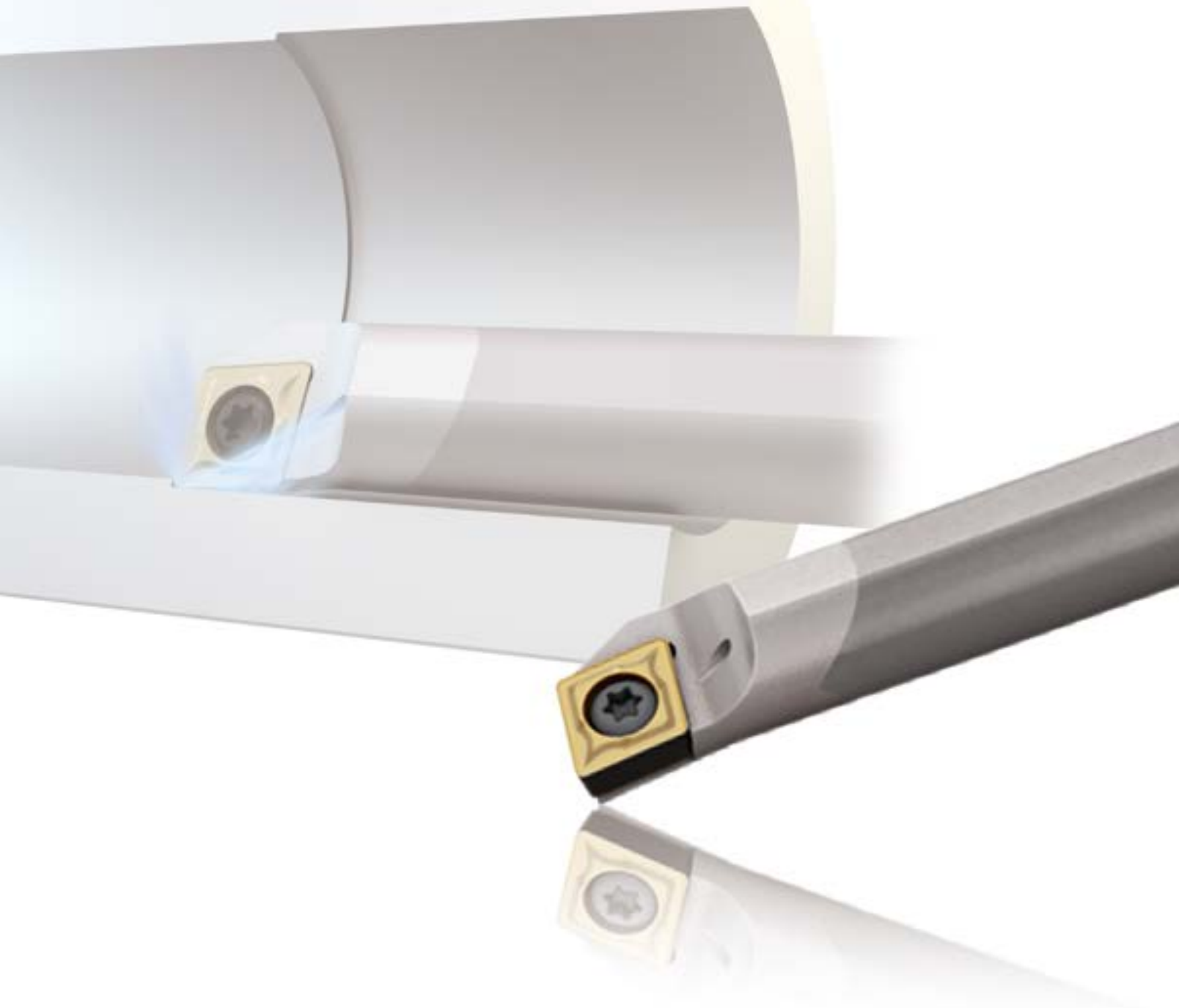


# Coolant Through Carbide Boring Bars

New  
Product

**Carbide coolant through boring bars provide excellent performance when machining internal applications.**



# IDENTIFICATION

## Boring Bar ANSI Designation Chart

A	Steel Bar w/Coolant Hole
AX	(A-type) Dimple Bar
B	Solid Steel Anti-vibration Bar
C	Carbide Bar (Steel Head)
D	Steel Anti-vibration Bar w/Coolant Hole
E	Carbide Bar (Steel Head) w/Coolant Hole
EX	(E-type) Dimple Bar
F	Carbide Anti-vibration Bar (Steel Head)
G	Carbide Anti-vibration Bar (Steel Head w/Coolant Hole)
H	Heavy Metal Bar
J	Heavy Metal Bar w/Coolant Hole
JX	(J-type) Dimple Bar
S	Solid Steel Bar

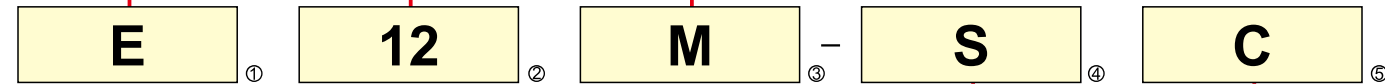
03	3/16"	16	1"
04	1/4"	20	1-1/4"
05	5/16"	24	1-1/2"
06	3/8"	28	1-3/4"
08	1/2"	32	2"
10	5/8"	36	2-1/4"
12	3/4"	40	2-1/2"

F	3"	Q	7"
G	3-1/2"	R	8"
H	4"	S	10"
J	4-1/2"	T	12"
K	5"	U	14"
L	5-1/2"	V	16"
M	6"	W	18"
N	6-1/2"	Y	20"
P	6-3/4"	Z	Special

② Shank Diameter

③ Length

① Boring Bar Type

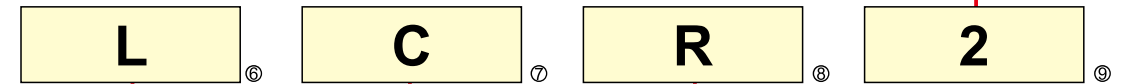


④ Insert Holding	
C	Top Clamp
D	Double Clamp
M	Clamp and Lock Pin
P	Hole Clamp
S	Screw Lock Only

⑤ Insert Shape			
C	D	R	S
80° Rhombic	55° Rhombic	Round	Square
T	V	W	
Triangular	35° Rhombic	Trigon	

Insert IC	.187	.219	.250	.313	.375	.500	.625	.750	1.000
	1.5	1.8	2	2.5	3	4	5	6	8
			2	2.5	3	4	5	6	8
			2	2.5	3	4	5	6	
80°					3	4	5	6	8
55°					3	4	5	6	8
35°			2	3					

⑥ Insert Size



④ Boring Bar Style			
F	J	K	L
-1° (91°)	-3° (93°)	15° (75°)	-5° (95°)
End Cutting	Side Cutting	End Cutting	Side & End Cutting
P	Q	U	X
-27°30' (117°30')	-17°30' (107°30')	-3° (93°)	
End Cutting	End Cutting	End Cutting	Back Boring

⑦ Insert Relief Angle	
Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Other

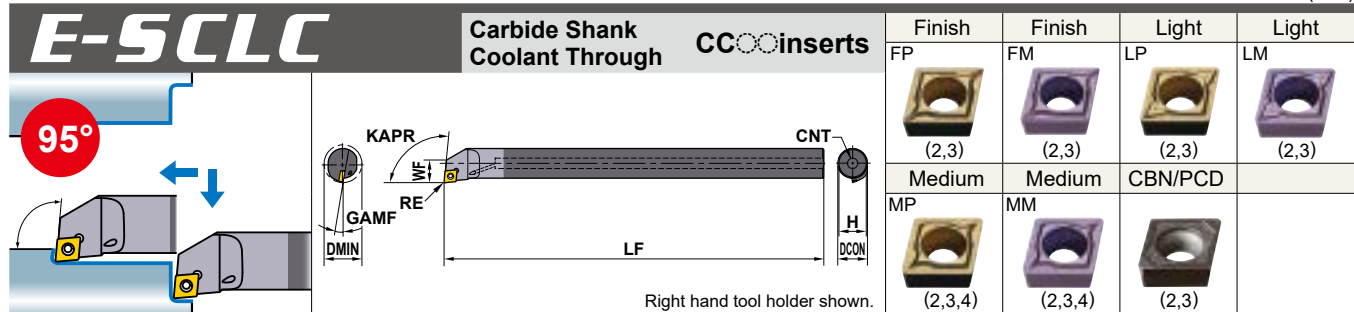
⑧ Hand		
Figure	Hand	Symbol
	Right	R
	Left	L
	Neutral	N

# Coolant Through Carbide Boring Bars

## SCREW CLAMP TYPE

- Two wall pocket.
- 7° and 11° positive insert, low cutting force.
- Screw-on type.
- Carbide shanks are stocked in various diameters.

(inch)



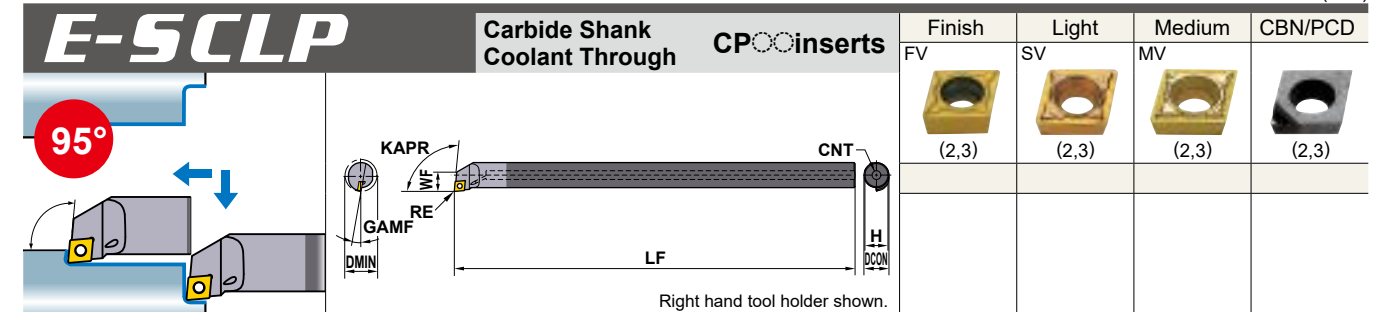
Right hand tool holder shown.

Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E05K-SCLCL2	●	CCMT CCGT CCMH CCGH CCET CCMW CCGW NP-CCGW	21.5	.313	5.00	.385	.219	.295	15°	.094	.016	.21	TS253	TKY08F
E05K-SCLCR2	●		21.5	.313	5.00	.385	.219	.295	15°	.094	.016	.21	TS253	TKY08F
E06M-SCLCL2	●		21.5	.375	6.00	.477	.250	.360	15°	.109	.016	.31	TS25	TKY08F
E06M-SCLCR2	●		21.5	.375	6.00	.477	.250	.360	15°	.109	.016	.31	TS25	TKY08F
E08M-SCLCL2	●		21.5	.500	6.00	.602	.313	.485	13°	.188	.016	.51	TS25	TKY08F
E08M-SCLCR2	●		21.5	.500	6.00	.602	.313	.485	13°	.188	.016	.51	TS25	TKY08F
E10R-SCLCL2	●		21.5	.625	8.00	.797	.406	.600	10°	.219	.016	1.2	TS25	TKY08F
E10R-SCLCR2	●		21.5	.625	8.00	.797	.406	.600	10°	.219	.016	1.2	TS25	TKY08F
E12S-SCLCL2	●		21.5	.750	10.00	.954	.500	.725	8°	.281	.016	2.2	TS25	TKY08F
E12S-SCLCR2	●		21.5	.750	10.00	.954	.500	.725	8°	.281	.016	2.2	TS25	TKY08F
E08M-SCLCL3	●		32.5	.500	6.00	.602	.313	.485	13°	.188	.031	.51	TS4	TKY15F
E08M-SCLCR3	●		32.5	.500	6.00	.602	.313	.485	13°	.188	.031	.51	TS4	TKY15F
E10R-SCLCL3	●		32.5	.625	8.00	.797	.406	.600	10°	.219	.031	1.2	TS4	TKY15F
E10R-SCLCR3	●		32.5	.625	8.00	.797	.406	.600	10°	.219	.031	1.2	TS4	TKY15F
E12S-SCLCL3	●		32.5	.750	10.00	.954	.500	.725	8°	.281	.031	2.2	TS4	TKY15F
E12S-SCLCR3	●		32.5	.750	10.00	.954	.500	.725	8°	.281	.031	2.2	TS4	TKY15F
E16T-SCLCL3	●	32.5	1.000	12.00	1.219	.641	.975	7°	.313	.031	5.0	TS4	TKY15F	
E16T-SCLCR3	●	32.5	1.000	12.00	1.219	.641	.975	7°	.313	.031	5.0	TS4	TKY15F	
E16T-SCLCL4	●	43	1.000	12.00	1.219	.641	.975	7°	.313	.031	5.0	TS5	TKY25F	
E16T-SCLCR4	●	43	1.000	12.00	1.219	.641	.975	7°	.313	.031	5.0	TS5	TKY25F	

\* Clamp Torque (lbf-in) : TS25 = 8.9, TS253 = 8.9, TS4 = 31, TS5 = 66

(Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.

(Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.



Right hand tool holder shown.

Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E06M-SCLPL2	●	CPMT CPGT CPMH	21.5	.375	6.00	.477	.250	.360	15°	.109	.016	.31	TS25	TKY08F
E06M-SCLPR2	●		21.5	.375	6.00	.477	.250	.360	15°	.109	.016	.31	TS25	TKY08F
E08R-SCLPL2	●		21.5	.500	8.00	.602	.313	.485	6°	.188	.016	.71	TS25	TKY08F
E08R-SCLPR2	●		21.5	.500	8.00	.602	.313	.485	6°	.188	.016	.71	TS25	TKY08F
E10S-SCLPL2	●		21.5	.625	10.00	.797	.406	.600	10°	.219	.016	1.3	TS25	TKY08F
E10S-SCLPR2	●		21.5	.625	10.00	.797	.406	.600	10°	.219	.016	1.3	TS25	TKY08F
E12S-SCLPL2	●		21.5	.750	10.00	.954	.500	.725	8°	.281	.016	2.2	TS25	TKY08F
E12S-SCLPR2	●		21.5	.750	10.00	.954	.500	.725	8°	.281	.016	2.2	TS25	TKY08F
E08R-SCLPL2.5	●		2.51.5	.500	8.00	.602	.313	.485	6°	.188	.016	.71	TS3D	TKY10F
E08R-SCLPR2.5	●		2.51.5	.500	8.00	.602	.313	.485	6°	.188	.016	.71	TS3D	TKY10F
E08R-SCLPL3	●		32.5	.500	8.00	.602	.313	.485	8°	.188	.016	.71	TS4S	TKY15F
E08R-SCLPR3	●		32.5	.500	8.00	.602	.313	.485	8°	.188	.016	.71	TS4S	TKY15F
E10S-SCLPL3	●		32.5	.625	10.00	.797	.406	.600	10°	.219	.031	1.3	TS4	TKY15F
E10S-SCLPR3	●		32.5	.625	10.00	.797	.406	.600	10°	.219	.031	1.3	TS4	TKY15F
E12S-SCLPL3	●		32.5	.750	10.00	.954	.500	.725	8°	.281	.031	2.2	TS4	TKY15F
E12S-SCLPR3	●		32.5	.750	10.00	.954	.500	.725	8°	.281	.031	2.2	TS4	TKY15F
E16T-SCLPL3	●	32.5	1.000	12.00	1.219	.641	.975	7°	.313	.031	5	TS4	TKY15F	
E16T-SCLPR3	●	32.5	1.000	12.00	1.219	.641	.975	7°	.313	.031	5	TS4	TKY15F	

\* Clamp Torque (lbf-in) : TS25 = 8.9, TS3D = 22, TS4S = 31, TS4 = 31

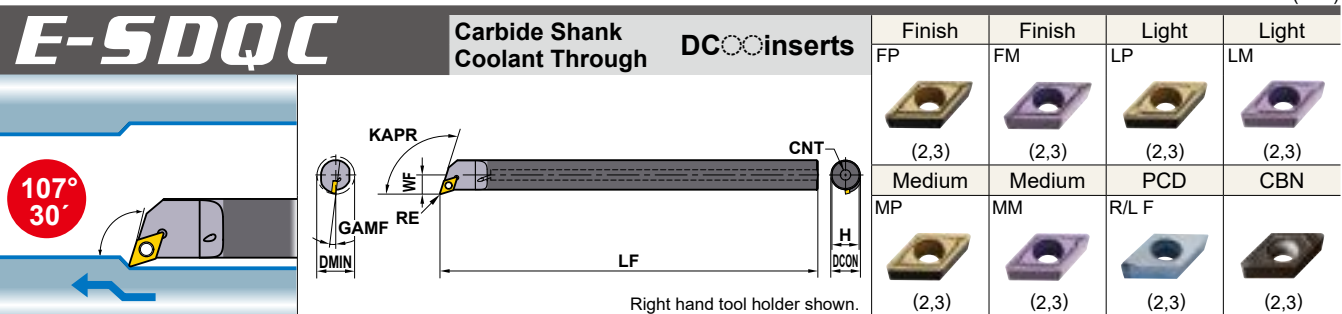
(Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.

(Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.

# Coolant Through Carbide Boring Bars

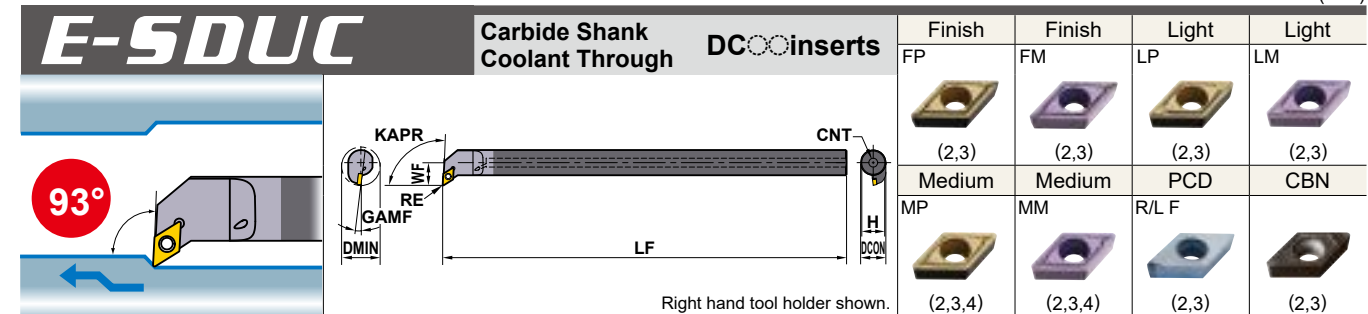
## SCREW CLAMP TYPE

- Two wall pocket.
- 7° positive insert, low cutting force.
- Screw-on type.
- Carbide shanks are stocked in various diameters.



Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E06M-SDQCL2	●	DCET DCGT DCGW DCMT NP-DCGW NP-DCGT NP-DCMW	21.5	.375	6.00	.488	.290	.360	8°	.109	.016	.31	TS25	TKY08F
E06M-SDQCR2	●		21.5	.375	6.00	.488	.290	.360	8°	.109	.016	.31	TS25	TKY08F
E08M-SDQCL2	●		21.5	.500	6.00	.665	.375	.485	10°	.187	.016	.51	TS25	TKY08F
E08M-SDQCR2	●		21.5	.500	6.00	.665	.375	.485	10°	.187	.016	.51	TS25	TKY08F
E10R-SDQCL2	●		21.5	.625	8.00	.797	.406	.600	7°	.218	.016	1.2	TS25	TKY08F
E10R-SDQCR2	●		21.5	.625	8.00	.797	.406	.600	7°	.218	.016	1.2	TS25	TKY08F
E12S-SDQCL3	●		32.5	.750	10.00	.954	.500	.725	7°	.281	.031	2.2	TS4	TKY15F
E12S-SDQCR3	●		32.5	.750	10.00	.954	.500	.725	7°	.281	.031	2.2	TS4	TKY15F

\* Clamp Torque (lbf-in) : TS25 = 8.9, TS4 = 31  
 (Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.  
 (Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.



Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E06M-SDUCL2	●	DCET DCGT DCGW DCMT NP-DCGW NP-DCGT NP-DCMW	21.5	.375	6.00	.664	.437	.360	7°	.109	.016	.31	TS25	TKY08F
E06M-SDUCR2	●		21.5	.375	6.00	.664	.437	.360	7°	.109	.016	.31	TS25	TKY08F
E08R-SDUCL2	●		21.5	.500	8.00	.789	.500	.485	7°	.187	.016	.71	TS25	TKY08F
E08R-SDUCR2	●		21.5	.500	8.00	.789	.500	.485	7°	.187	.016	.71	TS25	TKY08F
E10S-SDUCL2	●		21.5	.625	10.00	.954	.563	.600	7°	.218	.016	1.6	TS25	TKY08F
E10S-SDUCR2	●		21.5	.625	10.00	.954	.563	.600	7°	.218	.016	1.6	TS25	TKY08F
E12S-SDUCL3	●		32.5	.750	10.00	1.079	.625	.725	7°	.281	.031	2.2	TS4	TKY15F
E12S-SDUCR3	●		32.5	.750	10.00	1.079	.625	.725	7°	.281	.031	2.2	TS4	TKY15F
E16T-SDUCL4	●		43	1.000	12.00	1.329	.750	.975	5°	.312	.031	5.0	TS5	TKY15F
E16T-SDUCR4	●		43	1.000	12.00	1.329	.750	.975	5°	.312	.031	5.0	TS5	TKY15F

\* Clamp Torque (lbf-in) : TS25 = 8.9, TS4 = 31, TS5 = 66  
 (Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.  
 (Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.

# Coolant Through Carbide Boring Bars

## SCREW CLAMP TYPE

- Two wall pocket.
- 7° and 11° positive insert, low cutting force.
- Screw-on type.
- Carbide shanks are stocked in various diameters.

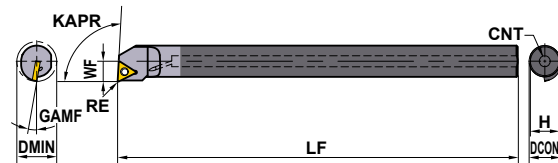
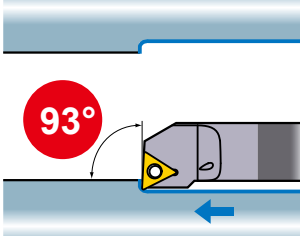
(inch)

### E-STUC

Carbide Shank  
Coolant Through

TC<sup>o</sup>inserts

Finish	Finish
FV (2,3)	FJ-P (2,3)
Medium	CBN/PCD
Standard (2,3)	(2,3)



Right hand tool holder shown.

Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E06M-STUCL2	●	TCGT TCGW TCMT TCMW NP-TCGW NP-TCMW	21.5	.375	6.00	.477	.250	.360	15°	.109	.016	.31	TS25	TKY08F
E06M-STUCR2	●		21.5	.375	6.00	.477	.250	.360	15°	.109	.016	.31	TS25	TKY08F
E08M-STUCL2	●		21.5	.500	6.00	.602	.313	.485	13°	.188	.016	.51	TS25	TKY08F
E08M-STUCR2	●		21.5	.500	6.00	.602	.313	.485	13°	.188	.016	.51	TS25	TKY08F
E10R-STUCL2	●		21.5	.625	8.00	.797	.406	.600	10°	.219	.016	1.2	TS25	TKY08F
E10R-STUCR2	●		21.5	.625	8.00	.797	.406	.600	10°	.219	.016	1.2	TS25	TKY08F
E12S-STUCL3	●		32.5	.750	10.00	.954	.500	.725	8°	.281	.031	2.2	TS4	TKY15F
E12S-STUCR3	●		32.5	.750	10.00	.954	.500	.725	8°	.281	.031	2.2	TS4	TKY15F
E16T-STUCL3	●		32.5	1.000	12.00	1.219	.641	.975	7°	.313	.031	5.0	TS4	TKY15F
E16T-STUCR3	●		32.5	1.000	12.00	1.219	.641	.975	7°	.313	.031	5.0	TS4	TKY15F

\* Clamp Torque (lbf-in) : TS25 = 8.9, TS4 = 31

(Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.

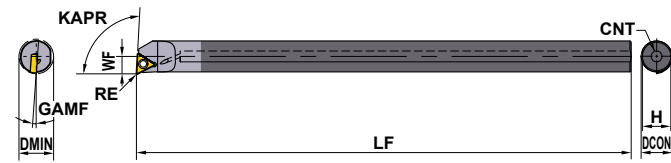
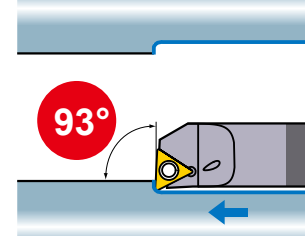
(Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.

### E-STUP

Carbide Shank  
Coolant Through

TP<sup>o</sup>inserts

Finish	Light	Medium
FV (1.5,1.8,2)	SV (1.5,1.8,2)	MV (1.5,1.8,2)
PCD	CBN	
R/L F (1.5,1.8,2)	(1.5,1.8,2)	



Right hand tool holder shown.

Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E05K-STUPL1.5	●	TPMH TPGH TPGX NP-TPGB NP-TPGX NP-TPMH NP-TPMX	1.51.5	.313	5.00	.402	.196	.295	10°	.094	.016	.21	TS2D	TKY06F
E05K-STUPR1.5	●		1.51.5	.313	5.00	.402	.196	.295	10°	.094	.016	.21	TS2D	TKY06F
E06M-STUPL1.8	●		1.81.5	.375	6.00	.450	.227	.360	8°	.109	.016	.31	TS25D	TKY08F
E06M-STUPR1.8	●		1.81.5	.375	6.00	.450	.227	.360	8°	.109	.016	.31	TS25D	TKY08F
E08R-STUPL1.8	●		1.81.5	.500	8.00	.580	.290	.485	7°	.188	.016	.71	TS25D	TKY08F
E08R-STUPR1.8	●		1.81.5	.500	8.00	.580	.290	.485	7°	.188	.016	.71	TS25D	TKY08F
E10S-STUPL2	●		22	.625	10.00	.700	.352	.600	4°	.219	.016	1.6	TS31D	TKY10F
E10S-STUPR2	●		22	.625	10.00	.700	.352	.600	4°	.219	.016	1.6	TS31D	TKY10F
E12S-STUPL2	●		22	.750	10.00	.825	.414	.725	0°	.281	.016	2.2	TS31D	TKY10F
E12S-STUPR2	●		22	.750	10.00	.825	.414	.725	0°	.281	.016	2.2	TS31D	TKY10F
E16T-STUPL2	●		22	1.000	12.00	1.280	.638	.975	0°	.313	.016	5.0	TS31D	TKY10F
E16T-STUPR2	●		22	1.000	12.00	1.280	.638	.975	0°	.313	.016	5.0	TS31D	TKY10F

\* Clamp Torque (lbf-in) : TS2D = 5.3, TS25D = 8.9, TS31D = 22

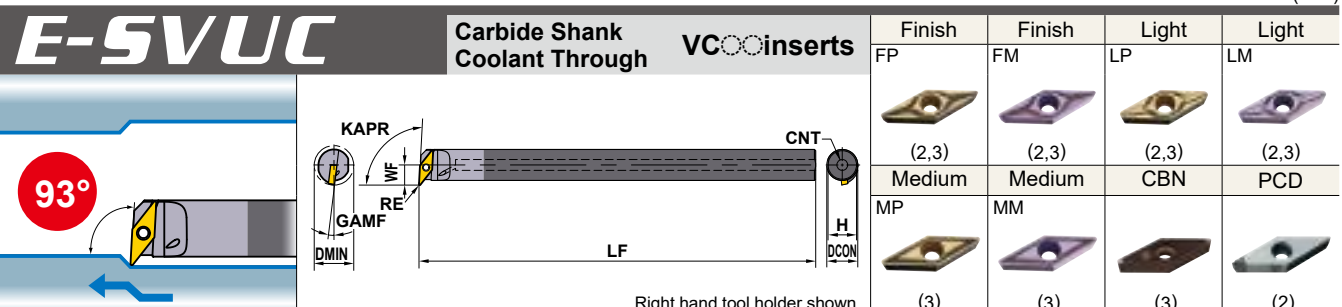
(Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.

(Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.

# Coolant Through Carbide Boring Bars

## SCREW CLAMP TYPE

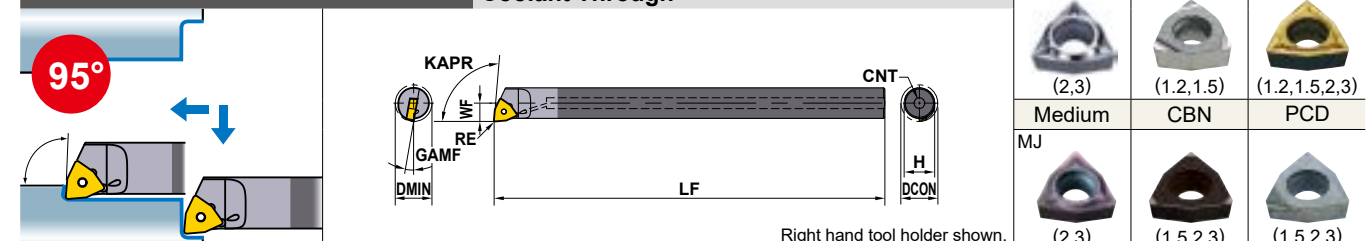
- Two wall pocket.
- 7° positive insert, low cutting force.
- Screw-on type.
- Carbide shanks are stocked in various diameters.



Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E10R-SVUCL2	●	VCMT VCGT NP-VCGW	22	.625	8.00	.831	.508	.600	7°	.219	.016	1.2	TS25	TKY08F
E10R-SVUCR2	●		22	.625	8.00	.831	.508	.600	7°	.219	.016	1.2	TS25	TKY08F
E12S-SVUCL2	●		22	.750	10.00	.985	.600	.725	7°	.281	.016	2.2	TS25	TKY08F
E12S-SVUCR2	●		22	.750	10.00	.985	.600	.725	7°	.281	.016	2.2	TS25	TKY08F
E16T-SVUCL3	●		33	1.000	12.00	1.340	.830	.975	6°	.312	.031	5.0	TS4	TKY15F
E16T-SVUCR3	●		33	1.000	12.00	1.340	.830	.975	6°	.312	.031	5.0	TS4	TKY15F

\* Clamp Torque (lbf-in) : TS25 = 8.9, TS4 = 31  
 (Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.  
 (Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.

## E-SWLO



Order Number	Stock	Insert Number	DCON	LF	DMIN	WF	H	GAMF	CNT	RE	WT (lbs)	*		
												Clamp Screw	Wrench	
E04H-SWL0L1.2	●	WCMT WCGT WCMW NP-WCMW NP-WCGW	1.21	.250	4.00	.313	.156	.235	17°	.078	.016	.11	TS2	TKY06F
E04H-SWL0R1.2	●		1.21	.250	4.00	.313	.156	.235	17°	.078	.016	.11	TS2	TKY06F
E05M-SWL0L1.2	●		1.21	.313	6.00	.375	.188	.295	15°	.094	.016	.26	TS21	TKY06F
E05M-SWL0R1.2	●		1.21	.313	6.00	.375	.188	.295	15°	.094	.016	.26	TS21	TKY06F
E05M-SWL0L1.5	●		1.51.5	.313	6.00	.375	.188	.295	15°	.094	.016	.26	TS2	TKY06F
E05M-SWL0R1.5	●		1.51.5	.313	6.00	.375	.188	.295	15°	.094	.016	.26	TS2	TKY06F
E05K-SWL0L2	●		21.5	.313	5.00	.406	.203	.295	15°	.094	.016	.21	TS25	TKT08F
E05K-SWL0R2	●		21.5	.313	5.00	.406	.203	.295	15°	.094	.016	.21	TS25	TKT08F
E06M-SWL0L2	●		21.5	.375	6.00	.438	.218	.358	15°	.109	.016	.31	TS25	TKT08F
E06M-SWL0R2	●		21.5	.375	6.00	.438	.218	.358	15°	.109	.016	.31	TS25	TKT08F
E08M-SWL0L2	●		21.5	.500	6.00	.625	.312	.480	13°	.188	.016	.51	TS25	TKT08F
E08M-SWL0R2	●		21.5	.500	6.00	.625	.312	.480	13°	.188	.016	.51	TS25	TKT08F
E10R-SWL0L3	●		32.5	.625	8.00	.750	.375	.600	10°	.219	.031	1.0	TS4	TKY15F
E10R-SWL0R3	●		32.5	.625	8.00	.750	.375	.600	10°	.219	.031	1.0	TS4	TKY15F
E12S-SWL0L3	●		32.5	.750	10.00	1.000	.500	.725	8°	.281	.031	1.7	TS4	TKY15F
E12S-SWL0R3	●		32.5	.750	10.00	1.000	.500	.725	8°	.281	.031	1.7	TS4	TKY15F
E16T-SWL0L3	●		32.5	1.000	12.00	1.250	.640	.975	7°	.313	.031	4.1	TS4	TKY15F
E16T-SWL0R3	●		32.5	1.000	12.00	1.250	.640	.975	7°	.313	.031	4.1	TS4	TKY15F

\* Clamp Torque (lbf-in) : TS2 = 5.3, TS21 = 5.3, TS25 = 8.9, TS4 = 31  
 (Note 1) When using inserts with right hand and left hand chip breakers, please use left hand inserts for right hand holders and right hand inserts for left hand holders.  
 (Note 2) Insert photo is an example. Letters show chip breaker style, figures show inscribed circle.

## Recommended Cutting Conditions

(inch)

			Case 1			Case 2		
Heavy Metal Shank			L/D ≤ 3			3 < L/D ≤ 4		
Steel Shank			L/D ≤ 3			3 < L/D ≤ 4		
Carbide Shank			L/D ≤ 5			5 < L/D ≤ 8		
Work Material	Hardness	Cutting Mode	vc (SFM)	f (IPR)	ap	vc (SFM)	f (IPR)	ap
P Carbon Steel Alloy Steel	180 – 280 HB	Light Cutting	295 – 525	.002 – .006	.008	260 – 490	.002 – .006	.008
		Medium Cutting	195 – 395	.006 – .014	.118	165 – 360	.004 – .008	.059
M Stainless Steel	≤ 200 HB	Light Cutting	330 – 590	.002 – .006	.008	330 – 590	.002 – .006	.008
		Medium Cutting	165 – 295	.006 – .010	.079	130 – 260	.004 – .008	.039
K Cast Iron	Tensile Strength ≤ 350 MPa	Light Cutting	295 – 525	.002 – .006	.020	330 – 590	.004 – .006	.020
		Medium Cutting	195 – 390	.006 – .010	.079	130 – 260	.006 – .010	.060
N Aluminum Alloy	—	Light Cutting	655 – 1310	.002 – .006	.008	665 – 1310	.002 – .006	.008
		Medium Cutting	490 – 820	.002 – .006	.079	490 – 820	.002 – .006	.059

### For your safety

● Don't handle inserts and chips without gloves. ● Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ● Please use safety covers and wear safety glasses. ● When using compounded cutting oils, please take fire precautions. ● When attaching inserts or spare parts, please use only the correct wrench or driver. ● When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

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