 44 ☐ ☐	CM6×25C	D15BM	WH40L	C2RA	SM6×10XA1	SPR4
DDJNR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.378							
DDJNR/L 16-4D-3	1.00	1.00	6.00	1.00	1.25	1.378							
DDJNR/L 20-4E	1.25	1.25	7.00	1.25	1.57	1.378							
DDJNR/L 20-4E-3	1.25	1.25	7.00	1.25	1.57	1.378	DN ☐ ☐ 43 ☐ ☐						

Applicable toolholders to SN ☐ ☐

D-type clamping

DSBNR/L

75°



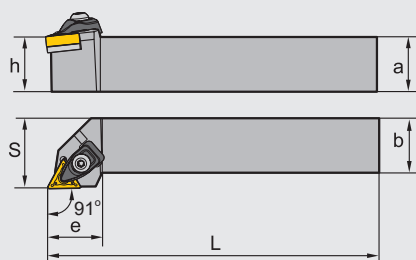
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Shim screw	Spring
	a	b	L	h	s	e							
DSBNR/L 10-3A	0.625	0.625	4.00	0.625	0.512	1.024	 A42-47, A87-89 SN ☐ ☐ 32 ☐ ☐	CM5×22C	S09BM	WH30L	C1RA	SM5×8.65XA1	SPR6
DSBNR/L 12-4C	0.75	0.75	5.00	0.75	0.669	1.339							
DSBNR/L 16-4D	1.00	1.00	6.00	1.00	0.866	1.339							
DSBNR/L 85-4E	1.25	1.00	7.00	1.25	0.866	1.339							
DSBNR/L 20-5E	1.25	1.25	7.00	1.25	1.063	1.614	SN ☐ ☐ 54 ☐ ☐	CM6×25C	S15BM	WH40L	C3RA	SM6×10XA2	SPR4

Applicable toolholders to **TN** □ □

D-type clamping

DTGNR/L

91°



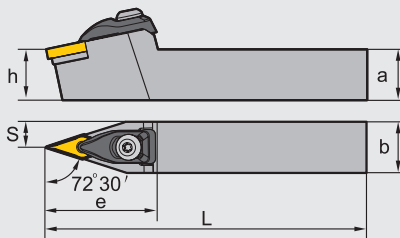
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Shim screw	Spring
	a	b	L	h	s	e							
DTGNR/L 10-3A	0.625	0.625	4.00	0.625	0.75	1.00	 A48-50, A90-91						
DTGNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.00	TN □ □ 33 □ □	CM5×22C	T16BM	WH30L	C1RA	SM5×8.65XA1	SPR6
DTGNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.00							

Applicable toolholders to **VN** □ □

D-type clamping

DVVNN

72°30'



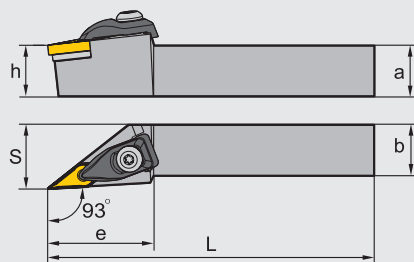
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Shim screw	Spring
	a	b	L	h	s	e							
DVVNN 12-3C	0.75	0.75	5.00	0.75	0.394	1.732	 A51-52, A92-93						
DVVNN 16-3D	1.00	1.00	6.00	1.00	0.492	1.732	VN □ □ 33 □ □	CM5×22C	V16BM	WH30L	C6RA	SM5×8.65XA1	SPR6

Applicable toolholders to VN□□

D-type clamping

DVJNR/L

93°



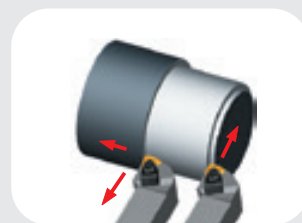
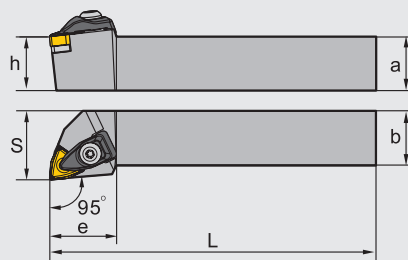
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Shim screw	Spring
	a	b	L	h	s	e	 A51-52, A92-93						
DVJNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.614	VN □ □ 33 □ □	CM5 ×22C	V16BM	WH30L	C6RA	SM5×8.65XA1	SPR6
DVJNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.614							

Applicable toolholders to WN□□

D-type clamping

DWLNR/L

95°



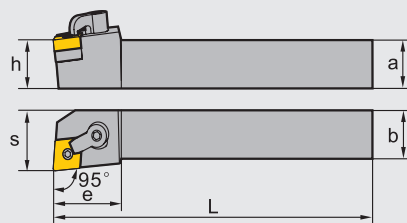
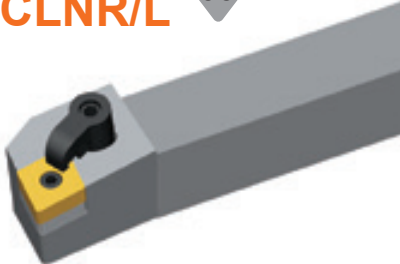
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Shim screw	Spring
	a	b	L	h	s	e	 A53-56, A94-95						
DWLNR/L 10-3A	0.625	0.625	4.00	0.625	0.75	0.945	WN □ □ 33 □ □	CM5×22C	W06BM	WH30L	C1RA	SM5×8.65XA1	SPR6
DWLNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	0.945							
DWLNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	0.945							
DWLNR/L 12-4C	0.75	0.75	5.00	0.75	1.00	1.220	WN □ □ 43 □ □	CM6×25C	W08BM	WH40L	C2RA	SM6×10XA1	SPR4
DWLNR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.220							
DWLNR/L 85-4E	1.25	1.00	7.00	1.25	1.25	1.220							

Applicable toolholders to CN□□

M-Multi clamp

MCLNR/L

95°



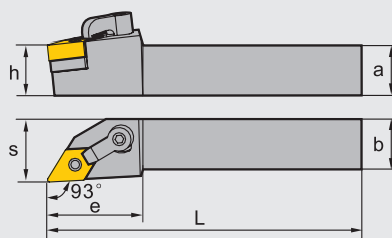
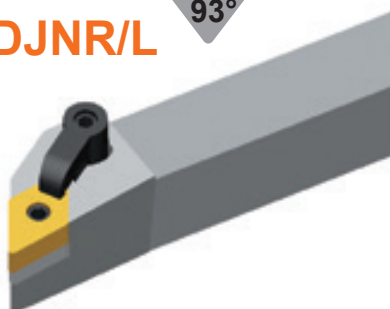
Type	Dimension(inch)						Applicable inserts  A30-35, A82-83	Clamping screw 	Shim 	Wrench 	Clamp 	Clamping stud 
	a	b	L	h	s	e						
MCLNR/L 12-4C	0.75	0.75	5.00	0.75	1.00	1.25	CN□□43□□	DM6×25	C12BM	WH30L	C1RD	TM6×17
MCLNR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.25		DM6×30				
MCLNR/L 85-4E	1.25	1.00	7.00	1.25	1.25	1.25	CN□□54□□	DM6×30	C16BM	WH30L	C2RD	TM8×21
MCLNR/L 16-5D	1.00	1.00	6.00	1.00	1.25	1.50						
MCLNR/L 20-5E	1.25	1.25	7.00	1.25	1.57	1.50	CN□□64□□	DM8×30X	C19BM	WH40L	C5RD	TM10×21
MCLNR/L 20-6E	1.25	1.25	7.00	1.25	1.57	1.77						
MCLNR/L 24-6F	1.50	1.50	8.00	1.50	2.00	1.77						

Applicable toolholders to DN□□

M-Multi clamp

MDJNR/L

93°



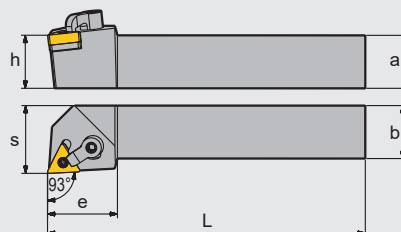
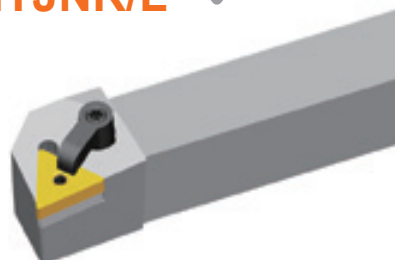
Type	Dimension(inch)						Applicable inserts  A36-41, A84-86	Clamping screw 	Shim 	Wrench 	Clamp 	Clamping stud 
	a	b	L	h	s	e						
MDJNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.25	DN□□33□□	DM6×25	D11BM	WH20L WH30L	C1RD	TM5×13
MDJNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.25		DM6×30				
MDJNR/L 85-3E	1.25	1.00	7.00	1.25	1.25	1.25	DN□□44□□	DM6×25	D15BM	WH30L	C2RD	TM6×19
MDJNR/L 12-4C	0.75	0.75	5.00	0.75	1.00	1.50		DM6×30				
MDJNR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.50	DN□□43□□	DM6×25	D15BM	WH30L	C2RD	TM6×19
MDJNR/L 85-4E	1.25	1.00	7.00	1.25	1.25	1.50		DM6×30				
MDJNR/L 12-4C-3	0.75	0.75	5.00	0.75	1.00	1.50	DN□□43□□	DM6×25	D15BM	WH30L	C2RD	TM6×19
MDJNR/L 16-4D-3	1.00	1.00	6.00	1.00	1.25	1.50		DM6×30				
MDJNR/L 85-4E-3	1.25	1.00	7.00	1.25	1.25	1.50						

Applicable toolholders to TN□□

M-Multi clamp

MTJNR/L

93°



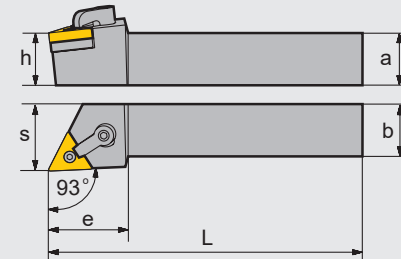
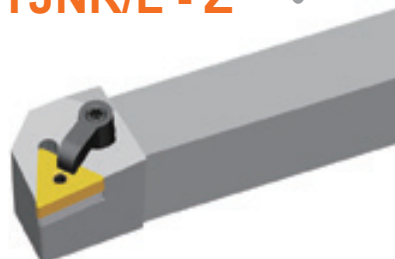
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Clamping stud
	a	b	L	h	s	e						
MTJNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.25	 A48-50, A90-91	DM6×25	 T16BM	 WH20L WH30L	 C1RD	 TM5×13
MTJNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.25		DM6×30				
MTJNR/L 85-3E	1.25	1.00	7.00	1.25	1.25	1.25		DM6×30				
MTJNR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.42	 TN □□ 43 □□	DM6×30	 T22BM	 WH30L	 C2RD	 TM6×17
MTJNR/L 85-4E	1.25	1.00	7.00	1.25	1.25	1.42		DM6×30				

Applicable toolholders to TN□□

M-Multi clamp

MTJNR/L - Z

93°



Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Clamping stud
	a	b	L	h	s	e						
MTJNR/L 12-3C-Z	0.75	0.75	5.00	0.75	1.00	1.25	 A48-50, A90-91	DM6×25	 T16BM	 WH20L WH30L	 C1RD	 TM5×13
MTJNR/L 16-3D-Z	1.00	1.00	6.00	1.00	1.25	1.25		DM6×30				
MTJNR/L 85-3E-Z	1.25	1.00	7.00	1.25	1.25	1.25		DM6×30				
MTJNR/L 16-4D-Z	1.00	1.00	6.00	1.00	1.25	1.42	 TN □□ 43 □□	DM6×30	 T22BM	 WH30L	 C2RD	 TM6×17
MTJNR/L 85-4E-Z	1.25	1.00	7.00	1.25	1.25	1.42		DM6×30				

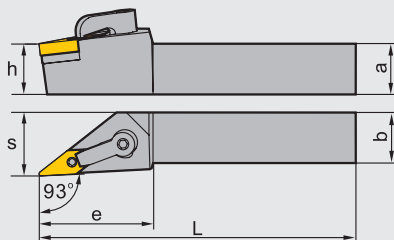


Applicable toolholders to VN □ □

M-Multi clamp

MVJNR/L

93°



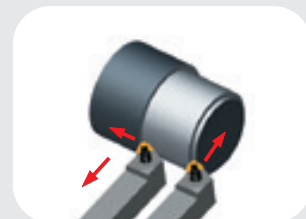
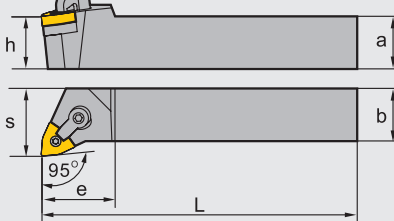
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Clamping stud
	a	b	L	h	s	e	 A51-52, A92-93					
MVJNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.77	VN □□ 33 □□	DM6×25	V16BM	WH20L WH30L	C3RD	TM5×13
MVJNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.77						
MVJNR/L 85-3E	1.25	1.00	7.00	1.25	1.25	1.77						
MVJNR/L 20-3E	1.25	1.25	7.00	1.25	1.57	1.77						

Applicable toolholders to WN □ □

M-Multi clamp

MWLNR/L

95°



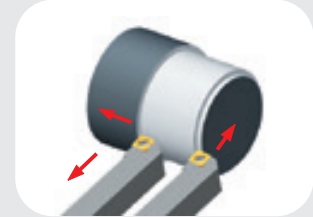
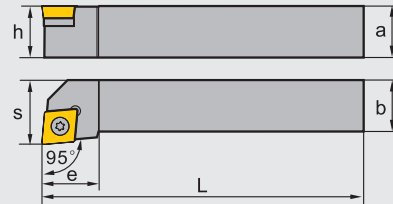
Type	Dimension(inch)						Applicable inserts	Clamping screw	Shim	Wrench	Clamp	Clamping stud
	a	b	L	h	s	e	 A53-56,A94-95					
MWLNR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.18	WN □□ 33 □□	DM6×25	W06BM	WH20L	C1RD	TM5×13
MWLNR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.18		DM6×30				
MWLNR/L 12-4C	0.75	0.75	5.00	0.75	1.00	1.18	WN □□ 43 □□	DM6×25	W08BM	WH30L	C1RD	TM6×17
MWLNR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.38		DM6×30				
MWLNR/L 85-4E	1.25	1.00	7.00	1.25	1.25	1.38						
MWLNR/L 20-4E	1.25	1.25	7.00	1.25	1.50	1.38						

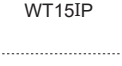
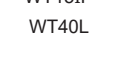
Applicable toolholders to CC□□

S-Screw clamp

SCLCR/L

95°



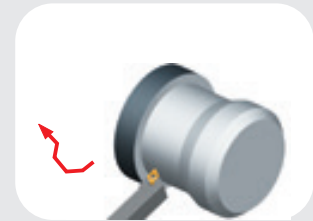
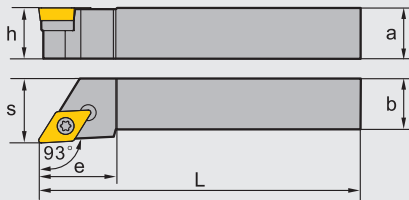
Type	Dimension(inch)						Applicable inserts	Screw	Shim	Shim screw	Shim Wrench
	a	b	L	h	s	e					
SCLCR/L 05-2L	0.3125	0.3125	2.36	0.3125	0.39	0.39	 A57-59, A96, A108				
SCLCR/L 06-2K	0.375	0.375	2.75	0.375	0.47	0.39					
SCLCR/L 08-3J	0.50	0.50	3.50	0.50	0.63	0.63	 CC □ □ 3(2.5) □ □				
SCLCR/L 10-3A	0.625	0.625	4.00	0.625	0.79	0.63					
SCLCR/L 12-4C	0.75	0.75	5.00	0.75	1.00	1.00	 CC □ □ 43 □ □				
SCLCR/L 16-4D	1.00	1.00	6.00	1.00	1.25	1.02					
SCLCR/L 85-4E	1.25	1.00	7.00	1.25	1.25	1.02					

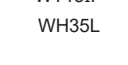
Applicable toolholders to DC□□

S-Screw clamp

SDJCR/L

93°



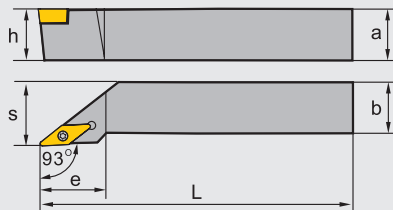
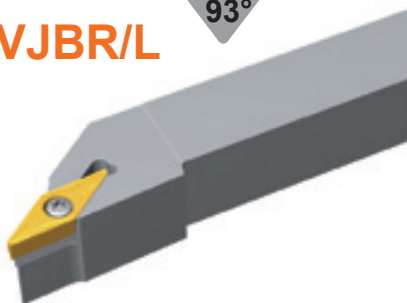
Type	Dimension(inch)						Applicable inserts	Screw	Shim	Shim screw	Wrench
	a	b	L	h	s	e					
SDJCR/L06-2K	0.375	0.375	2.75	0.375	0.47	0.60	 A60-62, A97, A109				
SDJCR/L08-2J	0.50	0.50	3.50	0.50	0.63	0.60					
SDJCR/L10-2A	0.625	0.625	4.00	0.625	0.79	0.71	 DC □ □ 3(2.5) □ □				
SDJCR/L10-3A	0.625	0.625	4.00	0.625	0.79	0.95					
SDJCR/L12-3C	0.75	0.75	5.00	0.75	1.00	0.95					
SDJCR/L16-3D	1.00	1.00	6.00	1.00	1.25	1.14					
SDJCR/L85-3E	1.25	1.00	7.00	1.25	1.25	1.44					

Applicable toolholders to VB□□

S-Screw clamp

SVJBR/L

93°



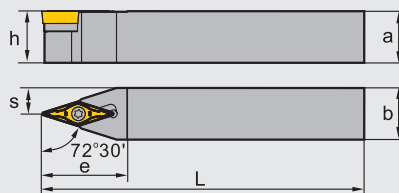
Type	Dimension(inch)						Applicable inserts	Screw	Shim	Shim screw	Wrench
	a	b	L	h	s	e	 A70-71, A99, A111				
SVJBR/L 08-2J	0.50	0.50	3.50	0.50	0.63	1.06	VB□□2(1.5)□□	I60M2.5×6.5	--	--	WT07IP
SVJBR/L 10-2A	0.625	0.625	4.00	0.625	0.79	1.06					
SVJBR/L 12-2C	0.75	0.75	5.00	0.75	1.00	1.06					
SVJBR/L 16-2D	1.00	1.00	6.00	1.00	1.25	1.06					
SVJBR/L 10-3A	0.625	0.625	4.00	0.625	0.79	1.42	VB□□33□□	I60M3.5×12	V16BS	SM5×8.65XA	WT15IP WH35L
SVJBR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.61					
SVJBR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.61					
SVJBR/L 85-3E	1.25	1.00	7.00	1.25	1.25	1.61					

Applicable toolholders to VB□□

S-Screw clamp

SVVBN

72°30'



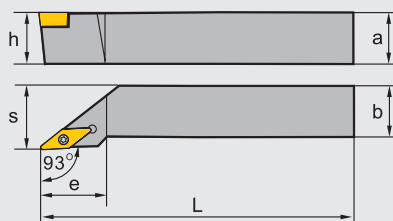
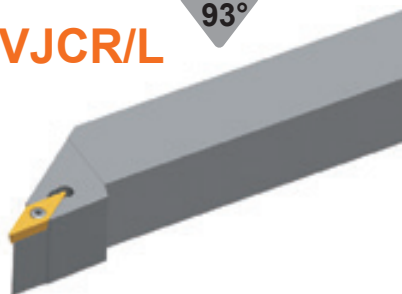
Type	Dimension(inch)						Applicable inserts	Screw	Shim	Shim crew	Wrench
	a	b	L	h	s	e	 A70-71, A99, A111				
SVVBN 08-2J	0.50	0.50	3.50	0.50	0.24	1.06	VB□□2(1.5)□□	I60M2.5×6.5	--	--	WT07IP
SVVBN 10-2A	0.625	0.625	4.00	0.625	0.31	1.06					
SVVBN 12-2C	0.75	0.75	5.00	0.75	0.39	1.18					
SVVBN 10-3A	0.625	0.625	4.00	0.625	0.31	1.30					
SVVBN 12-3C	0.75	0.75	5.00	0.75	0.39	1.30	VB□□33□□	I60M3.5×12	V16BS	SM5×8.65XA	WT15IP WH35L
SVVBN 16-3D	1.00	1.00	6.00	1.00	0.49	1.50					

Applicable toolholders to VC□□

S-Screw clamp

SVJCR/L

93°



Type	Dimension(inch)						Applicable inserts	Screw	Shim	Shim screw	Wrench
	a	b	L	h	s	e	 A68-69,A100,A112				
SVJCR/L 06-2L	0.375	0.375	2.36	0.375	0.47	0.87	VC□□22□□	I60M2.5×6.5	--	--	WT07IP
SVJCR/L 08-2J	0.50	0.50	3.50	0.50	0.63	1.06					
SVJCR/L 10-2A	0.625	0.625	4.00	0.625	0.79	1.06					
SVJCR/L 12-2C	0.75	0.75	5.00	0.75	1.00	1.06					
SVJCR/L 16-2D	1.00	1.00	6.00	1.00	1.25	1.06	VC□□33□□	I60M3.5×12	V16BS	SM5×8.65XA	WT15IP WH35L
SVJCR/L 10-3A	0.625	0.625	4.00	0.625	0.79	1.42					
SVJCR/L 12-3C	0.75	0.75	5.00	0.75	1.00	1.61					
SVJCR/L 16-3D	1.00	1.00	6.00	1.00	1.25	1.61					
SVJCR/L 85-3E	1.25	1.00	7.00	1.25	1.25	1.61					

Applicable toolholders to TC□□

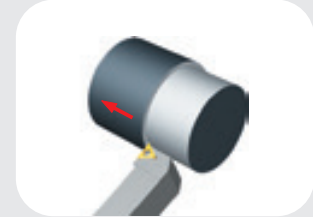
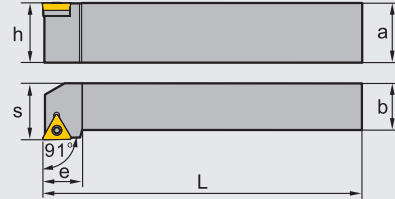
S-Screw clamp

STGCR/L

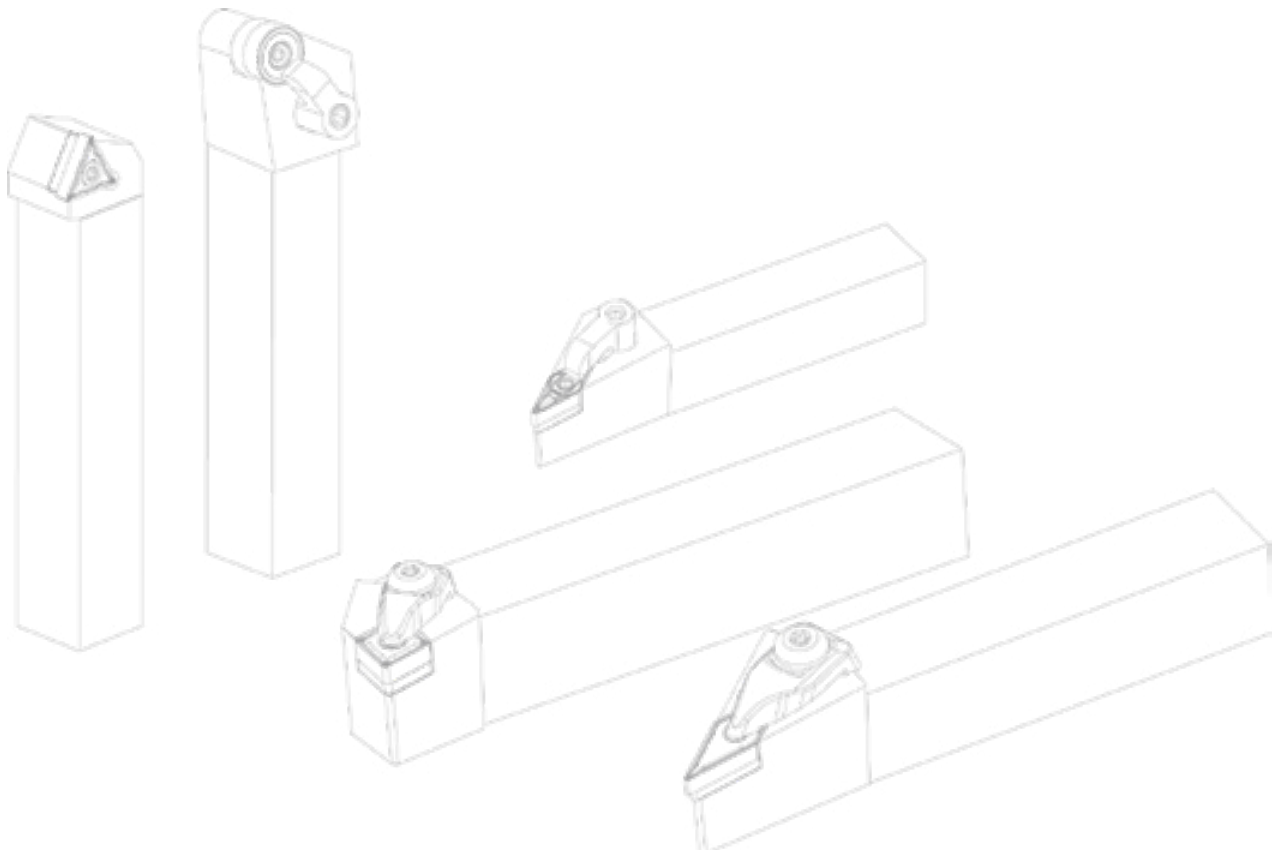
91°



R-type shown



Type	Dimension(inch)						Applicable inserts	Screw	Shim	Shim screw	Wrench
	a	b	L	h	s	e	 A65-67, A98, A110				
STGCR/L 05-1.8L	0.3125	0.3125	2.36	0.3125	0.39	0.43	TC□□1.8(1.5)□□	I60M2.2×5.5	--	--	WT06IP
STGCR/L 06-1.8L	0.375	0.375	2.36	0.375	0.47	0.43	TC□□1.8(1.5)□□	I60M2.2×5.5	--	--	WT06IP
STGCR/L 08-2J	0.50	0.50	3.50	0.50	0.63	0.55	TC□□2(1.5)□□	I60M2.5×6.5	--	--	WT07IP
STGCR/L 10-2A	0.625	0.625	4.00	0.625	0.79	0.63	TC□□2(1.5)□□	I60M2.5×6.5	--	--	WT07IP
STGCR/L 12-3C	0.75	0.75	5.00	0.75	1.00	0.83	TC□□3(2.5)□□	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP WH35L
STGCR/L 16-3D	1.00	1.00	6.00	1.00	1.25	0.83	TC□□3(2.5)□□	I60M3.5×12	T16BS	SM5×8.65XA	WT15IP WH35L



Internal turning tools



Boring Bars code key

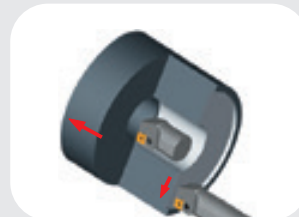
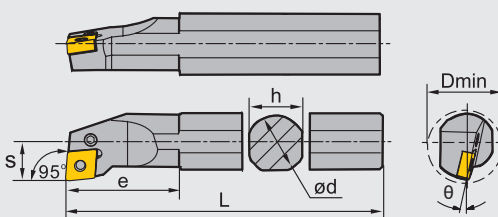
Boring bars type	Boring bars diameter	Boring bars length	Insert shape	
Steel with cooling hole A	 Round shanks: shown in 1/16" increments	 H = 4" J = 4-1/2" K = 5" M = 6" Q = 7" R = 8" S = 10" T = 12" U = 14" V = 16" Y = 20"	 C	 D
Carbide C	04 = 0.250" 05 = 0.3125" 06 = 0.375" 08 = 0.500" 10 = 0.625" 12 = 0.750" 16 = 1.000" 20 = 1.250" 24 = 1.500" 32 = 2.000" 40 = 2.500"		 K	 R
Carbide with cooling hole E			 S	 T
Steel S			 V	 W

S 16 T - S C L C R - 3

Insert mounting method	Boring bars style	Insert clearance angle	Cutting direction	Insert I.C size
 P-Lever Clamp	 K	 B	 L-Left hand	 Number of 1/8" of inscribed circle
 M-multi Clamp	 F	 C		2 = 0.250" 3 = 0.375" 4 = 0.500" 5 = 0.625" 6 = 0.750" 7 = 0.875" 8 = 1.000"
 S-Screw Clamp	 U	 D		
 C-Top Clamp	 L	 E	 R-Right hand	
	 Q	 N		
		 P		

Applicable Boring bars to **CN**□□**PCLNR/L**

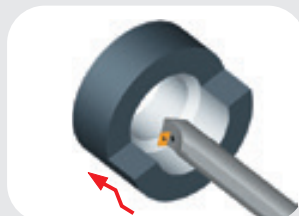
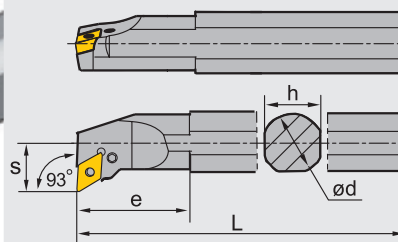
95°



Type	Dimension(inch)							Applicable inserts	Screw	Wrench	Lever	Shim	Shim pin
	Dmin	ød	h	L	S	θ	e						
S16Q-PCLNR/L-3	1.26	1.00	0.906	7	0.669	-10°	1.378	 A30-35, A82-83	 LEM5×9B	 WH20L	 L3C	 --	 --
S16T-PCLNR/L-3	1.26	1.00	0.906	12	0.669	-10°	1.378						
S16Q-PCLNR/L-4	1.26	1.00	0.906	7	0.669	-12°	1.575	 CN□□43□□	 LEM6×13.4A	 WH25L	 L4A	 --	 --
S16T-PCLNR/L-4	1.26	1.00	0.906	12	0.669	-12°	1.575						

Applicable Boring bars to **DN**□□**PDUNR/L**

93°

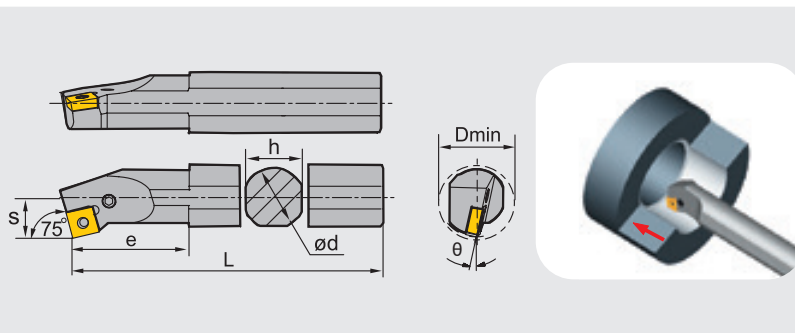


Type	Dimension(inch)							Applicable inserts	Screw	Wrench	Lever	Shim	Shim pin
	Dmin	ød	h	L	S	θ	e						
S16Q-PDUNR/L-3	1.26	1.00	0.906	7	0.669	-13°	1.378	 A36-41, A84-86	 LEM5×12B	 WH20L	 L3D	 --	 --
S16T-PDUNR/L-3	1.26	1.00	0.906	12	0.669	-13°	1.378						

Applicable toolholders to SN□□

PSKNR/L

75°

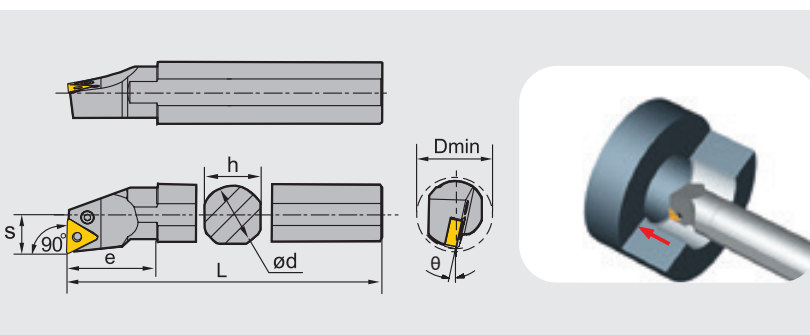


Type	Dimension(inch)							Applicable inserts	Screw	Wrench	Lever	Shim	Shim pin
	Dmin	ød	h	L	S	θ	e	 A42-47, A87-89					
S16Q-PSKNR/L-4	1.26	1.00	0.906	7	0.669	-12°	1.654	SN□□43□□	LEM6×13.4A	WH25L	L4A	--	--
S16T-PSKNR/L-4	1.26	1.00	0.906	12	0.669	-12°	1.654						
A16R-PSKNR/L-4	1.26	1.00	0.945	8	0.669	-12°	1.654						

Applicable Boring bars to TN□□

PTFNR/L

90°

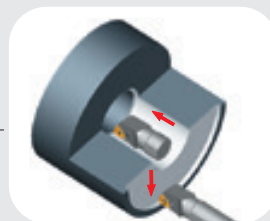
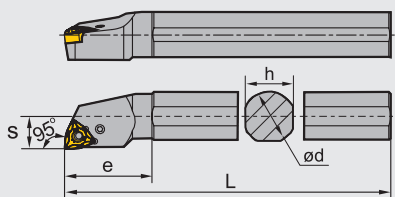


Type	Dimension(inch)							Applicable inserts	Screw	Wrench	Lever	Shim	Shim pin
	Dmin	ød	h	L	S	θ	e	 A48-50, A90-91					
S16Q-PTFNR/L-2	1.26	1.00	0.906	7	0.669	-10°	1.378	TN□□22□□	LEM5×9B	WH20L	L2	--	--
S16T-PTFNR/L-2	1.26	1.00	0.906	12	0.669	-10°	1.378						
S16Q-PTFNR/L-3	1.26	1.00	0.906	7	0.669	-12°	1.654	TN□□33□□	LEM5×12B	WH20L	L3B	--	--
S16T-PTFNR/L-3	1.26	1.00	0.906	12	0.669	-12°	1.654						

Applicable toolholders to WN□□

PWLNR/L

95°

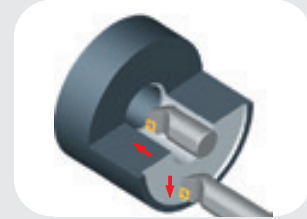
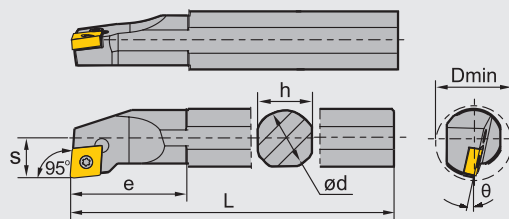


Type	Dimension(inch)							Applicable inserts	Screw	Wrench	Lever	Shim	Shim pin
	Dmin	ød	h	L	S	θ	e						
								 A53-56, A94-95					
S16Q-PWLNR/L-3	1.26	1.00	0.906	7	0.669	-13°	1.378	WN□□3(2.5)□□	LEM5×12B	WH20L	L3B	--	--
S16T-PWLNR/L-3	1.26	1.00	0.906	12	0.669	-13°	1.378	WN□□33□□					
S16Q-PWLNR/L-4	1.26	1.00	0.906	7	0.669	-13°	1.772	WN□□43□□	LEM6×13.4A	WH25L	L4A	--	--
S16T-PWLNR/L-4	1.26	1.00	0.906	12	0.669	-13°	1.772						

Applicable Boring bars to CC□□

SCLCR/L

95°

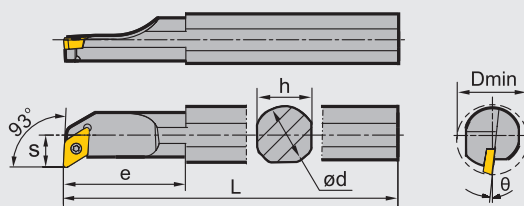


Type	Dimension(inch)							Applicable inserts  A57-59,A96,A108	Screw 	Wrench 	Shim 	Shim screw 
	Dmin	ød	h	L	S	θ	e					
S05K-SCLCR/L-2	0.394	0.3125	0.276	5	0.197	-15°	0.551	CC□T2(1.5)□	I60M2.5×5.5	WT07IP	--	--
S06M-SCLCR/L-2	0.472	0.375	0.354	6	0.236	-13°	0.551					
S08M-SCLCR/L-2	0.630	0.500	0.433	6	0.354	-10°	0.984					
S08M-SCLCR/L-3	0.630	0.500	0.433	6	0.354	-10°	0.984	CC□T3(2.5)□	I60M3.5×8	WT15IP	--	--
S10M-SCLCR/L-3	0.787	0.625	0.594	6	0.433	-12°	1.280					
S10R-SCLCR/L-3	0.787	0.625	0.591	8	0.433	-12°	1.280					
S12Q-SCLCR/L-3	0.787	0.750	0.709	7	0.512	-8°	1.496					
S12S-SCLCR/L-3	0.984	0.750	0.709	10	0.512	-8°	1.496	CC□T3(2.5)□	I60M3.5×10	WT15IP	--	--
S16Q-SCLCR/L-3	1.260	1.000	0.906	7	0.669	-6°	1.772					
S16T-SCLCR/L-3	1.260	1.000	0.906	12	0.669	-6°	1.772					
S16Q-SCLCR/L-4	1.260	1.000	0.921	7	0.669	-6°	1.772	CC□T43□	I60M4×11X	WT15IP	--	--
S16T-SCLCR/L-4	1.260	1.000	0.921	12	0.669	-6°	1.772					
S20R-SCLCR/L-4	1.575	1.250	1.171	8	0.866	-10°	1.969	CC□T43□	I60M4×11X	WH40L WT15IP	C12BS	SM6×10XA
S20U-SCLCR/L-4	1.575	1.250	1.171	14	0.866	-10°	1.969					
S24S-SCLCR/L-4	1.969	1.500	1.382	10	10.63	-8°	2.362					
S24V-SCLCR/L-4	1.969	1.500	1.382	16	1.063	-8°	2.362	CC□T2(1.5)□	I60M2.5×5.5	WT07IP	--	--
A05F-SCLCR/L-2	0.394	0.315	0.295	3.15	0.197	-15°	0.551					
A08K-SCLCR/L-3	0.630	0.500	0.453	5	0.354	-10°	0.984					

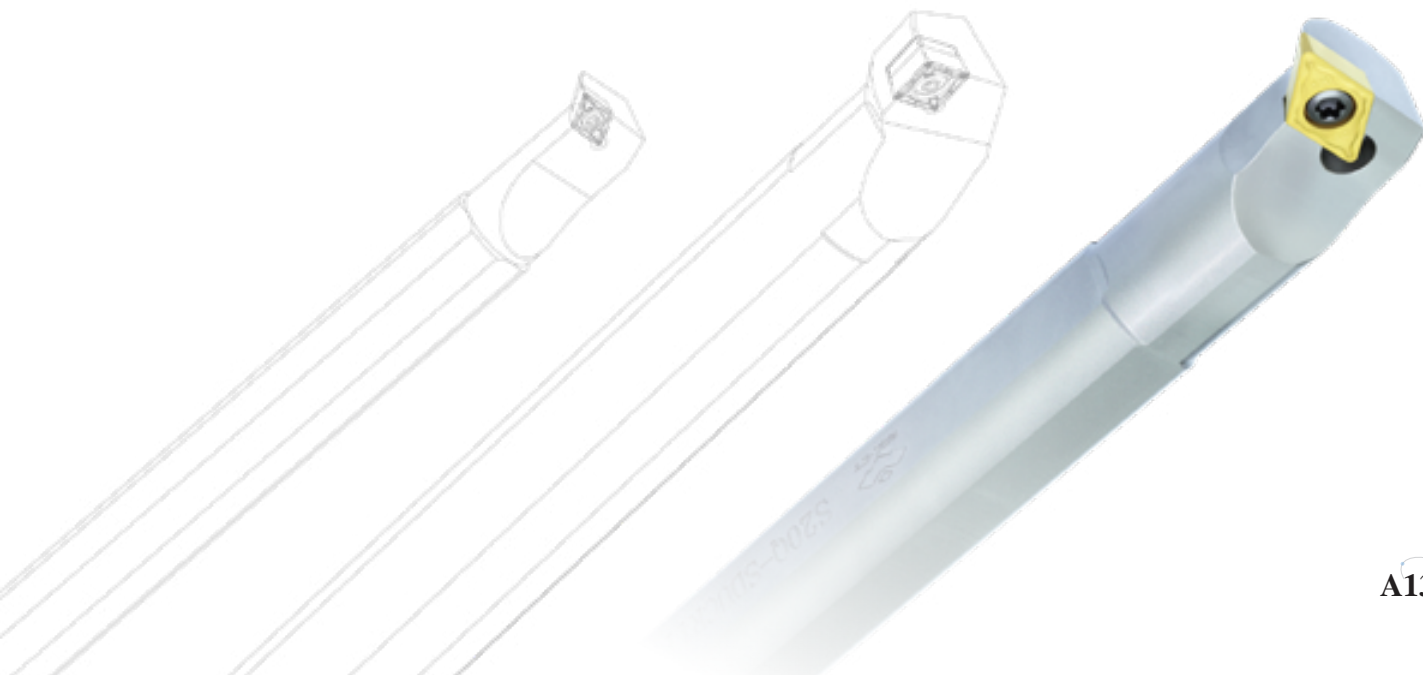
Applicable Boring bars to DC□□□

SDUCR/L

93°



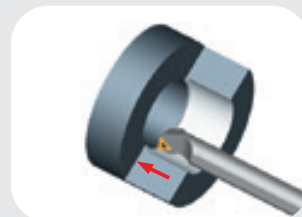
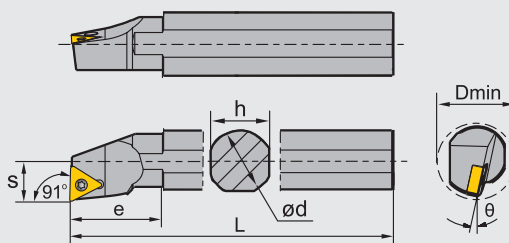
Type	Dimension(inch)							Applicable inserts	Screw	Wrench
	Dmin	ød	h	L	S	θ	e	 A60-62, A97, A109		
S06M-SDUCR/L-2	0.512	0.375	0.354	6	0.276	-8°	0	DC□T2(1.5)□	I60M2.5×5.5	WT07IP
S08M-SDUCR/L-2	0.630	0.500	0.433	6	0.354	-8°	0.866		I60M2.5×6.5	
S10M-SDUCR/L-2	0.787	0.625	0.591	6	0.433	-6°	1.063			
S10R-SDUCR/L-2	0.787	0.625	0.591	8	0.433	-6°	1.063			
S12Q-SDUCR/L-3	0.984	0.750	0.709	7	0.512	-6°	1.575	DC□T3(2.5)□	I60M3.5×8	WT15IP
S12S-SDUCR/L-3	0.984	0.750	0.709	10	0.512	-6°	1.575			
S16Q-SDUCR/L-3	1.260	1.000	0.906	7	0.669	-6°	1.811			
S16T-SDUCR/L-3	1.260	1.000	0.906	12	0.669	-6°	1.811		I60M3.5×10	



Applicable Boring bars to TC□□

STFCR/L

91°



Type	Dimension(inch)							Applicable inserts	Screw	Wrench	Shim	Shim screw
	Dmin	ød	h	L	S	θ	e	 A65-67, A98, A110				
S08M-STFCR/L-2	0.630	0.500	0.433	6	0.354	-10°	1.181	TC□T2(1.5)□	I60M2.5×6.5	WT07IP	--	--
S10M-STFCR/L-2	0.787	0.625	0.591	6	0.433	-6°	1.378					
S10R-STFCR/L-2	0.787	0.625	0.591	8	0.433	-6°	1.378					
S12Q-STFCR/L-2	0.984	0.750	0.709	7	0.512	-3°	1.417					
S12S-STFCR/L-2	0.984	0.750	0.709	10	0.512	-3°	1.417					
S16Q-STFCR/L-3	1.260	1.000	0.906	7	0.669	-6°	1.929	TC□T3(2.5)□	I60M3.5×10	WT15IP	--	--
S16T-STFCR/L-3	1.260	1.000	0.906	12	0.669	-6°	1.292					
S20R-STFCR/L-3	1.575	1.250	1.181	8	0.866	-10°	1.969		I60M3.5×12	WT15IP WH35L	T16BS	SM5×8.65XA
S20U-STFCR/L-3	1.575	1.250	1.181	14	0.866	-10°	1.969					
S24S-STFCR/L-3	1.969	1.500	1.3779	10	1.063	-8°	2.362					
S24V-STFCR/L-3	1.969	1.500	1.3779	16	1.063	-8°	2.362	TC□T2(1.5)□	I60M2.5×6.5	WT07IP	--	--
A08K-STFCR/L-2	0.630	0.500	0.453	5	0.354	-10°	1.024					
A10M-STFCR/L-2	0.787	0.625	0.610	6	0.433	-6°	1.181					
A12Q-STFCR/L-2	0.984	0.750	0.748	7	0.512	-3°	1.417					
A16R-STFCR/L-3	1.260	1.000	0.946	8	0.669	-6°	1.772		I60M3.5×10	WT15IP	--	--
A20S-STFCR/L-3	1.575	1.250	1.220	10	0.866	-10°	1.929	TC□T3(2.5)□				
									I60M3.5×12	WT15IP/WH35L	T16BS	SM5×8.65XA

Recommended cutting parameters for general turning

ISO	Materials		Hardness HB	CVD Coating						PVD Coating			Cermet	Coated cermet
				YBC103	YBC203	YBC152	YBC252	YBC351	YBC352	YBG102	YBG202	YBG205	YNG151	YNG151C
				Feed rate (inch/rev)										
				0.004-0.024	0.004-0.031	0.004-0.024	0.004-0.031	0.008-0.039	0.008-0.039	0.008-0.016	0.004-0.024	0.002-0.031	0.002-0.008	0.002-0.008
				Cutting speed (SFPM)										
P	Carbon steel	C=0.15%	125	1650-900	1600-800	1650-900	1600-800	1200-550	1400-700	1500-700	1200-600	1200-500	1800-1100	1900-1100
		C=0.35%	150	1500-800	1500-750	1500-800	1500-750	1000-500	1100-650	1400-700	1000-550	1000-550	1600-1000	1700-1000
		C=0.60%	200	1300-700	1300-650	1300-700	1300-650	850-400	1000-600	1200-600	850-500	900-550	1500-850	1600-850
	Alloy steel	Anneal	180	1300-600	1300-650	1300-600	1300-650	650-300	800-500	1200-600	650-400	700-450	1300-800	1400-800
		Hardened	275	900-500	850-450	900-500	850-450	450-230	650-400	800-400	450-300	500-300	1000-600	1000-600
		Hardened	300	850-500	800-400	850-500	800-400	400-200	600-350	700-300	400-260	450-300	800-560	900-550
		Hardened	350	750-400	700-400	750-400	700-400	350-200	500-300	650-300	360-240	400-260	800-500	800-500
	High alloy steel	Anneal	200	1200-600	1000-550	1200-600	1000-550	550-260	700-400	1000-500	600-300	600-300	1100-650	1200-650
		Hardened	325	600-400	500-300	600-400	500-300	300-130	450-300	400-260	300-200	300-200	550-360	600-360
	Cast steel	Non-Alloy	180	900-500	800-450	900-500	800-450	450-240	600-400	750-400	450-300	450-300	850-560	1000-550
		Low alloy	200	900-350	700-350	900-350	700-350	400-260	550-400	650-300	400-300	400-350	850-560	1000-550
		High alloy	225	700-350	600-300	700-350	600-300	300-180	500-350	550-260	300-180	300-200	850-300	900-300

ISO	Materials		Hardness HB	CVD Coating				PVD Coating			Cermet	Coated cermet
				YBM151	YBM153	YBM251	YBM253	YBM215	YBG202	YBG205	YNG151	YNG151C
				Feed rate (inch/rev)								
				0.008-0.024	0.008-0.024	0.008-0.024	0.008-0.024	0.008-0.016	0.004-0.016	0.008-0.016	0.004-0.012	0.004-0.012
				Cutting speed (SFPM)								
M	Stainless steel	Ferrite	180	900-600	900-600	800-450	850-450	1000-650	1000-600	1000-650	1100-700	1100-700
		Austenite	260	800-500	800-500	650-360	700-360	900-550	800-500	900-550	800-500	900-450
		Martensite	330	650-450	650-450	700-400	750-400	850-500	850-550	850-500	900-550	1000-500

Recommended cutting parameters for general turning

ISO	Materials		Hardness HB	CVD Coating					Cermet	Coated cermet
				YBD052	YBD151	YBD102	YBD152	YBD252	YNG151	YNG151C
				Feed rate(inch/rev)						
				0.004-0.016	0.004-0.024	0.004-0.016	0.004-0.020	0.004-0.031	0.004-0.016	0.004-0.016
				Cutting speed(SFPM)						
K	Malleable cast iron	Ferrite	130	1150-750	1000-700	1000-700	1050-350	800-550	1000-500	1000-600
		Pearlite	230	800-350	700-300	750-300	750-300	600-250	700-400	800-500
	Low cast iron		180	1700-650	1500-600	1500-650	1600-600	1250-500	1300-800	1400-900
	High cast iron		260	750-400	700-350	700-400	700-300	550-300	1200-800	1200-850
	Nodular Cast iron	Ferrite	160	1000-500	1000-450	1000-500	950-450	700-350	1100-600	1200-700
		Pearlite	250	750-350	700-300	700-350	700-300	550-300	1000-650	1100-700

ISO	Materials		Hardness HB	PVD Coating					Cemented carbide
				YBG102	YBG105	YBG202	YBS103	YBG212	YD101
				Feed rate (inch/rev)					
				0.002-0.006					
				Cutting speed (SFPM)					
N	Al alloy	No heat treatment	60						5700-2600
		Heat treatment	100						1700-800
	Cast aluminum alloy	No heat treatment	75						1500-600
		Heat treatment	90						1000-360
	Copper alloy	Lead alloy	110						2000-650
		Copper, pure copper	90						1000-650
		Copper, nonlead Copper, electrolytic copper	100						700-400
S	Ni-base alloy	Ni-base alloy	40	300-100	300-130	300-100	300-70	300-100	230-70

Frequent problems of turning and solutions

Common problem Solutions			Tool material		Cutting conditions				Tool shape							Machine clamping system			
			Harder materials	Tougher materials	Cutting speed	Feed rate	Cutting depth	Cutting liquid	Change chipbreaker of inserts	Rake face	Nose radius	Approach angle	Cutting edge strength	Increase precision of inserts	Increase rigidity of tool holder	Clamping of toolholder and workpiece	Overhang of toolholder	Power, gap	
Over abrasion on nose	Bad precision during machining	Abrasion intensified on flank	✓								↑								
		Unsuitable cutting conditions			↓	↑													
Surface precision deterioration	Bad surface quality	Abrasion intensified and cutting edge not sharp enough	✓		↓			✓		↑	↑		↓	✓			✓	✓	
		Breakage		✓		↓	↓		✓		↑		↑			✓	✓	✓	
		Unsuitable geometrical shape of cutting edge							✓		↑		↓	✓					
		Unsuitable cutting conditions			↑	↓	↓	✓											
		Shake and vibration		✓	↓	↓	↓	✓	✓	↑	↓	↑	↓		✓	✓	✓	✓	
		Built-up edge			↑	↑		✓	✓	↑			↓	✓					
Radiation	Effect of cutting heat	Unsuitable cutting conditions			↓	↓	↓												
		Unsuitable geometrical shape of cutting edge	✓						✓	↑			↓						
Bad precision of dimensions	Dimensions fluctuate during cutting	Unsuitable inserts precision											✓						
		Location removed of workpiece or tools							✓	↑	↓	↑			✓	✓	✓	✓	
Breakage	Abrasion intensified on flank and rake face	Abrasion on clearance face	✓		↓				✓	↑	↑		↓						
		Abrasion on rake face	✓		↓	↓	↓		✓	↑		↓							
	Light breakage	Shake and impact		✓		↓	↓		✓			↓	↑		✓	✓	✓	✓	
	Built-up edge	Unsuitable workpiece hardness for cutting conditions			↑	↑		✓	✓	↑			↓	✓					
	Thermal cracking	Hardness of workpiece material and tool material unsuitable for cutting conditions			↓	↓	↓	✓	✓	↑			↓						
	Cutting edge nose deformation	Occurring during intermittent machining with high feed rate	✓		↑	↓	↓	✓	✓	↑	↑	↓	↓						
	Tool life	Unsuitable materials and cutting conditions		✓		↓	↓		✓		↑	↓	↑		✓	✓	✓	✓	
Chip controlling	Intertwist of long chips	Unsuitable cutting condition			↓	↑	↑	✓											
		Unsuitable geometry							✓		↓	↑							
	Too short chips lead to splash	Unsuitable cutting condition				↓	↓	✓											
		Unsuitable geometrical shape of cutting edge							✓		↑	↓							
Burr and knockdown flange	Steel and Al, burrs occurring	Unsuitable cutting condition			↑	↓		✓											
		Unsuitable tool abrasion and geometrical shape	✓						✓	↑	↓	↑	↓						
	Cast iron, knockdown flange	Unsuitable cutting conditions			↓	↑		✓											
		Unsuitable tool abrasion and geometrical shape	✓						✓	✓	↓	↓	↓						
	Soft steel, raw edges	Unsuitable cutting condition				↓	↓												
		Unsuitable tool abrasion and geometrical shape	✓						✓	↑	↑		↑		✓	✓	✓	✓	