

# HOW TO READ THE STANDARD OF BORING BARS

## ● How this section page is organized

① Organized by product series.  
(Refer to the index on the next page.)

**TYPE OF BORING BAR**  
indicates the initial letters for the order number,  
as well as applicable insert types.

**TITLE OF PRODUCT SERIES**  
**PRODUCT SECTION**

**PRODUCT FEATURES**

**FIGURE SHOWING THE TOOLING APPLICATION**  
uses illustrations and arrows to depict available  
machining applications along with cutting edge  
lead angles.

**GEOMETRY**  
**CHIP BREAKER BY**  
**CUTTING APPLICATION**

**BORING BARS**

**DIMPLE BAR**

**FSCLC/P** CC Inserts, CP Inserts

**FSTUP** TP Inserts

**FSCLC/P-E** Carbide shank with coolant hole

**FSTUP-E** Carbide shank with coolant hole

**Legend:**

- Inventory maintained in Japan.
- CC - type inserts → A098, A099
- CP - type inserts → A102
- CBN & PCD Inserts → B036~B039, B066
- TP - type inserts → A116, A117
- CBN & PCD Inserts → B043, B069
- CUTTING CONDITIONS → E012
- SPARE PARTS → P001
- TECHNICAL DATA → Q001

**Legend for Stock Status Mark:** is shown on the left hand page of each double-page spread.

**Product Standards:** indicates order numbers, stock status (per right/left hand), applicable inserts, dimensions, minimum cutting diameters, standard corner radius, recommended l/d ratios, and spare parts.

**Min. Cutting Diameter:** is colour-coded to let you find, at a glance, the maximum / minimum cutting diameters for internal machining.

**Reference Page for Applicable Inserts:** indicates reference pages for details of inserts that are applicable to the title product.

**Page Reference:** indicates reference pages, including the above, on the right hand page of each double-page spread.

**To Order:** Please specify  
① order number and hand of tool (right/left).

# TURNING TOOLS

# BORING BARS

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## STANDARD BORING BARS

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MICRO-DEX BORING BARS.....	E016
MICRO-MINI TWIN BORING BARS .....	E019
MICRO-MINI BORING BARS.....	E022
F TYPE BORING BARS.....	E025
S TYPE BORING BARS.....	E028
P TYPE BORING BARS.....	E035
M TYPE BORING BARS .....	E039
D TYPE BORING HEAD .....	E040
AL TYPE BORING BARS .....	E043

\*Arranged by Alphabetical order

E013 A○○○-DCLN  
 E013 A○○○-DDUN  
 E014 A○○○-DSKN  
 E014 A○○○-DTFN  
 E015 A○○○-DVUN  
 E015 A○○○-DWLN  
 E039 A○○○-MWLN  
 E036 A○○○-PCLN  
 E037 A○○○-PDQN  
 E036 A○○○-PDUN  
 E038 A○○○-PDZN  
 E035 A○○○-PSKN  
 E035 A○○○-PTFN  
 E037 A○○○-PWLN  
 E022 C○○○-BLS  
 E016 C○○○-SCLC  
 E030 C○○○-SCLC  
 E031 C○○○-SDQC  
 E029 C○○○-SDUC

E028 C○○○-STFC  
 E017 C○○○-STUC  
 E032 C○○○-SVQC  
 E016 C○○○-SWUB  
 E019 CB  
 E020 CR  
 E041 DPCL  
 E041 DPDH  
 E040 DPDU  
 E040 DPTF  
 E042 DPVP  
 E026 FCTU1  
 E026 FCTU2  
 E006 FSCLC/P  
 E009 FSDQC  
 E008 FSDUC  
 E025 FSTU1  
 E025 FSTU2  
 E007 FSTUP

E012 FSVJB/C  
 E011 FSVPB/C  
 E011 FSVUB/C  
 E027 FSWL1  
 E027 FSWL2  
 E010 FSWUB/P  
 E018 RBH  
 E023 RBH  
 E030 S○○○-SCLC  
 E034 S○○○-SCZC  
 E031 S○○○-SDQC  
 E029 S○○○-SDUC  
 E033 S○○○-SSKC  
 E028 S○○○-STFC  
 E043 S○○○-STFE  
 E032 S○○○-SVQC  
 E033 S○○○-SVUC  
 E024 SBH

# CLASSIFICATION

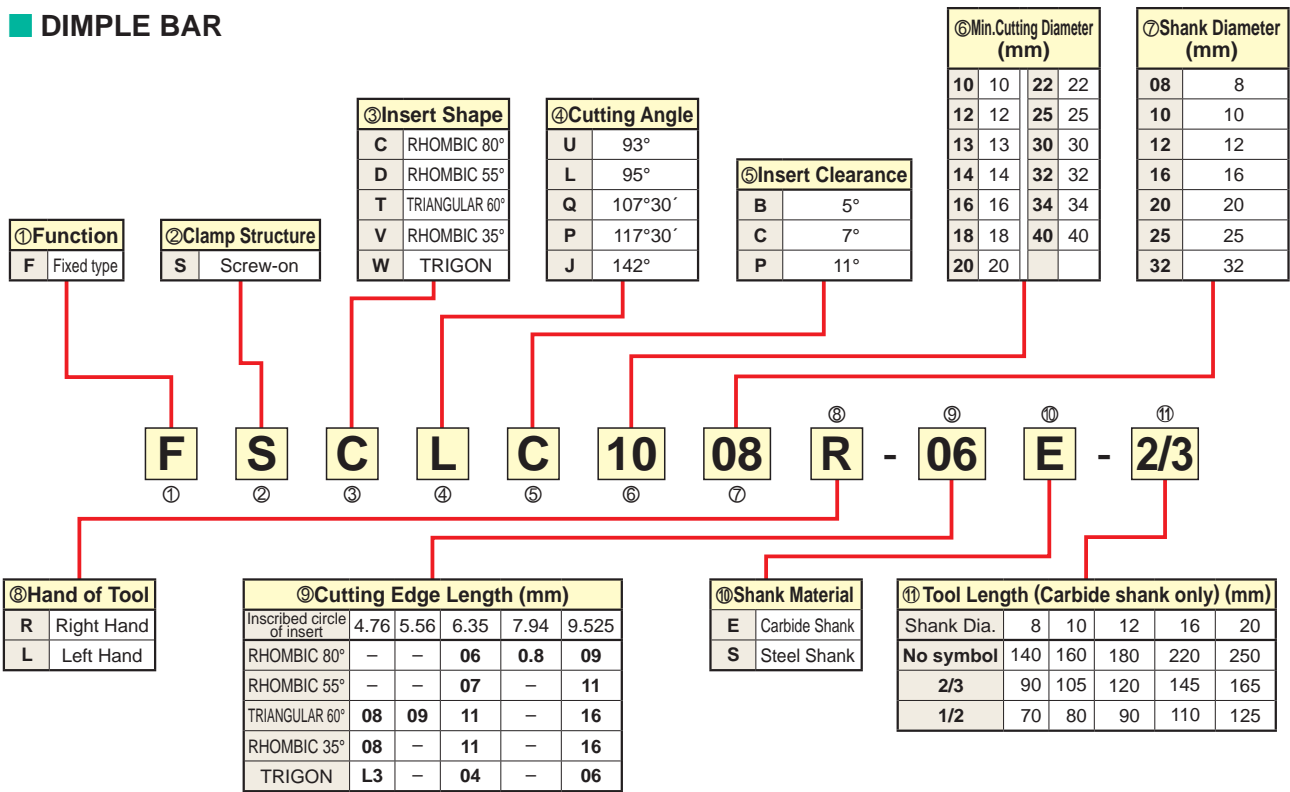
Name of Tool Holder	Features	$\theta=75^\circ$	$\theta=91^\circ$	$\theta=93^\circ$		
<b>DIMPLE BAR</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 10</math>.</li> <li>5°, 7°, 11° positive insert.</li> <li>Excellent vibration resistance due to a light dimple head.</li> <li>l/d is 3 to 5 times the diameter (Carbide shank is 7 to 8 times the diameter).</li> </ul>			 <b>FSTUP</b> ↻ E007	 <b>FSDUC</b> ↻ E008	 <b>FSVUB/C</b> ↻ E011
<b>DOUBLE CLAMP DIMPLE BAR</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 32</math>.</li> <li>Economical negative insert.</li> <li>Single action type.</li> <li>Excellent vibration resistance due to a light dimple head. (With coolant hole.)</li> <li>l/d is 3 to 4 times the diameter.</li> </ul>	 <b>DSKN</b> ↻ E014	 <b>DTFN</b> ↻ E014	 <b>DDUN</b> ↻ E013	 <b>DVUN</b> ↻ E015	
<b>F Type Boring Bars</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 5.8</math>.</li> <li>11° positive insert.</li> <li>Screw-on type and Clamp-on type.</li> <li>l/d is 3 to 5 times the diameter.</li> <li>FSWL type is 7° positive insert.</li> </ul>			 <b>FSTU</b> ↻ E025	 <b>FCTU</b> ↻ E026	
<b>S Type Boring Bars</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 11</math>.</li> <li>ISO standard.</li> <li>7° positive insert.</li> <li>Screw-on type.</li> <li>l/d is 3 to 5 times the diameter (Carbide shank is 7 times the diameter).</li> </ul>	 <b>SSKC</b> ↻ E033	 <b>STFC</b> ↻ E028	 <b>SDUC</b> ↻ E029	 <b>SVUC</b> ↻ E033	
<b>P Type Boring Bars</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 25</math>.</li> <li>ISO standard.</li> <li>Economical negative insert.</li> <li>Lever lock type, and pin lock type.</li> <li>l/d is 3 times the diameter.</li> </ul>	 <b>PSKN</b> ↻ E035	 <b>PTFN</b> ↻ E035	 <b>PDUN</b> ↻ E036		
<b>D Type Boring Head</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 40</math>.</li> <li>Economical negative insert.</li> <li>Lever lock type.</li> <li>Exchangeable head type.</li> </ul>		 <b>DPTF</b> ↻ E040	 <b>DPDU</b> ↻ E040		
<b>M Type Boring Bars</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 32</math>.</li> <li>Negative trigon shape insert.</li> <li>Double clamp type.</li> <li>l/d is 3 times the diameter.</li> </ul>					
<b>AL Type Boring Bars</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 20</math>.</li> <li>Suitable for non-ferrous metal.</li> <li>20° positive insert.</li> <li>Screw-on type.</li> <li>l/d is 6 times the diameter.</li> <li>Excellent vibration resistance.</li> </ul>		 <b>STFE</b> ↻ E043			
<b>MICRO-DEX Boring Bars</b> (Carbide Shank) 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 5</math>.</li> <li>7° positive insert.</li> <li>Carbide shank type.</li> <li>Easy-to-use tool geometries.</li> <li>Suitable for small workpieces.</li> <li>l/d is 5 times the diameter.</li> </ul>			 <b>SWUB</b> ↻ E016	 <b>STUC</b> ↻ E017	
<b>MICRO-MINI TWIN Boring Bars</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 2.2</math>.</li> <li>Solid carbide type with two cutting edges.</li> <li>Continuous cutting from boring to facing.</li> <li>With or without a chip breaker.</li> </ul>					
<b>MICRO-MINI Boring Bars</b> 	<ul style="list-style-type: none"> <li>The minimum cutting diameter is from <math>\phi 3.2</math>.</li> <li>Solid carbide type (Single cutting edges).</li> <li>l/d is 5 times the diameter.</li> <li>Cutting edge can be shaped according to the application. Thus, it covers a wide cutting range (threading, grooving, copying, etc.).</li> </ul>		 <b>COFR-BLS</b> ↻ E022			

(Note 1) Holders with blue colour symbol have an anti-vibration carbide shank. (For Micro-dex boring bars, carbide shank only.)



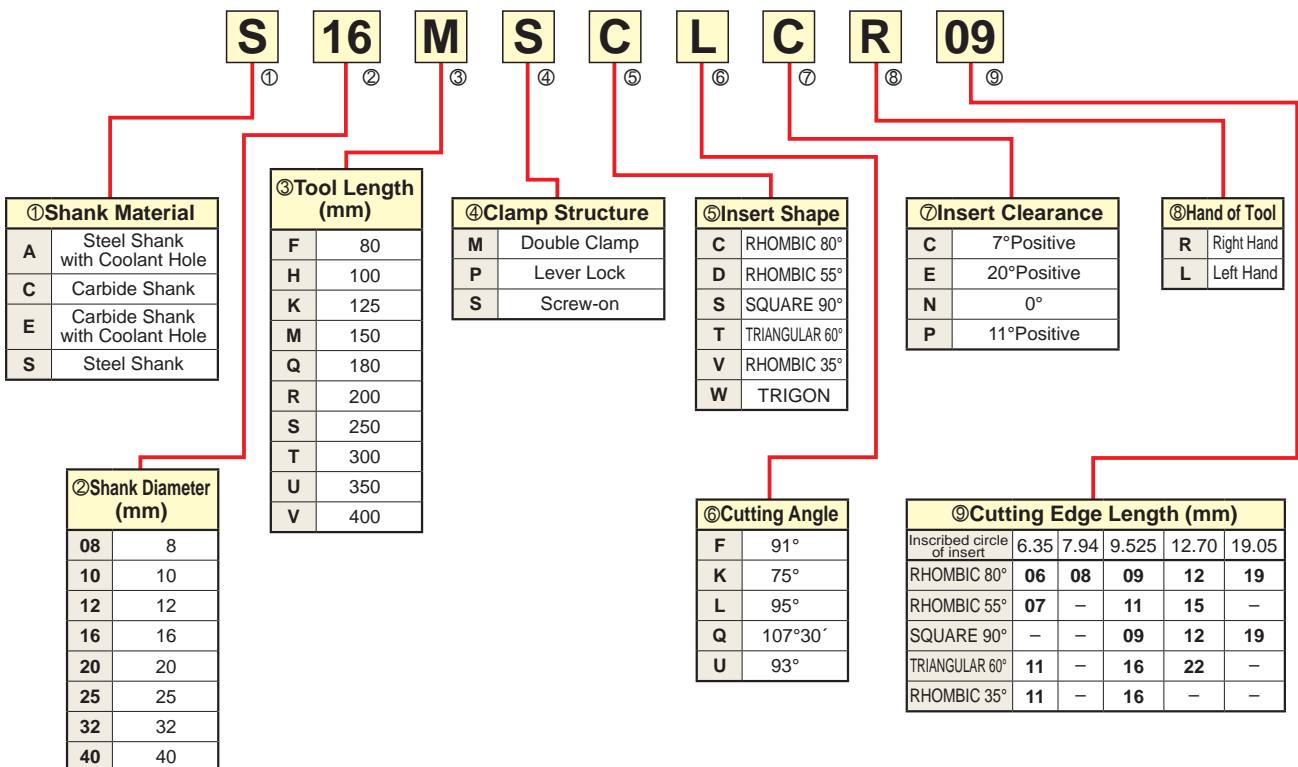
# IDENTIFICATION

## DIMPLE BAR



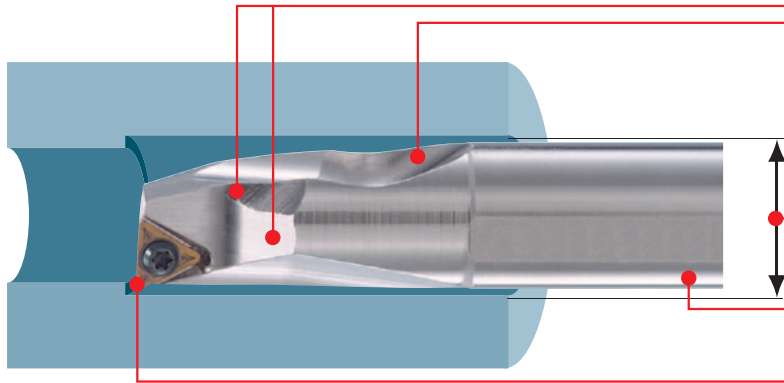
## ISO TYPE Boring tools

[For Aluminium Alloy, M-type, P-type and S-type]



# FEATURES OF DIMPLE BAR

Highly rigid steel shank and a lightweight head configuration designed by computer simulation analysis reduces chatter and improves the vibration damping properties.



Chip disposal is improved by having two channels for chip evacuation.

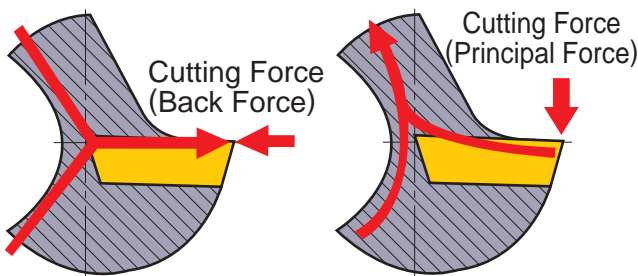
The lightweight head with its large dimple reduces chatter.

Available in sizes smaller than the ISO standard. Therefore the boring of small diameter holes is possible.

The boring bar has a laser printed scale on the shank to facilitate easy installation.

"F and FS" breakers improves the quality of the surface finish, "MV" breaker offers excellent chip disposal. High wear resistant CBN inserts are also available for the machining of hardened materials.

## DEFLECTION RESISTANCE



The unique cross sectional shape engineered into the dimple effectively balances the cutting forces (principal and back force), and reduces deflection by up to 17%.

Boring Bar	Deflection
DIMPLE BAR	28.3 $\mu$ m
Conventional Bar	34 $\mu$ m

## VIBRATION RESISTANCE

### ● DIMPLE BAR

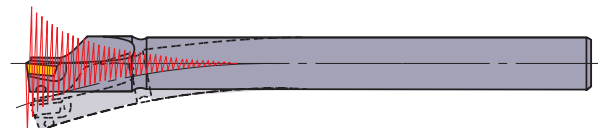
Weight of the Head	Damping Time
49.7g	15.8ms



By reducing the weight of the head, the damping properties are increased.

### ● Conventional Product

Weight of the Head	Damping Time
70.1g	20ms



\* The simulation data stated above was conducted with a FSCLP1816R-09S holder, under the following conditions; l/d=5, depth of cut=0.5mm, and feed=0.05mm/rev.

## Direction for the use of CCG/MT • CPG/MT • CPMX • TPG/MX type inserts

By changing the clamp screw, it is possible to use the inserts listed in the table below.

### Holder : FSCLC/P • FSCLC/P...E

Insert Number	Clamp Screw
CCG/MT0602 $\odot\odot$ ( $\phi$ 6.35)	Can be used as it is.
CPG/MT0802 $\odot\odot$ ( $\phi$ 7.94)	Change to TS3
CPG/MT0903 $\odot\odot$ ( $\phi$ 9.525)	Change to TS4
CPMX0802 $\odot\odot$ ( $\phi$ 7.94)	Can be used as it is.
CPMX0903 $\odot\odot$ ( $\phi$ 9.525)	Can be used as it is.

### Holder : FSTUP • FSTUP...E

Insert Number	Clamp Screw
TPG/MX0802 $\odot\odot$ ( $\phi$ 4.76)	Change to CS200T
TPG/MX0902 $\odot\odot$ ( $\phi$ 5.56)	Change to CS250T
TPG/MX1103 $\odot\odot$ ( $\phi$ 9.525)	Change to CS300890T

\* If the screw is too long the please shorten as necessary.

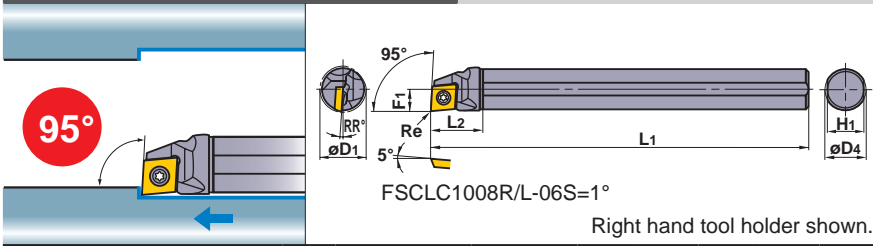
(Note) TPMT/W09, W11 types cannot be used due to a different clamp screw size.

# DIMPLE BAR

- Excellent vibration resistance due to light dimple head.
- Chip disposal is improved by having two channels for chip evacuation.
- A laser printed scale on the side for easy installation (Steel shank).
- l/d is 3 to 5 times the diameter (Carbide shank is 7 to 8 times the diameter).

## FSCLC/P

### CC<sup>○</sup>inserts, CP<sup>○</sup>inserts



Finish	Finish	Light	Light
FP (06,09)	FM (06,09)	LP (06,09)	LM (06,09)
Medium MP (06,09)	Medium MM (06,09)	PCD/CBN (06,08,09)	

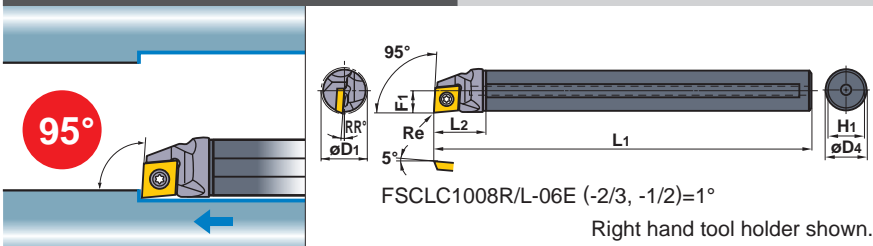
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	*	
	R	L		D4	L1	L2	F1	H1	RR°	Clamp Screw				Wrench	
FSCLC1008R/L-06S	●	●	CCGH/MH NP-CCGT NP-CCGW  CPMH NP-CPGB NP-CPMB NP-CPMH	0602 <sup>○</sup>	8	125	18	5	7.2	12	10	0.4	3	TS253	TKY08F
FSCLP1210R/L-08S	●	●		0802 <sup>○</sup>	10	150	22.5	6	9	5	12	0.4	3.5	TS3D	TKY10F
1412R/L-08S	●	●		0802 <sup>○</sup>	12	150	27	7	11	4	14	0.4	4	TS3D	TKY10F
1612R/L-09S	●	●		0903 <sup>○</sup>	12	150	30	8	11	4	16	0.4	4	TS4D	TKY15F
1816R/L-09S	●	●		0903 <sup>○</sup>	16	180	36	9	15	3.5	18	0.4	5	TS4D	TKY15F
2220R/L-09S	●	●		0903 <sup>○</sup>	20	220	45	11	19	2	22	0.4	5	TS4D	TKY15F
3025R/L-09S	●	●		0903 <sup>○</sup>	25	250	56.3	15	23.4	0	30	0.4	5	TS4D	TKY15F

\* Clamp Torque (N · m) : TS253=1.0, TS3D=2.5, TS4D=3.5

## FSCLC/P\_E

Carbide shank with coolant hole

### CC<sup>○</sup>inserts, CP<sup>○</sup>inserts



Finish	Finish	Light	Light
FP (06,09)	FM (06,09)	LP (06,09)	LM (06,09)
Medium MP (06,09)	Medium MM (06,09)	PCD/CBN (06,08,09)	

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	*	
	R	L		D4	L1	L2	F1	H1	RR°	Clamp Screw				Wrench	
FSCLC1008R/L-06E	●	●	CCGH CCMH NP-CCGT NP-CCGW	0602 <sup>○</sup>	8	140	13.8	5	7.2	12	10	0.4	7	TS253	TKY08F
1008R-06E-2/3	●	●		0602 <sup>○</sup>	8	90	13.8	5	7.2	12	10	0.4	7	TS253	TKY08F
1008R-06E-1/2	●	●		0602 <sup>○</sup>	8	70	13.8	5	7.2	12	10	0.4	7	TS253	TKY08F
FSCLP1210R/L-08E	●	●	CPMH NP-CPGB NP-CPMB NP-CPMH	0802 <sup>○</sup>	10	160	16.0	6	9	5	12	0.4	7.5	TS3D	TKY10F
1210R-08E-2/3	●	●		0802 <sup>○</sup>	10	105	16.0	6	9	5	12	0.4	7.5	TS3D	TKY10F
1210R-08E-1/2	●	●		0802 <sup>○</sup>	10	80	16.0	6	9	5	12	0.4	7.5	TS3D	TKY10F
1412R/L-08E	●	●		0802 <sup>○</sup>	12	180	17.8	7	11	4	14	0.4	8	TS3D	TKY10F
1412R-08E-2/3	●	●		0802 <sup>○</sup>	12	120	17.8	7	11	4	14	0.4	8	TS3D	TKY10F
1412R-08E-1/2	●	●		0802 <sup>○</sup>	12	90	17.8	7	11	4	14	0.4	8	TS3D	TKY10F
1816R/L-09E	●	●		0903 <sup>○</sup>	16	220	21.8	9	15	3.5	18	0.4	8	TS4D	TKY15F
1816R-09E-2/3	●	●		0903 <sup>○</sup>	16	145	21.8	9	15	3.5	18	0.4	8	TS4D	TKY15F
1816R-09E-1/2	●	●		0903 <sup>○</sup>	16	110	21.8	9	15	3.5	18	0.4	8	TS4D	TKY15F
2220R/L-09E	●	●		0903 <sup>○</sup>	20	250	24.0	11	19	2	22	0.4	8	TS4D	TKY15F
2220R-09E-2/3	●	●		0903 <sup>○</sup>	20	165	24.0	11	19	2	22	0.4	8	TS4D	TKY15F
2220R-09E-1/2	●	●	0903 <sup>○</sup>	20	125	24.0	11	19	2	22	0.4	8	TS4D	TKY15F	

\* Clamp Torque (N · m) : TS253=1.0, TS3D=2.5, TS4D=3.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

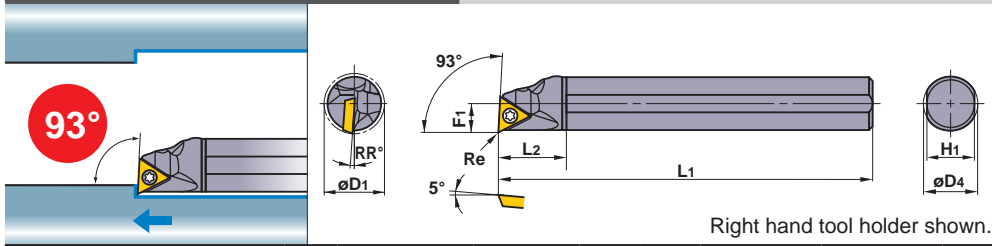
● : Inventory maintained in Japan.


CC <sup>○</sup> type inserts	> A098, A099
CP <sup>○</sup> type inserts	> A102
CBN & PCD inserts	> B036—B039, B056

# FSTUP

## TP $\odot\odot$ inserts

Finish	Light	Medium
FV  (08,09)	SV  (08,09,11,16)	MV  (08,09,11,16)
PCD	CBN	
R/L-F  (08,09,11)	 (08,09,11,16)	



Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D <sub>1</sub> (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	* 		
	R	L		D <sub>4</sub>	L <sub>1</sub>	L <sub>2</sub>	F <sub>1</sub>	H <sub>1</sub>	RR°				Clamp Screw	Wrench	
<b>FSTUP1008R/L-08S</b>	●	●	TPGH TPMH NP-TPGB NP-TPMB NP-TPMH	0802 $\odot\odot$	8	125	18	5	7.2	10	10	0.4	3	TS2D	TKY06F
<b>1210R/L-09S</b>	●	●		0902 $\odot\odot$	10	150	22.5	6	9	8	12	0.4	3.5	TS25D	TKY08F
<b>1412R/L-09S</b>	●	●		0902 $\odot\odot$	12	150	27	7	11	7	14	0.4	4	TS25D	TKY08F
<b>1210R/L-11S</b>	●	●		1103 $\odot\odot$	10	150	22.5	6	9	8	12	0.4	3.5	TS31D	TKY10F
<b>1412R/L-11S</b>	●	●		1103 $\odot\odot$	12	150	27	7	11	7	14	0.4	4	TS31D	TKY10F
<b>1816R/L-11S</b>	●	●		1103 $\odot\odot$	16	180	36	9	15	4	18	0.4	5	TS31D	TKY10F
<b>2220R/L-11S</b>	●	●		1103 $\odot\odot$	20	220	45	11	19	0	22	0.4	5	TS31D	TKY10F
<b>3225R/L-16S</b>	●	●		1603 $\odot\odot$	25	270	56.3	16	23.4	0	32	0.8	5	TS4D	TKY15F

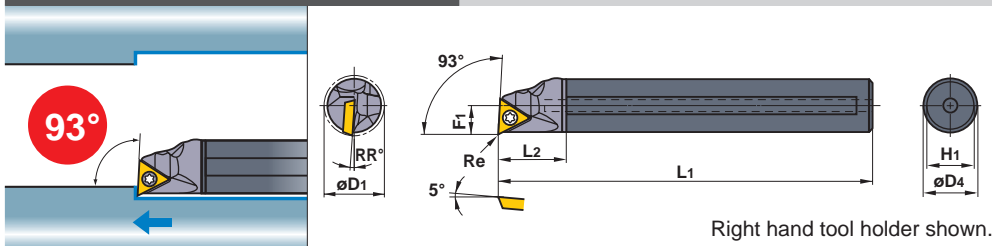
\* Clamp Torque (N · m) : TS2D=0.6, TS25D=1.0, TS31D=2.5, TS4D=3.5


# FSTUP\_E

## Carbide shank with coolant hole

## TP $\odot\odot$ inserts

Finish	Light	Medium
FV  (08,09)	SV  (08,09,11)	MV  (08,09,11)
PCD	CBN	
R/L-F  (08,09,11)	 (08,09,11)	



Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D <sub>1</sub> (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	* 		
	R	L		D <sub>4</sub>	L <sub>1</sub>	L <sub>2</sub>	F <sub>1</sub>	H <sub>1</sub>	RR°				Clamp Screw	Wrench	
<b>FSTUP1008R/L-08E</b>	●	●	TPGH TPMH NP-TPGB NP-TPMB NP-TPMH	0802 $\odot\odot$	8	140	13.8	5	7.2	10	10	0.4	7	TS2D	TKY06F
<b>1008R-08E-2/3</b>	●	●		0802 $\odot\odot$	8	90	13.8	5	7.2	10	10	0.4	7	TS2D	TKY06F
<b>1008R-08E-1/2</b>	●	●		0802 $\odot\odot$	8	70	13.8	5	7.2	10	10	0.4	7	TS2D	TKY06F
<b>1210R/L-09E</b>	●	●		0902 $\odot\odot$	10	160	16.0	6	9	8	12	0.4	7.5	TS25D	TKY08F
<b>1210R-09E-2/3</b>	●	●		0902 $\odot\odot$	10	105	16.0	6	9	8	12	0.4	7.5	TS25D	TKY08F
<b>1210R-09E-1/2</b>	●	●		0902 $\odot\odot$	10	80	16.0	6	9	8	12	0.4	7.5	TS25D	TKY08F
<b>1412R/L-09E</b>	●	●		0902 $\odot\odot$	12	180	17.8	7	11	7	14	0.4	8	TS25D	TKY08F
<b>1412R-09E-2/3</b>	●	●		0902 $\odot\odot$	12	120	17.8	7	11	7	14	0.4	8	TS25D	TKY08F
<b>1412R-09E-1/2</b>	●	●		0902 $\odot\odot$	12	90	17.8	7	11	7	14	0.4	8	TS25D	TKY08F
<b>1816R/L-11E</b>	●	●		1103 $\odot\odot$	16	220	21.8	9	15	4	18	0.4	8	TS31D	TKY10F
<b>1816R-11E-2/3</b>	●	●		1103 $\odot\odot$	16	145	21.8	9	15	4	18	0.4	8	TS31D	TKY10F
<b>1816R-11E-1/2</b>	●	●		1103 $\odot\odot$	16	110	21.8	9	15	4	18	0.4	8	TS31D	TKY10F
<b>2220R/L-11E</b>	●	●		1103 $\odot\odot$	20	250	24.0	11	19	0	22	0.4	8	TS31D	TKY10F
<b>2220R-11E-2/3</b>	●	●		1103 $\odot\odot$	20	165	24.0	11	19	0	22	0.4	8	TS31D	TKY10F
<b>2220R-11E-1/2</b>	●	●		1103 $\odot\odot$	20	125	24.0	11	19	0	22	0.4	8	TS31D	TKY10F

\* Clamp Torque (N · m) : TS2D=0.6, TS25D=1.0, TS31D=2.5

TP $\odot\odot$  type inserts > A116, A117  
CBN & PCD inserts > B043, B059

CUTTING CONDITIONS > E012  
SPARE PARTS > P001  
TECHNICAL DATA > Q001

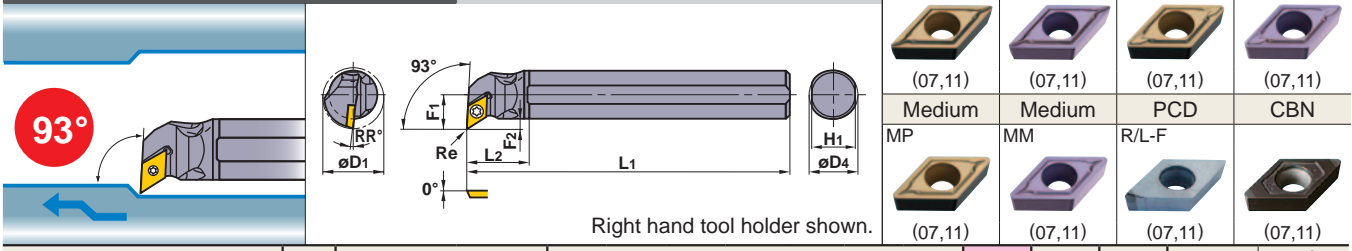




# DIMPLE BAR

- Excellent vibration resistance due to light dimple head.
- Chip disposal is improved by having two channels for chip evacuation.
- A laser printed scale on the side for easy installation (Steel shank).
- l/d is 3 to 5 times the diameter (Carbide shank is 7 to 8 times the diameter).

## FSDUC

### DC $\odot$ inserts

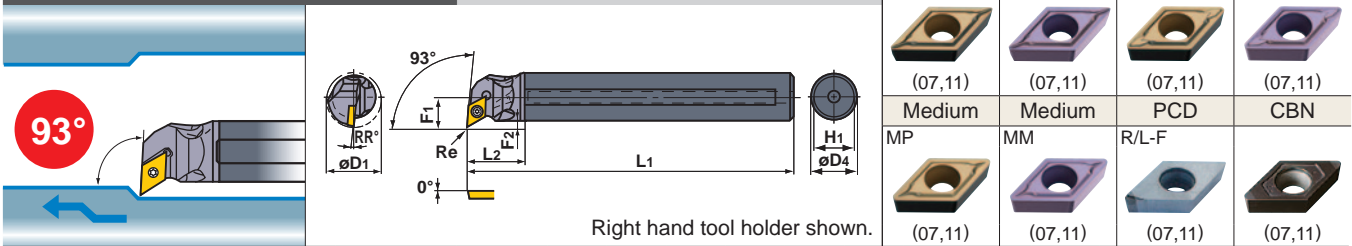




Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	*  		
	R	L		D4	L1	L2	F1	F2	H1	RR°				Clamp Screw	Wrench	
<b>FSDUC1410R/L-07S</b>	●	●	DCMT DCET DCGT NP-DCMT NP-DCMW	0702 $\odot$	10	150	18	8.3	3.3	9	7.5	14	0.4	3.5	TS25	TKY08F
<b>1612R/L-07S</b>	●	●		0702 $\odot$	12	150	20	9.3	3.3	11	6	16	0.4	4	TS25	TKY08F
<b>2016R/L-07S</b>	●	●		0702 $\odot$	16	180	20	11.3	3.3	15	5	20	0.4	5	TS25	TKY08F
<b>3220R/L-11S</b>	●	●		11T3 $\odot$	20	180	22.5	16.1	6.1	19	5	32	0.8	5	TS43	TKY15F

\* Clamp Torque (N · m) : TS25=1.0, TS43=3.5

## FSDUC\_E

### Carbide shank with coolant hole DC $\odot$ inserts



Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	*  		
	R	L		D4	L1	L2	F1	F2	H1	RR°				Clamp Screw	Wrench	
<b>FSDUC1410R/L-07E</b>	●	●	DCMT DCET DCGT NP-DCMT NP-DCMW	0702 $\odot$	10	160	16.0	8.3	3.3	9	7.5	14	0.4	7.5	TS25	TKY08F
<b>1612R/L-07E</b>	●	●		0702 $\odot$	12	180	17.8	9.3	3.3	11	6.0	16	0.4	8	TS25	TKY08F
<b>2016R/L-07E</b>	●	●		0702 $\odot$	16	220	21.8	11.3	3.3	15	5.0	20	0.4	8	TS25	TKY08F
<b>3220R/L-11E</b>	●	●		11T3 $\odot$	20	250	24.0	16.1	6.1	19	5.0	32	0.8	8	TS43	TKY15F

\* Clamp Torque (N · m) : TS25=1.0, TS43=3.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

DC $\odot$  type inserts > A103–A107  
CBN & PCD inserts > B040, B041, B057

FSDQC		DC $\odot$ inserts									Finish	Finish	Light	Light		
		FP	FM	LP	LM											
		Right hand tool holder shown.									(07,11)	(07,11)	(07,11)	(07,11)		
		Medium	Medium	PCD	CBN											
		Right hand tool holder shown.									(07,11)	(07,11)	(07,11)	(07,11)		
		MP	MM	R/L-F												
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	* Clamp Screw	Wrench	
	R	L		D4	L1	L2	F1	F2	H1	RR°						
FSDQC1310R/L-07S	●	●	DCMT DCET DCGT NP-DCMT NP-DCMW	0702 $\odot$	10	150	20.5	7.6	2.6	9	8	13	0.4	3.5	TS25	TKY08F
1612R/L-07S	●	●		0702 $\odot$	12	150	22.5	8.6	2.6	11	6	16	0.4	4	TS25	TKY08F
2016R/L-07S	●	●		0702 $\odot$	16	180	22.5	10.6	2.6	15	5	20	0.4	5	TS25	TKY08F
2520R/L-11S	●	●		11T3 $\odot$	20	180	26	13.7	3.7	19	7	25	0.8	5	TS43	TKY15F

\* Clamp Torque (N · m) : TS25=1.0, TS43=3.5

FSDQC_E		Carbide shank with coolant hole DC $\odot$ inserts									Finish	Finish	Light	Light		
		FP	FM	LP	LM											
		Right hand tool holder shown.									(07,11)	(07,11)	(07,11)	(07,11)		
		Medium	Medium	PCD	CBN											
		Right hand tool holder shown.									(07,11)	(07,11)	(07,11)	(07,11)		
		MP	MM	R/L-F												
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	* Clamp Screw	Wrench	
	R	L		D4	L1	L2	F1	F2	H1	RR°						
FSDQC1310R/L-07E	●	●	DCMT DCET DCGT NP-DCMT NP-DCMW	0702 $\odot$	10	162	18.4	7.6	2.6	9	8	13	0.4	7.5	TS25	TKY08F
1612R/L-07E	●	●		0702 $\odot$	12	182	20.2	8.6	2.6	11	6	16	0.4	8	TS25	TKY08F
2016R/L-07E	●	●		0702 $\odot$	16	222	24.2	10.6	2.6	15	5	20	0.4	8	TS25	TKY08F
2520R/L-11E	●	●		11T3 $\odot$	20	254	28.0	13.7	3.7	19	7	25	0.8	8	TS43	TKY15F

\* Clamp Torque (N · m) : TS25=1.0, TS43=3.5

DC $\odot$  type inserts > A103–A107  
CBN & PCD inserts > B040, B041, B057

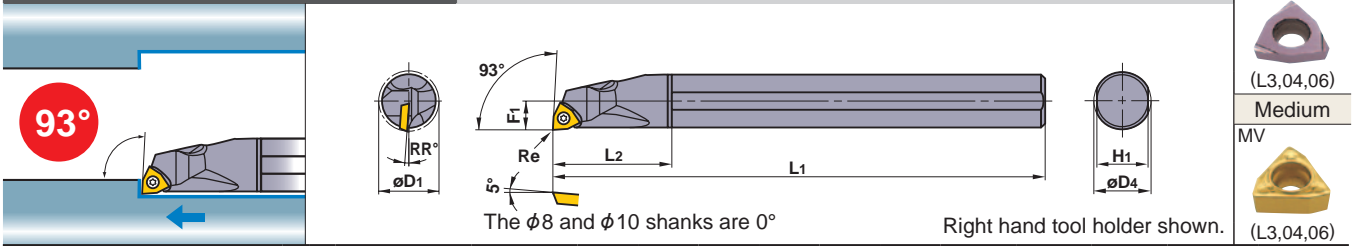
CUTTING CONDITIONS > E012  
SPARE PARTS > P001  
TECHNICAL DATA > Q001

# DIMPLE BAR

- Excellent vibration resistance due to light dimple head.
- Chip disposal is improved by having two channels for chip evacuation.
- A laser printed scale on the side for easy installation (Steel shank).
- l/d is 3 to 5 times the diameter (Carbide shank is 7 to 8 times the diameter).

## FSWUB/P

## WB inserts, WP inserts



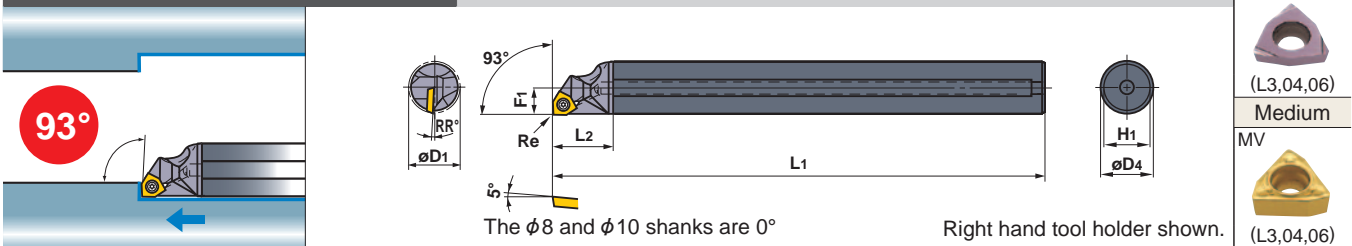
Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	* Clamp Screw	Wrench	
	R	L		D4	L1	L2	F1	H1	RR°						
FSWUB1008R/L-L3S	●	●	WBMT WBGT	L302	8	125	18	5	7.2	14	10	0.2	3	TS2	TKY06F
1210R/L-L3S	●	●		L302	10	150	22.5	6	9	11	12	0.2	3.5	TS2	TKY06F
FSWUP1412R/L-04S	●	●	WPMT WPGT	0402	12	150	27	7	11	4	14	0.4	4	TS253	TKY08F
1816R/L-04S	●	●		0402	16	180	36	9	15	1	18	0.4	5	TS253	TKY08F
2220R/L-06S	●	●		0603	20	220	45	11	19	2	22	0.8	5	TS4	TKY15F
3025R/L-06S	●	●		0603	25	250	56.3	15	23.4	0	30	0.8	5	TS4	TKY15F

\* Clamp Torque (N · m) : TS2=0.6, TS253=1.0, TS4=3.5

## FSWUB/P\_E

Carbide shank with coolant hole

## WB inserts, WP inserts



Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	* Clamp Screw	Wrench	
	R	L		D4	L1	L2	F1	H1	RR°						
FSWUB1008R/L-L3E	●	●	WBMT WBGT	L302	8	140	13.8	5	7.2	14	10	0.2	7	TS2	TKY06F
1008R-L3E-2/3	●	●		L302	8	90	13.8	5	7.2	14	10	0.2	7	TS2	TKY06F
1008R-L3E-1/2	●	●		L302	8	70	13.8	5	7.2	14	10	0.2	7	TS2	TKY06F
1210R/L-L3E	●	●		L302	10	160	16.0	6	9	11	12	0.2	7.5	TS2	TKY06F
1210R-L3E-2/3	●	●		L302	10	105	16.0	6	9	11	12	0.2	7.5	TS2	TKY06F
1210R-L3E-1/2	●	●		L302	10	80	16.0	6	9	11	12	0.2	7.5	TS2	TKY06F
FSWUP1412R/L-04E	●	●	WPMT WPGT	0402	12	180	17.8	7	11	4	14	0.4	8	TS253	TKY08F
1412R-04E-2/3	●	●		0402	12	120	17.8	7	11	4	14	0.4	8	TS253	TKY08F
1412R-04E-1/2	●	●		0402	12	90	17.8	7	11	4	14	0.4	8	TS253	TKY08F
1816R/L-04E	●	●		0402	16	220	21.8	9	15	1	18	0.4	8	TS253	TKY08F
1816R-04E-2/3	●	●		0402	16	145	21.8	9	15	1	18	0.4	8	TS253	TKY08F
1816R-04E-1/2	●	●		0402	16	110	21.8	9	15	1	18	0.4	8	TS253	TKY08F
2220R/L-06E	●	●		0603	20	250	24.0	11	19	2	22	0.8	8	TS4	TKY15F
2220R-06E-2/3	●	●		0603	20	165	24.0	11	19	2	22	0.8	8	TS4	TKY15F
2220R-06E-1/2	●	●		0603	20	125	24.0	11	19	2	22	0.8	8	TS4	TKY15F

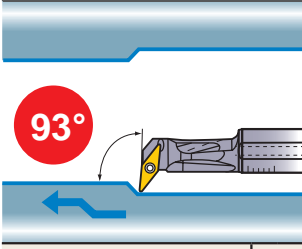
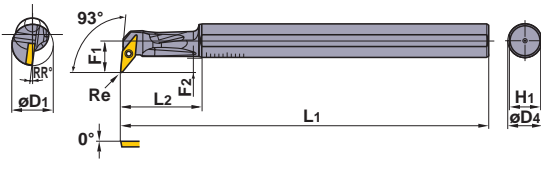
\* Clamp Torque (N · m) : TS2=0.6, TS253=1.0, TS4=3.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

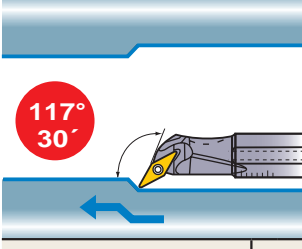
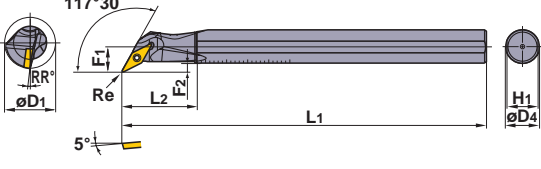
(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

WB type inserts > A126  
WP type inserts > A128  
PCD inserts > B062

<b>FSVUB/C</b>		<b>VC<math>\circ</math>inserts, VB<math>\circ</math>inserts</b>										Finish	Finish	Light	Light			
												FP (11,16)	FM (11,16)	LP (11,16)	LM (11,16)			
		Right hand tool holder shown.										Medium (16)	Medium (16)	Medium (16)	CBN (16)			
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommended l/d ratio	Tools				
	R	L		D4	L1	L2	F1	F2	H1	RR°				Shim	Shim Pin	Clamp Screw *	Wrench	
<b>FSVUC1612R/L-08S</b>	●	●	VCGT VCMT	0802 $\circ$	12	150	25	11	5.5	11	8	16	0.4	4	—	—	TS202	TKY06F
<b>FSVUB2016R/L-11S</b>	●	●	VBET VBGT VBMT NP-VBGW	1103 $\circ$	16	180	32.5	15.5	8	15	8	20	0.4	5	—	—	TS255	TKY08F
<b>2520R/L-11S</b>	●	●		1103 $\circ$	20	200	40.5	17.5	8	19	7	25	0.4	5	—	—	TS255	TKY08F
<b>3425R/L-16S</b>	●	●		1604 $\circ$	25	220	50	20.5	8.5	23.4	13	34	0.8	5	SPSVN32	BCP141	TS35D	TKY15F
<b>4032R/L-16S</b>	●	●	1604 $\circ$	32	250	84.0	27.5	12	30.4	9	40	0.8	5	SPSVN32	BCP141	TS35D	TKY15F	

\* Clamp Torque (N • m) : TS202=0.6, TS255=1.0, TS35D=3.5

<b>FSVPB/C</b>		<b>VC<math>\circ</math>inserts, VB<math>\circ</math>inserts</b>										Finish	Finish	Light	Light			
												FP (11,16)	FM (11,16)	LP (11,16)	LM (11,16)			
		Right hand tool holder shown.										Medium (16)	Medium (16)	Medium (16)	CBN (16)			
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommended l/d ratio	Tools				
	R	L		D4	L1	L2	F1	F2	H1	RR°				Shim	Shim Pin	Clamp Screw *	Wrench	
<b>FSVPC1610R/L-08S</b>	●	●	VCGT VCMT	0802 $\circ$	10	150	25	8	3	9	8	16	0.4	3.5	—	—	TS202	TKY06F
<b>FSVPB2012R/L-11S</b>	●	●	VBET VBGT VBMT NP-VBGW	1103 $\circ$	12	150	28	10	4.5	11	8	20	0.4	4	—	—	TS255	TKY08F
<b>2516R/L-11S</b>	●	●		1103 $\circ$	16	180	35	12.5	5	15	5	25	0.4	5	—	—	TS255	TKY08F
<b>3020R/L-11S</b>	●	●		1103 $\circ$	20	200	40	15	5	19	5	30	0.4	5	—	—	TS255	TKY08F
<b>3425R/L-16S</b>	●	●		1604 $\circ$	25	220	50	17	5	23.4	13	34	0.8	5	SPSVN32	BCP141	TS35D	TKY15F
<b>4032R/L-16S</b>	●	●		1604 $\circ$	32	250	55	22	6.5	30.4	9	40	0.8	5	SPSVN32	BCP141	TS35D	TKY15F

\* Clamp Torque (N • m) : TS202=0.6, TS255=1.0, TS35D=3.5

VB $\circ$  type inserts > A119—A121  
VC $\circ$  type inserts > A122, A123  
CBN & PCD inserts > B045, B061

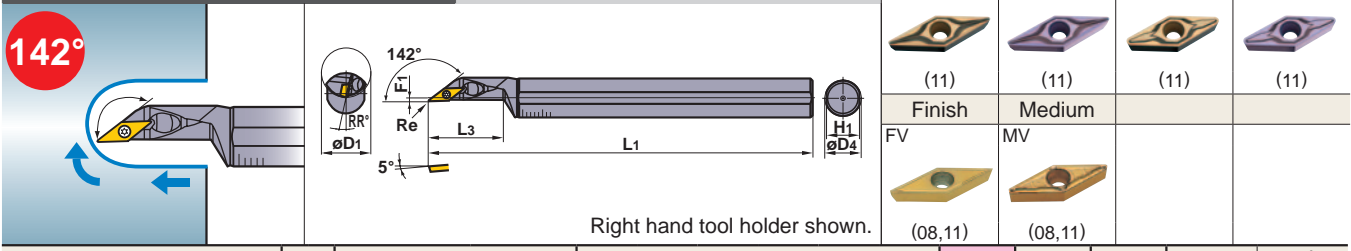
CUTTING CONDITIONS > E012  
SPARE PARTS > P001  
TECHNICAL DATA > Q001

# DIMPLE BAR

- Excellent vibration resistance due to light dimple head.
- Chip disposal is improved by having two channels for chip evacuation.
- A laser printed scale on the side for easy installation (Steel shank).
- l/d is 3 to 5 times the diameter.

## FSVJB/C

VC $\odot$  inserts, VB $\odot$  inserts



Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Maximum recommendation l/d ratio	*		
	R	L		D4	L1	L3	F1	H1	RR°				Clamp Screw	Wrench	
<b>FSVJC1612R/L-08S</b>	●	●	VCGT VCMT	0802 $\odot$	12	150	26	2	11	5	16	0.4	4	TS202	TKY06F
<b>2016R/L-08S</b>	●	●		0802 $\odot$	16	180	36	2	15	5	20	0.4	5	TS202	TKY06F
<b>FSVJB2520R/L-11S</b>	●	●	VBET VBGT VBMT	1103 $\odot$	20	200	37.5	2	19	5	25	0.4	5	TS255	TKY08F
<b>3025R/L-11S</b>	●	●		1103 $\odot$	25	250	45	3.5	23.4	5	30	0.4	5	TS255	TKY08F

\* Clamp Torque (N · m) : TS202=0.6, TS255=1.0

## RECOMMENDED CUTTING CONDITIONS

Work Material	Cutting Mode	Breaker	Recom-mendation	Grade	Cutting Speed (m/min)	l/d ≤ 3 (Steel shank) l/d ≤ 6 (Carbide shank)		l/d = 4-5 (Steel shank) l/d = 7-8 (Carbide shank)	
						Feed (mm/rev)	Depth of Cut (mm)	Feed (mm/rev)	Depth of Cut (mm)
P Mild Steel ≤180HB	Finish	FV	①	NX2525	170 (120-220)	0.10 (0.05-0.15)	-0.5	0.10 (0.05-0.15)	-0.5
			②	NX3035	150 (100-200)	0.20 (0.10-0.25)	-1.0	0.15 (0.05-0.20)	-1.0
	Light	SV	①	NX2525	160 (110-210)	0.20 (0.10-0.25)	-1.0	0.15 (0.05-0.20)	-1.0
			②	NX3035	140 (90-190)	0.25 (0.15-0.35)	-2.0	0.20 (0.15-0.25)	-1.5
	Medium	MV	①	NX2525	150 (100-200)	0.25 (0.15-0.35)	-2.0	0.20 (0.15-0.25)	-1.5
			②	NX3035	140 (90-190)	0.10 (0.05-0.15)	-0.5	0.10 (0.05-0.15)	-0.5
M Carbon Steel Alloy Steel 180-350HB	Finish	FV	①	VP15TF	140 (90-190)	0.10 (0.05-0.15)	-0.5	0.10 (0.05-0.15)	-0.5
			②	NX2525	130 (80-180)	0.10 (0.05-0.15)	-0.5	0.10 (0.05-0.15)	-0.5
	Light	SV	①	UE6020	140 (90-190)	0.20 (0.10-0.25)	-1.0	0.15 (0.05-0.20)	-1.0
			②	NX3035	110 (60-160)	0.20 (0.10-0.25)	-1.0	0.15 (0.05-0.20)	-1.0
	Medium	MV	①	UE6020	130 (80-180)	0.25 (0.15-0.35)	-2.0	0.20 (0.15-0.25)	-1.5
			②	NX3035	100 (60-150)	0.25 (0.15-0.35)	-2.0	0.20 (0.15-0.25)	-1.5
K Gray Cast Iron Tensile Strength ≤350MPa	Finish	F, FS	①	HTi10	130 (90-160)	0.15 (0.10-0.20)	-0.5	0.15 (0.10-0.20)	-0.5
			②	VP15TF	90 (60-120)	0.20 (0.15-0.25)	-2.0	0.20 (0.15-0.25)	-1.5
N Aluminium Alloy	Finish	F, FS	①	HTi10	300 (200-400)	0.10 (0.05-0.15)	-0.5	0.10 (0.05-0.15)	-0.5
			②	MD220	200 (150-250)	0.10 (0.05-0.15)	-2.0	0.10 (0.05-0.15)	-1.0
H Heat Treated Steel 35-65HRC	Finish	Flat Top	①	MB825	100 (80-200)	0.10 (0.05-0.15)	-0.15	0.10 (0.05-0.15)	-0.1

(Note 1) When vibrations occur, reduce cutting speed by 30%.

(Note 2) The depth of cut needs to be less than the corner diameter when using the FSVJ type.

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

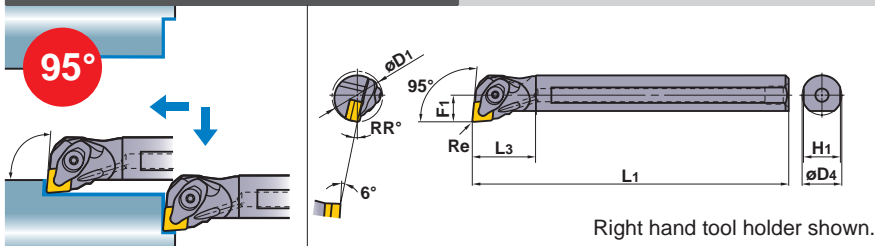
- VB $\odot$  type inserts > A119-A121
- VC $\odot$  type inserts > A122, A123
- CBN & PCD inserts > B045, B061









# DOUBLE CLAMP DIMPLE BAR







- Economical negative insert.
- Single action type.
- Excellent vibration resistance due to a light dimple head. (With coolant hole.)
- $l/d$  is 3 to 4 times the diameter.

## DCLN

With coolant hole **CN** inserts



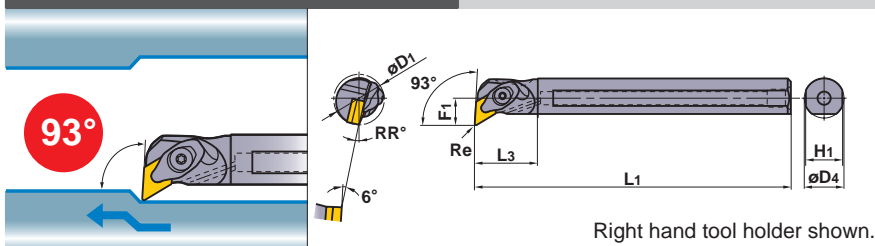
Finish	Light	Light	Medium
FH  (12)	SA  (12)	LP  (12)	MP  (12)
Medium MH  (12)	Medium Standard  (12)	Stainless MM  (12)	CBN  (12)









Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)						
	R	L		D4	L1	L3	F1	H1	RR°									
A25R-DCLNR/L12	●	●	CNMA 1204	25	200	40	17	23	11	32	0.8	LLSCP42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	
A32S-DCLNR/L12	●	●	CNMG CNMM 1204	32	250	50	22	30	13	40	0.8	LLSCN42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	
A40T-DCLNR/L12	●	●	CNGG 1204	40	300	63	27	37	10	50	0.8	LLSCN42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	







\* Clamp Torque (N · m) : DC0621T=5.0

## DDUN

With coolant hole **DN** inserts



Finish	Light	Medium	Medium
FH  (15)	LP  (15)	MP  (15)	MH  (15)
Medium Standard  (15)	Stainless MM  (15)	G class R/L  (15)	CBN  (15)

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)						
	R	L		D4	L1	L3	F1	H1	RR°									
A25R-DDUNR/L15	●	●	DNMA DNMG 1504	25	200	40	17	23	13	32	0.8	LLSDP42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	
A32S-DDUNR/L15	●	●	DNMX DNMG 1504	32	250	50	22	30	13	40	0.8	LLSDN42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	
A40T-DDUNR/L15	●	●	DNGA DNMG 1504	40	300	63	27	37	10	50	0.8	LLSDN42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	

\* Clamp Torque (N · m) : DC0621T=5.0

## RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Cutting Mode	$l/d \leq 3$			$l/d = 3-4$		
			Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Medium	110 (80-140)	0.25 (0.1-0.4)	-5.0	110 (80-140)	0.2 (0.1-0.3)	-4.0
<b>M</b> Stainless Steel	≤200HB	Medium	80 (60-100)	0.2 (0.1-0.3)	-4.0	70 (50-100)	0.15 (0.1-0.25)	-3.0
<b>K</b> Gray Cast Iron	Tensile Strength ≤350MPa	Medium	80 (60-100)	0.25 (0.1-0.4)	-5.0	80 (60-100)	0.2 (0.1-0.3)	-4.0

CN type inserts > A066-A070  
 DN type inserts > A071-A075  
 CBN & PCD inserts > B022-B026, B052

SPARE PARTS > P001  
 TECHNICAL DATA > Q001

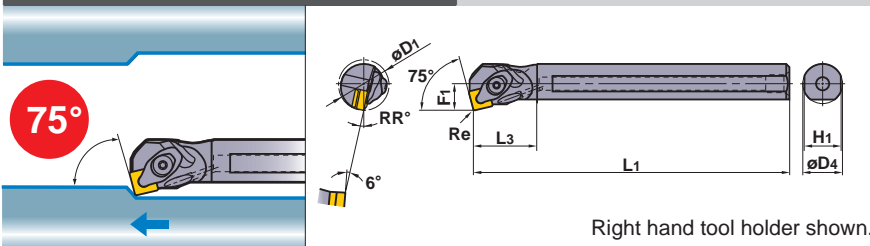
BORING









# DOUBLE CLAMP DIMPLE BAR

- Economical negative insert.
- Single action type.
- Excellent vibration resistance due to a light dimple head. (With coolant hole.)
- $l/d$  is 3 to 4 times the diameter.

## DSKN

With coolant hole **SN** inserts



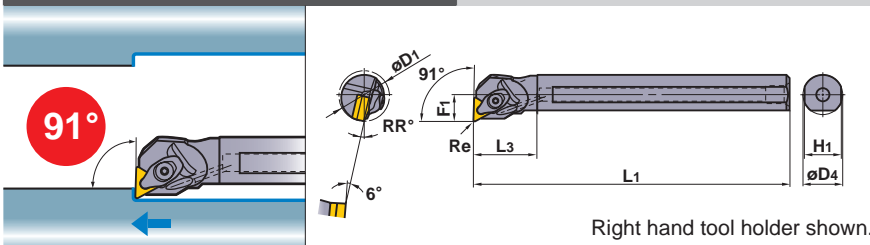
Finish	Light	Medium	Medium
FH  (12)	LP  (12)	MP  (12)	MH  (12)
Medium	Stainless	G class	CBN
Standard  (12)	MM  (12)	R/L  (12)	 (12)


Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Accessories					
	R	L		D4	L1	L3	F1	H1	RR°	Shim			Shim Pin	Clamp Bridge	Spring	Clamp Screw *	Wrench	
A25R-DSKNR/L12	●	●	SNMA SNMG SNMM SNGA SNGG	1204	25	200	40	17	23	13	32	0.8	LLSSP42	LLP14	DCK2613	DCS1	DC0621T	TKY20F
A32S-DSKNR/L12	●	●	SNMA SNMG SNMM SNGA SNGG	1204	32	250	50	22	30	13	40	0.8	LLSSN42	LLP14	DCK2613	DCS1	DC0621T	TKY20F

\* Clamp Torque (N · m) : DC0621T=5.0

## DTFN

With coolant hole **TN** inserts



Finish	Light	Medium	Medium
FH  (16)	LP  (16)	MP  (16)	MH  (16)
Medium	Stainless	G class	CBN
Standard  (16)	MM  (16)	R/L  (16)	 (16)

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Accessories					
	R	L		D4	L1	L3	F1	H1	RR°	Shim			Shim Pin	Clamp Bridge	Spring	Clamp Screw *	Wrench	
A25R-DTFNR/L16	●	●	TNMA TNMG TNMM TNGA TNGG	1604	25	200	40	17	23	13	32	0.8	LLSTP32	LLP23	DCK2211	DCS2	DC0520T	TKY15F
A32S-DTFNR/L16	●	●	TNMA TNMG TNMM TNGA TNGG	1604	32	250	50	22	30	13	40	0.8	LLSTN32	LLP23	DCK2211	DCS2	DC0520T	TKY15F


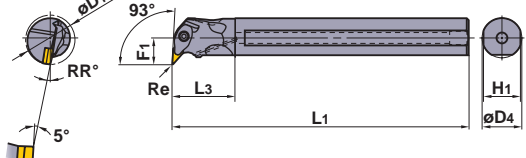
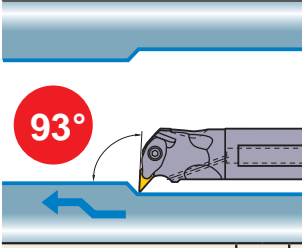






\* Clamp Torque (N · m) : DC0520T=3.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.


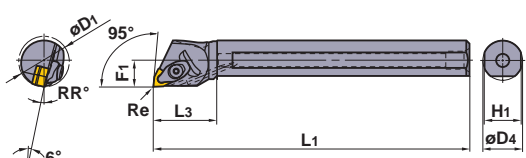
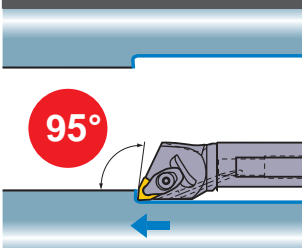






(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

SN type inserts	> A077 – A081
TN type inserts	> A082 – A087
CBN & PCD inserts	> B027 – B029, B053

<b>DVUN</b>		With coolant hole <b>VN<math>\circ</math>inserts</b>										Finish	Light	Medium	Medium		
			(16)	(16)	(16)	(16)	(16)	(16)	(16)	(16)	(16)	FH	LP	MP	MH		
												Medium	Stainless	G class	CBN		
												Standard	MM	R/L			
Order Number	Stock	Insert Number	Dimensions(mm)							Min. Cutting Diameter	Standard Corner Radius						
	R L		D4	L1	L3	F1	H1	RR°	D1 (mm)	Re (mm)	Shim	Shim Pin	Clamp Bridge	Spring	Clamp Screw	Wrench	
<b>A40T-DVUNR/L16</b>	●●	VNMA VNGA 1604 $\circ$	40	300	63	27	37	9	50	0.8	DCSVN32	LLP13	DCK3113	DCS2	DC0520T	TKY15F	

\* Clamp Torque (N · m) : DC0520T=3.5

<b>DWLN</b>		With coolant hole <b>WN<math>\circ</math>inserts</b>										Finish	Light	Medium	Medium		
			(08)	(08)	(06,08)	(08)	(08)	(08)	(08)	(08)	(08)	FH	LP	MP	MH		
												Medium	Medium - Rough	Stainless			
												Standard	RP	MM			
Order Number	Stock	Insert Number	Dimensions(mm)							Min. Cutting Diameter	Standard Corner Radius						
	R L		D4	L1	L3	F1	H1	RR°	D1 (mm)	Re (mm)	Shim	Shim Pin	Clamp Bridge	Spring	Clamp Screw	Wrench	
<b>A25R-DWLNR/L06</b>	●●	WNMG 0604 $\circ$	25	200	40	17	23	13	32	0.8	LLSWP32	LLP23	DCK2211	DCS2	DC0520T	TKY15F	
<b>A25R-DWLNR/L08</b>	●●	WNMG 0804 $\circ$	25	200	40	17	23	13	32	0.8	LLSWP42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	
<b>A32S-DWLNR/L08</b>	●●	WNMA WNMG 0804 $\circ$	32	250	50	22	30	13	40	0.8	LLSWN42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	
<b>A40T-DWLNR/L08</b>	●●	WNMG 0804 $\circ$	40	300	63	27	37	10	50	0.8	LLSWN42	LLP14	DCK2613	DCS1	DC0621T	TKY20F	

\* Clamp Torque (N · m) : DC0520T=3.5, DC0621T=5.0

## RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Cutting Mode	l/d ≤ 3			l/d = 3-4		
			Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Medium	110 (80-140)	0.25 (0.1-0.4)	-5.0	110 (80-140)	0.2 (0.1-0.3)	-4.0
<b>M</b> Stainless Steel	≤200HB	Medium	80 (60-100)	0.2 (0.1-0.3)	-4.0	70 (50-100)	0.15 (0.1-0.25)	-3.0
<b>K</b> Gray Cast Iron	Tensile Strength ≤350MPa	Medium	80 (60-100)	0.25 (0.1-0.4)	-5.0	80 (60-100)	0.2 (0.1-0.3)	-4.0

VN $\circ$  type inserts > A088-A090WN $\circ$  type inserts > A091-A094

CBN &amp; PCD inserts &gt; B030, B031, B054

SPARE PARTS &gt; P001

TECHNICAL DATA &gt; Q001



# BORING BARS

## MICRO-DEX BORING BARS

- The minimum cutting diameter is from  $\phi 5$ .
- 7° positive insert, carbide shank type.
- Easy-to-use tool geometries.
- Suitable for small workpieces.
- l/d is 5 times the diameter.

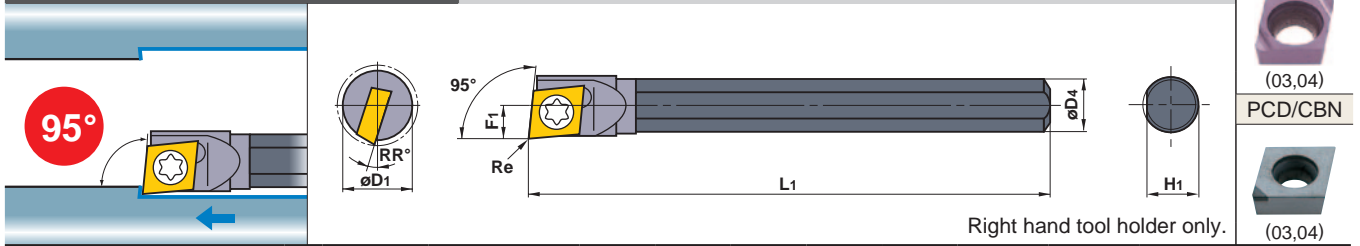
### SCLC

Carbide shank

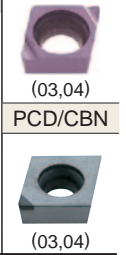
### CCO inserts

Finish

L-F



Right hand tool holder only.



Order Number	Stock	Insert Number	Dimensions(mm)					Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	*2	
			D4	L1	F1	H1	RR°			Clamp Screw	Wrench
C04GSCLCR03	●	*1	4	90	2.5	3.7	15	5	0.2	TS16	TKY06F
C05HSCLCR03	●	CCGT	5	100	3.0	4.7	13	6	0.2	TS16	TKY06F
C06JSCLCR04	●	NP-CCMW	6	110	3.5	5.7	13	7	0.2	TS21	TKY06F
C07KSCLCR04	●		7	125	4.0	6.7	11	8	0.2	TS21	TKY06F

\*1 Diameter of inscribed circle is special. (For SCLC type)

\*2 Clamp Torque (N · m) : TS16=0.6, TS21=0.6

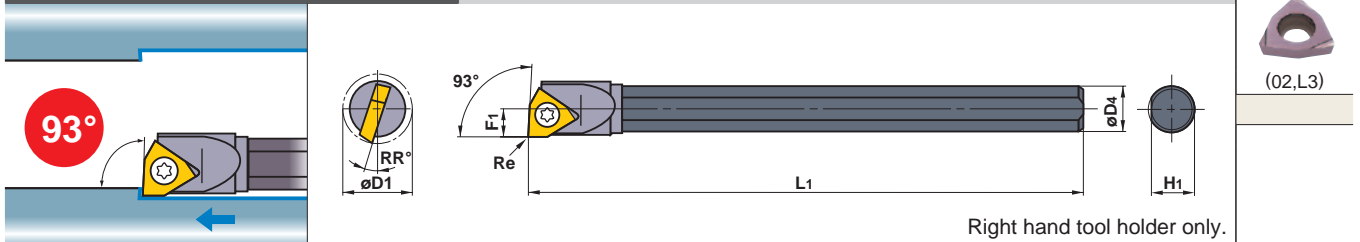
### SWUB

Carbide shank

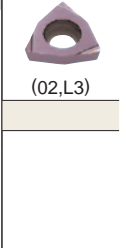
### WBGT inserts

Finish

L-F



Right hand tool holder only.



Order Number	Stock	Insert Number	Dimensions(mm)					Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	*	
			D4	L1	F1	H1	RR°			Clamp Screw	Wrench
C05HSWUBR02	●		5	100	3.0	4.7	15	6	0.2	TS21	TKY06F
C06JSWUBR02	●	WBGT	6	110	3.5	5.7	13	7	0.2	TS2C	TKY06F
C07KSWUBRL3	●		7	125	4.0	6.7	15	8	0.2	TS2	TKY06F

\* Clamp Torque (N · m) : TS21=0.6, TS2C=0.6, TS2=0.6

(Note) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

● : Inventory maintained in Japan.

CCGT type inserts > A098  
WBGT type inserts > A126  
CBN inserts > B038

**STUC**

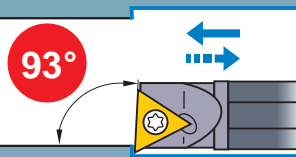
Carbide shank

TCGT inserts

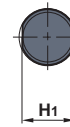
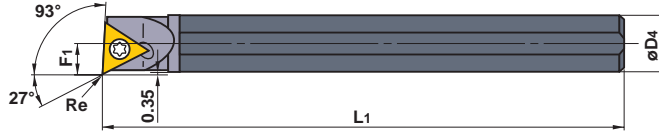
Finish

L-F

93°



Depth of cut is limited when cutting backwards.



(06)

Right hand tool holder only.

Order Number	Stock R	Insert Number		Dimensions(mm)					Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* Clamp Screw	Wrench
				D4	L1	F1	H1	RR°				
<b>C07KSTUCR06</b>	●	TCGT	0601	7	125	4.0	6.7	12	8	0.2	TS2C	TKY06F

\* Clamp Torque (N · m) : TS2C=0.6

BORING

**RECOMMENDED CUTTING CONDITIONS**

	Work Material	Grade	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	l/d
<b>P</b>	Carbon Steel, Alloy Steel 180–350HB	<b>NX2525</b>	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5
<b>M</b>	Stainless Steel ≤200HB	<b>VP15TF</b>	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5
<b>K</b>	Gray Cast Iron ≤350MPa	<b>VP15TF</b>	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5
<b>N</b>	Non-Ferrous Material	<b>VP15TF</b>	120 (80–160)	0.05 (0.01–0.08)	0.4 (0.1–0.6)	3–5
		<b>MD220</b>	120 (80–160)	0.05 (0.01–0.08)	0.4 (0.1–0.6)	3–5
<b>H</b>	Heat Treated Steel 35–65HRC	<b>MB810</b>	80 (40–120)	0.03 (0.01–0.05)	0.1 (0.03–0.2)	3–5

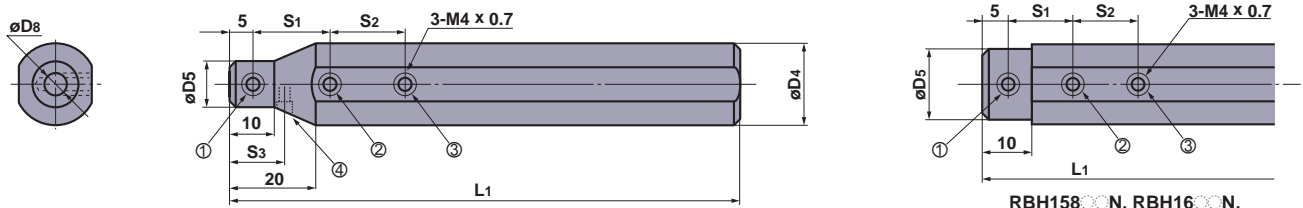
TCGT type inserts > A113  
 SPARE PARTS > P001  
 TECHNICAL DATA > Q001

**E017**

# BORING BARS

## MICRO-DEX BORING BARS

### STANDARD HOLDER



RBH22000N has a temporary set screw for different machine specifications.  
(Represented by number 4)

RBH15800N, RBH1600N,  
RBH19000N

Order Number	Stock	Dimensions(mm)							MICRO-DEX	*Clamp Screw				Wrench	Torque (N·m)
		D4	D8	D5	L1	S1	S2	S3		①	②	③	④		
RBH15840N	●	15.875	4	15	100	15	15	—	C04GS	A	A	A	—	HKY20F	2.0
15850N	●	15.875	5	15	100	15	15	—	C05HS	A	A	A	—	HKY20F	2.0
15860N	●	15.875	6	15	100	15	15	—	C06JS	A	A	A	—	HKY20F	2.0
15870N	●	15.875	7	15	100	20	20	—	C07KS	A	A	A	—	HKY20F	2.0
RBH1640N	●	16	4	15	100	15	15	—	C04GS	A	A	A	—	HKY20F	2.0
1650N	●	16	5	15	100	15	15	—	C05HS	A	A	A	—	HKY20F	2.0
1660N	●	16	6	15	100	15	15	—	C06JS	A	A	A	—	HKY20F	2.0
1670N	●	16	7	15	100	20	20	—	C07KS	A	A	A	—	HKY20F	2.0
*2 RBH19040N	●	19.05	4	18	125	15	15	—	C04GS	B	B	B	—	HKY20F	2.0
*2 19050N	●	19.05	5	18	125	15	15	—	C05HS	B	B	B	—	HKY20F	2.0
*2 19060N	●	19.05	6	18	125	15	15	—	C06JS	B	B	B	—	HKY20F	2.0
*2 19070N	●	19.05	7	18	125	20	20	—	C07KS	B	B	B	—	HKY20F	2.0
RBH2040N	●	20	4	13	125	15	15	—	C04GS	A	B	B	—	HKY20F	2.0
2050N	●	20	5	14	125	15	15	—	C05HS	A	B	B	—	HKY20F	2.0
2060N	●	20	6	15	125	15	15	—	C06JS	A	B	B	—	HKY20F	2.0
2070N	●	20	7	16	125	20	20	—	C07KS	A	B	B	—	HKY20F	2.0
RBH2240N	●	22	4	13	125	15	15	12.5	C04GS	A	B	B	A	HKY20F	2.0
2250N	●	22	5	14	125	15	15	12.5	C05HS	A	B	B	A	HKY20F	2.0
2260N	●	22	6	15	125	15	15	15	C06JS	A	B	B	A	HKY20F	2.0
2270N	●	22	7	16	125	20	20	15	C07KS	A	B	B	A	HKY20F	2.0
RBH2540N	●	25	4	13	150	15	15	—	C04GS	A	C	C	—	HKY20F	2.0
2550N	●	25	5	14	150	15	15	—	C05HS	A	C	C	—	HKY20F	2.0
2560N	●	25	6	15	150	15	15	—	C06JS	A	C	C	—	HKY20F	2.0
2570N	●	25	7	16	150	20	20	—	C07KS	A	C	C	—	HKY20F	2.0
RBH25440N	●	25.4	4	13	150	15	15	—	C04GS	A	C	C	—	HKY20F	2.0
25450N	●	25.4	5	14	150	15	15	—	C05HS	A	C	C	—	HKY20F	2.0
25460N	●	25.4	6	15	150	15	15	—	C06JS	A	C	C	—	HKY20F	2.0
25470N	●	25.4	7	16	150	20	20	—	C07KS	A	C	C	—	HKY20F	2.0

\*1 Order number of clamp screw A=HSS04004, B=HSS04006, C=HSS04008

\*2 Revised order number.

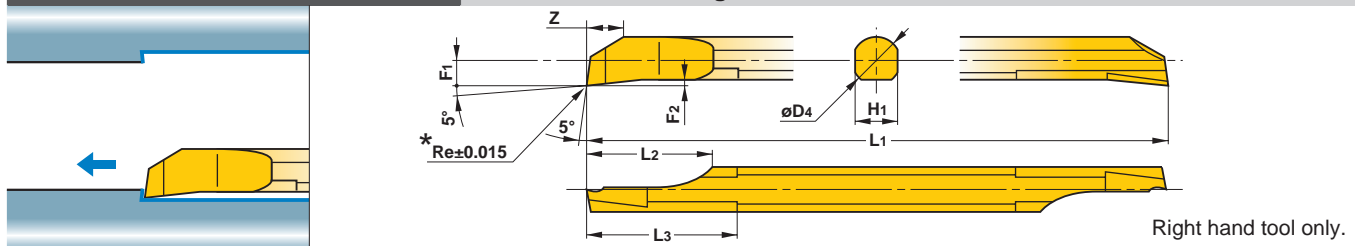
Conventional Order Number	Revised Order Number
RBH1940N	RBH19040N
1950N	19050N
1960N	19060N
1970N	19070N

● : Inventory maintained in Japan. (MICRO-MINI TWIN is available in 1 piece in one pack.)

# MICRO-MINI TWIN

**CB**

For internal machining



Order Number	Stock		Breaker	Min. Cutting Diameter (mm)		Dimensions (mm)								
	Micro Grain	Coated		l/d ≤ 3	l/d > 3	Re	D4	L1	L2	L3	F1	F2	H1	Z
	TF15	VP15TF												
<b>CB02RS</b>	●	●	without	2.2	3.6	0.05	2	50	5	6	1	0.25	1.8	1.4
<b>02RS-B</b>	●	●	with	2.2	3.9	0.05	2	50	5	6	1	0.25	1.8	1.4
<b>02RS-01</b>	●	●	without	2.2	3.6	0.1	2	50	5	6	1	0.25	1.8	1.4
<b>02RS-01B</b>	●	●	with	2.2	4.2	0.1	2	50	5	6	1	0.25	1.8	1.4
<b>02RS-02</b>	●	●	without	2.2	3.6	0.2	2	50	5	6	1	0.25	1.8	1.4
<b>02RS-02B</b>	●	●	with	2.2	4.9	0.2	2	50	5	6	1	0.25	1.8	1.4
<b>03RS</b>	●	●	without	3.2	4.2	0.05	3	50	7.5	9	1.5	0.35	2.7	2.3
<b>03RS-B</b>	●	●	with	3.2	4.4	0.05	3	50	7.5	9	1.5	0.35	2.7	2.3
<b>03RS-01</b>	●	●	without	3.2	4.2	0.1	3	50	7.5	9	1.5	0.35	2.7	2.3
<b>03RS-01B</b>	●	●	with	3.2	4.5	0.1	3	50	7.5	9	1.5	0.35	2.7	2.3
<b>03RS-02</b>	●	●	without	3.2	4.2	0.2	3	50	7.5	9	1.5	0.35	2.7	2.3
<b>03RS-02B</b>	●	●	with	3.2	4.8	0.2	3	50	7.5	9	1.5	0.35	2.7	2.3
<b>04RS</b>	●	●	without	4.2	5.1	0.05	4	60	10	12	2	0.45	3.6	3.1
<b>04RS-B</b>	●	●	with	4.2	5.2	0.05	4	60	10	12	2	0.45	3.6	3.1
<b>04RS-01</b>	●	●	without	4.2	5.1	0.1	4	60	10	12	2	0.45	3.6	3.1
<b>04RS-01B</b>	●	●	with	4.2	5.3	0.1	4	60	10	12	2	0.45	3.6	3.1
<b>04RS-02</b>	●	●	without	4.2	5.1	0.2	4	60	10	12	2	0.45	3.6	3.1
<b>04RS-02B</b>	●	●	with	4.2	5.5	0.2	4	60	10	12	2	0.45	3.6	3.1
<b>05RS</b>	●	●	without	5.2	6.0	0.05	5	70	12.5	15	2.5	0.55	4.5	3.9
<b>05RS-B</b>	●	●	with	5.2	6.1	0.05	5	70	12.5	15	2.5	0.55	4.5	3.9
<b>05RS-02</b>	●	●	without	5.2	6.0	0.2	5	70	12.5	15	2.5	0.55	4.5	3.9
<b>05RS-02B</b>	●	●	with	5.2	6.4	0.2	5	70	12.5	15	2.5	0.55	4.5	3.9
<b>CB06RS</b>	●	●	without	6.2	7.2	0.05	6	75	12.5	18	3	0.65	5.4	4.7
<b>06RS-B</b>	●	●	with	6.2	7.3	0.05	6	75	12.5	18	3	0.65	5.4	4.7
<b>06RS-02</b>	●	●	without	6.2	7.2	0.2	6	75	12.5	18	3	0.65	5.4	4.7
<b>06RS-02B</b>	●	●	with	6.2	7.8	0.2	6	75	12.5	18	3	0.65	5.4	4.7
<b>CB07RS</b>	●	●	without	7.2	8.6	0.05	7	85	12.5	21	3.5	0.75	6.3	5.5
<b>07RS-B</b>	●	●	with	7.2	8.8	0.05	7	85	12.5	21	3.5	0.75	6.3	5.5
<b>07RS-02</b>	●	●	without	7.2	8.6	0.2	7	85	12.5	21	3.5	0.75	6.3	5.5
<b>07RS-02B</b>	●	●	with	7.2	9.2	0.2	7	85	12.5	21	3.5	0.75	6.3	5.5
<b>CB08RS</b>	●	●	without	8.2	9.5	0.05	8	95	15	24	4	0.85	7.2	6.3
<b>08RS-B</b>	●	●	with	8.2	9.6	0.05	8	95	15	24	4	0.85	7.2	6.3
<b>08RS-02</b>	●	●	without	8.2	9.5	0.2	8	95	15	24	4	0.85	7.2	6.3
<b>08RS-02B</b>	●	●	with	8.2	9.8	0.2	8	95	15	24	4	0.85	7.2	6.3

\* The Re dimension represents the size before grinding a chip breaker.

## RECOMMENDED CUTTING CONDITIONS

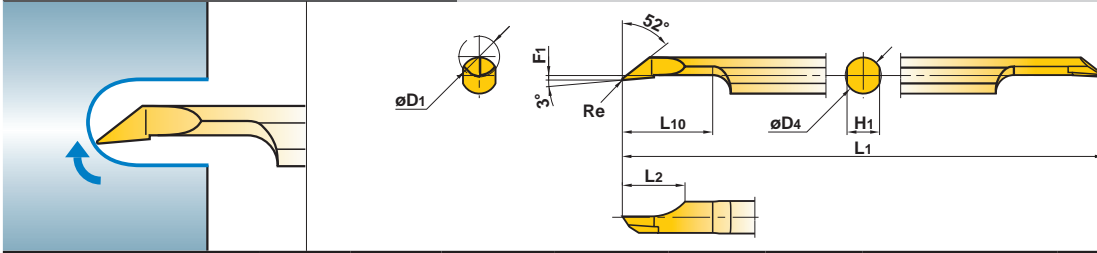
Work Material	Micro-Mini Twin <b>CB</b>				Micro-Mini Twin <b>CR</b>		
	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	l/d	Cutting Speed (m/min)	Feed (mm/rev)	
						03RS/04RS	05RS
<b>P</b> Carbon Steel Alloy Steel 180-350HB	80 (40-120)	0.03 (0.01-0.05)	0.2 (0.1-0.3)	3-5	80 (40-120)	0.02 (0.01-0.03)	0.03 (0.01-0.05)
<b>M</b> Stainless Steel ≤200HB	80 (40-120)	0.03 (0.01-0.05)	0.2 (0.1-0.3)	3-5	80 (40-120)	0.02 (0.01-0.03)	0.03 (0.01-0.05)
<b>K</b> Gray Cast Iron ≤350MPa	80 (40-120)	0.03 (0.01-0.05)	0.2 (0.1-0.3)	3-5	80 (40-120)	0.03 (0.01-0.05)	0.03 (0.01-0.05)
<b>N</b> Non-Ferrous Material	120 (80-160)	0.05 (0.01-0.08)	0.3 (0.1-0.5)	3-5	120 (80-160)	0.03 (0.01-0.05)	0.05 (0.01-0.08)

(Note) Recommend wet machining.

## MICRO-MINI TWIN

**CR**

For internal copying



Right hand tool only.

Order Number	Stock		Breaker	Min. Cutting Diameter D1 (mm)	Dimensions (mm)						
	Micro Grain	Coated			Re	D4	L1	L10	L2	F1	H1
	TF15	VP15TF									
<b>CR03RS-01</b>	●	●	without	3.5	0.1	3	50	8	6	0.15	2.7
<b>03RS-01B</b>	●	●	with	3.5	0.1	3	50	8	6	0.15	2.7
<b>04RS-01</b>	●	●	without	4.5	0.1	4	60	10	7	0.15	3.6
<b>04RS-01B</b>	●	●	with	4.5	0.1	4	60	10	7	0.15	3.6
<b>05RS-01</b>	●	●	without	5.5	0.1	5	70	12	8	0.15	4.5
<b>05RS-01B</b>	●	●	with	5.5	0.1	5	70	12	8	0.15	4.5

## RECOMMENDED CUTTING CONDITIONS

Work Material	Micro-Mini Twin <b>CB</b>				Micro-Mini Twin <b>CR</b>		
	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	l/d	Cutting Speed (m/min)	Feed (mm/rev)	
						03RS/04RS	05RS
<b>P</b> Carbon Steel Alloy Steel 180–350HB	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5	80 (40–120)	0.02 (0.01–0.03)	0.03 (0.01–0.05)
<b>M</b> Stainless Steel ≤200HB	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5	80 (40–120)	0.02 (0.01–0.03)	0.03 (0.01–0.05)
<b>K</b> Gray Cast Iron ≤350MPa	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5	80 (40–120)	0.03 (0.01–0.05)	0.03 (0.01–0.05)
<b>N</b> Non-Ferrous Material	120 (80–160)	0.05 (0.01–0.08)	0.3 (0.1–0.5)	3–5	120 (80–160)	0.03 (0.01–0.05)	0.05 (0.01–0.08)

(Note 1) Recommend wet machining.

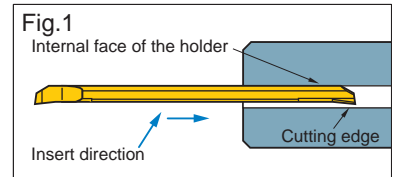
(Note 2) The recommended tool overhang of CR type is L10+2mm.

● : Inventory maintained in Japan. (MICRO-MINI TWIN is available in 1 piece in one pack.)

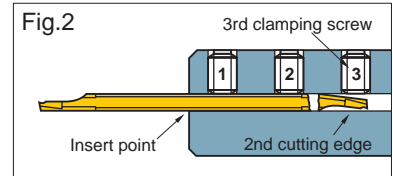
## PRECAUTIONS WHEN USING THE MICRO-MINI TWIN

● When using a holder for general purpose / small automatic lathe:

- ① To avoid chipping of the 2nd cutting edge take care when inserting the boring bar into the holder. Refer to fig.1. If the 2nd edge contacts the internal face of the holder there is a possibility that it may chip.



- ② When using this type of holder, there is a possibility that damage to the shank and the 2nd cutting edge can occur. Make sure that the clamping screws are tightened to the set torque value. Additionally make sure that there is no clamping screw near the 2nd cutting edge as this can break the boring bar.

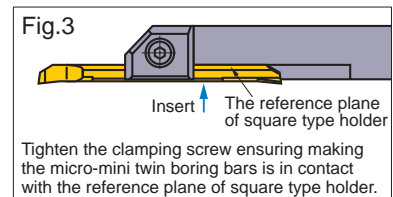


◎ When using Mitsubishi holders

When using holders with a tool overhang of recommended quantity, ensure that the 3rd clamping screw is removed prior to machining. (RBH1620N, RBH19020N, RBH2020N and RBH2520N do not have the 3rd screw.) The set torque value for clamping screw is 2.0 N·m.

● When using a square type holder:

- ① When installing the boring bar into the holder, tighten the clamp screws after ensuring the flats on the tool holder are parallel to the reference flats on the micro-mini bar. Refer to fig.3.  
② Make sure that the clamping screws are tightened to the recommended values.  
③ Do not tighten the clamp screw without a bar in place, otherwise the bridge will be deformed.



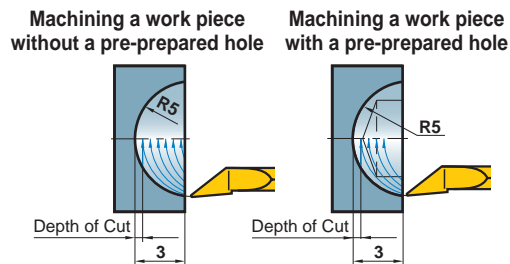
## MACHINING METHODS OF THE CR TYPE

### ● Profile turning

By drilling a pre-prepared hole, the machining time will be shortened and chip control will be improved.

<Cutting Conditions>

Workpiece : JIS S20C  
Holder : CR05RS-01B  
Cutting Speed : 80m/min  
Feed : 0.05mm/rev  
Depth of Cut : 0.05mm  
Wet Cutting

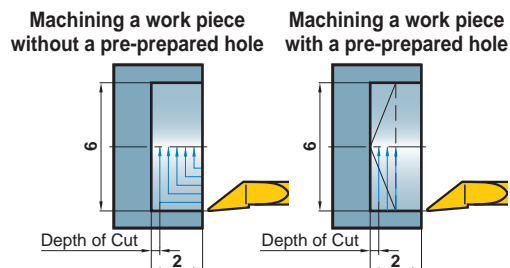


### ● Inner end facing

By drilling a pre-prepared hole, the machining time will be shortened and chip control will be improved.

<Cutting Conditions>

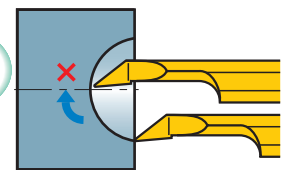
Workpiece : JIS S20C  
Holder : CR05RS-01B  
Cutting Speed : 80m/min  
Feed : 0.05mm/rev  
Depth of Cut : 0.05mm  
Wet Cutting



## NOTES FOR USE

Profile turning,  
Inner end facing

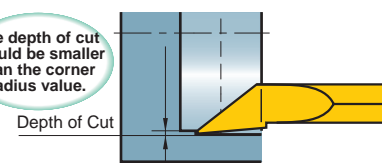
The cutting edge should not be cross the centre line of the work piece.



If the cutting edge crosses the centre line of a work piece, the cutting edge can fracture.

Copying

The depth of cut should be smaller than the corner radius value.



With depths of cut larger than the corner radius value, burrs will be formed.

# BORING BARS

## MICRO-MINI BORING BARS

- Solid carbide type with minimum cutting diameter  $\phi 3.2\text{mm}$ .
- $l/d$  is 5 times the diameter.
- Cutting edge can be shaped according to the application thus, it covers a wide application range (threading, grooving, copying, etc).

### STANDARD MICRO-MINI BORING BARS (Solid carbide boring bar)

Order Number	Stock	Dimensions(mm)				Min. Cutting Diameter (mm)	Max. Depth of Groove F <sub>2</sub> (mm)	Geometry
		TF15	W <sub>3</sub>	D <sub>4</sub>	L <sub>1</sub>			
C03FR-BLS	●	2.0	3	80	15	3.2	1.0	
C04FR-BLS	●	2.5	4	80	20	4.2	1.5	
C05HR-BLS	●	3.0	5	100	25	5.2	2.0	

Right hand tool only.

### RECOMMENDED CUTTING CONDITIONS

	Work Material	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	l/d	Edge Condition (mm)	
						*Corner Radius or C	*Honing
<b>P</b>	Carbon Steel, Alloy Steel 180-350HB	40 (30-50)	0.05 (-0.1)	0.2 (0.1-0.3)	5	0.1-0.5	0.01-0.05
<b>M</b>	Stainless Steel $\leq 200\text{HB}$	40 (30-50)	0.05 (-0.1)	0.2 (0.1-0.3)	5	$\leq 0.4$	$\leq 0.03$ (Honing not required)
<b>K</b>	Gray Cast Iron $\leq 350\text{MPa}$	40 (30-50)	0.05 (-0.05)	0.2 (0.1-0.3)	5	0.1-0.5	0.01-0.05
<b>N</b>	Non-Ferrous Material	80 (60-100)	0.05 (-0.1)	0.3 (0.1-0.5)	5	0.1-0.5	$\leq 0.03$ (Honing not required)

\*Cutting edge is not honed. Please hone according to the workpiece before machining.

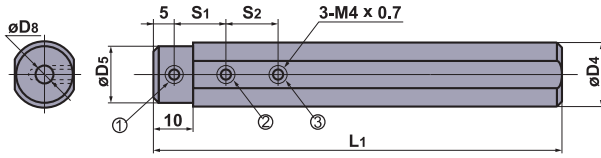
### GRINDING THE CUTTING EDGE OF MICRO-MINI BORING BAR

- MICRO-MINI boring bar can be applied to boring and grooving without any modifications. It can also be reground as shown below.
- For shaping and regrinding, use a diamond whetstone approximately #250-#400. Please grind according to the application using the figure below as a reference.

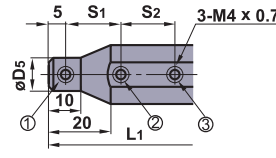
Application	Boring	Grooving	Threading
Grinding Examples			

● : Inventory maintained in Japan. (MICRO MINI is available in 1 piece in one pack.)

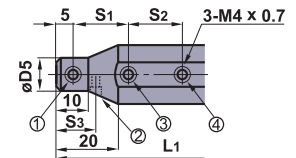
# ROUND TYPE HOLDER



RBH158○N, RBH16○N, RBH190○N



RBH20○N, RBH25○N, RBH254○N



RBH22○N

Order Number	Stock	Dimensions(mm)							Micro-Mini C	Micro-Mini Twin		*1 Clamp Screw				Wrench	Torque (N·m)
		D4	D8	D5	L1	S1	S2	S3		CB	CR	①	②	③	④		
RBH15820N	●	15.875	2	15	100	10	—	—	02RS(-B) 02RS-0(B)	—	B	B	—	—	HKY20F	2.0	
15830N	●	15.875	3	15	100	10	—	03FR-BLS	03RS(-B) 03RS-0(B)	03RS-01(B)	A	A	A	—	HKY20F	2.0	
15840N	●	15.875	4	15	100	15	—	04FR-BLS	04RS(-B) 04RS-0(B)	04RS-01(B)	A	A	A	—	HKY20F	2.0	
15850N	●	15.875	5	15	100	15	—	05HR-BLS	05RS(-B) 05RS-0(B)	05RS-01(B)	A	A	A	—	HKY20F	2.0	
15860N	●	15.875	6	15	100	15	—	—	06RS(-B) 06RS-0(B)	—	A	A	A	—	HKY20F	2.0	
15870N	●	15.875	7	15	100	20	—	—	07RS(-B) 07RS-0(B)	—	A	A	A	—	HKY20F	2.0	
15880N	●	15.875	8	15	100	20	—	—	08RS(-B) 08RS-0(B)	—	D	D	D	—	HKY20F	2.0	
RBH1620N	●	16	2	15	100	10	—	—	02RS(-B) 02RS-0(B)	—	B	B	—	—	HKY20F	2.0	
1630N	●	16	3	15	100	10	—	03FR-BLS	03RS(-B) 03RS-0(B)	03RS-01(B)	A	A	A	—	HKY20F	2.0	
1640N	●	16	4	15	100	15	—	04FR-BLS	04RS(-B) 04RS-0(B)	04RS-01(B)	A	A	A	—	HKY20F	2.0	
1650N	●	16	5	15	100	15	—	05HR-BLS	05RS(-B) 05RS-0(B)	05RS-01(B)	A	A	A	—	HKY20F	2.0	
1660N	●	16	6	15	100	15	—	—	06RS(-B) 06RS-0(B)	—	A	A	A	—	HKY20F	2.0	
1670N	●	16	7	15	100	20	—	—	07RS(-B) 07RS-0(B)	—	A	A	A	—	HKY20F	2.0	
1680N	●	16	8	15	100	20	—	—	08RS(-B) 08RS-0(B)	—	D	D	D	—	HKY20F	2.0	
*2 RBH19020N	●	19.05	2	18	125	10	—	—	02RS(-B) 02RS-0(B)	—	C	C	—	—	HKY20F	2.0	
*2 19030N	●	19.05	3	18	125	10	—	03FR-BLS	03RS(-B) 03RS-0(B)	03RS-01(B)	B	B	B	—	HKY20F	2.0	
*2 19040N	●	19.05	4	18	125	15	—	04FR-BLS	04RS(-B) 04RS-0(B)	04RS-01(B)	B	B	B	—	HKY20F	2.0	
*2 19050N	●	19.05	5	18	125	15	—	05HR-BLS	05RS(-B) 05RS-0(B)	05RS-01(B)	B	B	B	—	HKY20F	2.0	
*2 19060N	●	19.05	6	18	125	15	—	—	06RS(-B) 06RS-0(B)	—	B	B	B	—	HKY20F	2.0	
*2 19070N	●	19.05	7	18	125	20	—	—	07RS(-B) 07RS-0(B)	—	B	B	B	—	HKY20F	2.0	
19080N	●	19.05	8	18	125	20	—	—	08RS(-B) 08RS-0(B)	—	A	A	A	—	HKY20F	2.0	
RBH2020N	●	20	2	11	125	10	—	—	02RS(-B) 02RS-0(B)	—	A	A	—	—	HKY20F	2.0	
2030N	●	20	3	12	125	10	—	03FR-BLS	03RS(-B) 03RS-0(B)	03RS-01(B)	A	A	B	—	HKY20F	2.0	
2040N	●	20	4	13	125	15	—	04FR-BLS	04RS(-B) 04RS-0(B)	04RS-01(B)	A	B	B	—	HKY20F	2.0	
2050N	●	20	5	14	125	15	—	05HR-BLS	05RS(-B) 05RS-0(B)	05RS-01(B)	A	B	B	—	HKY20F	2.0	
2060N	●	20	6	15	125	15	—	—	06RS(-B) 06RS-0(B)	—	A	B	B	—	HKY20F	2.0	
2070N	●	20	7	16	125	20	—	—	07RS(-B) 07RS-0(B)	—	A	B	B	—	HKY20F	2.0	
2080N	●	20	8	17	125	20	—	—	08RS(-B) 08RS-0(B)	—	A	A	A	—	HKY20F	2.0	
RBH2220N	●	22	2	11	125	10	—	—	02RS(-B) 02RS-0(B)	—	A	B	—	A	HKY20F	2.0	
2230N	●	22	3	12	125	10	—	03FR-BLS	03RS(-B) 03RS-0(B)	03RS-01(B)	A	B	C	A	HKY20F	2.0	
2240N	●	22	4	13	125	15	—	04FR-BLS	04RS(-B) 04RS-0(B)	04RS-01(B)	A	B	B	A	HKY20F	2.0	
2250N	●	22	5	14	125	15	—	05HR-BLS	05RS(-B) 05RS-0(B)	05RS-01(B)	A	B	B	A	HKY20F	2.0	
2260N	●	22	6	15	125	15	—	—	06RS(-B) 06RS-0(B)	—	A	B	B	A	HKY20F	2.0	
2270N	●	22	7	16	125	20	—	—	07RS(-B) 07RS-0(B)	—	A	B	B	A	HKY20F	2.0	
2280N	●	22	8	17	125	20	—	—	08RS(-B) 08RS-0(B)	—	A	B	B	A	HKY20F	2.0	
RBH2520N	●	25	2	11	150	10	—	—	02RS(-B) 02RS-0(B)	—	A	B	—	—	HKY20F	2.0	
2530N	●	25	3	12	150	10	—	03FR-BLS	03RS(-B) 03RS-0(B)	03RS-01(B)	A	B	C	—	HKY20F	2.0	
2540N	●	25	4	13	150	15	—	04FR-BLS	04RS(-B) 04RS-0(B)	04RS-01(B)	A	C	C	—	HKY20F	2.0	
2550N	●	25	5	14	150	15	—	05HR-BLS	05RS(-B) 05RS-0(B)	05RS-01(B)	A	C	C	—	HKY20F	2.0	
2560N	●	25	6	15	150	15	—	—	06RS(-B) 06RS-0(B)	—	A	C	C	—	HKY20F	2.0	
2570N	●	25	7	16	150	20	—	—	07RS(-B) 07RS-0(B)	—	A	C	C	—	HKY20F	2.0	
2580N	●	25	8	17	150	20	—	—	08RS(-B) 08RS-0(B)	—	A	B	B	—	HKY20F	2.0	
RBH25420N	●	25.4	2	11	150	10	—	—	02RS(-B) 02RS-0(B)	—	A	B	—	—	HKY20F	2.0	
25430N	●	25.4	3	12	150	10	—	03FR-BLS	03RS(-B) 03RS-0(B)	03RS-01(B)	A	B	C	—	HKY20F	2.0	
25440N	●	25.4	4	13	150	15	—	04FR-BLS	04RS(-B) 04RS-0(B)	04RS-01(B)	A	C	C	—	HKY20F	2.0	
25450N	●	25.4	5	14	150	15	—	05HR-BLS	05RS(-B) 05RS-0(B)	05RS-01(B)	A	C	C	—	HKY20F	2.0	
25460N	●	25.4	6	15	150	15	—	—	06RS(-B) 06RS-0(B)	—	A	C	C	—	HKY20F	2.0	
25470N	●	25.4	7	16	150	20	—	—	07RS(-B) 07RS-0(B)	—	A	C	C	—	HKY20F	2.0	
25480N	●	25.4	8	17	150	20	—	—	08RS(-B) 08RS-0(B)	—	A	B	B	—	HKY20F	2.0	

\*1 Order number of clamp screw A=HSS04004, B=HSS04006, C=HSS04008, D=HSS04003 \*2 Revised order number.

Conventional Order Number	Revised Order Number	Conventional Order Number	Revised Order Number
RBH1920N	RBH19020N	RBH1950N	RBH19050N
1930N	19030N	1960N	19060N
1940N	19040N	1970N	19070N

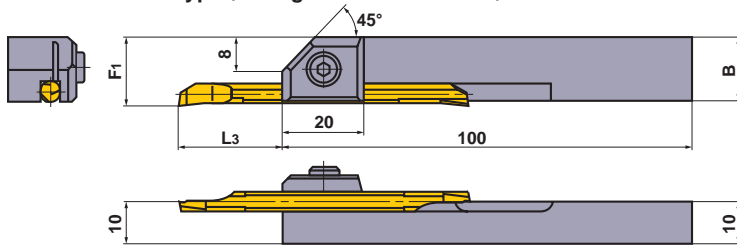
SPARE PARTS > P001  
TECHNICAL DATA > Q001



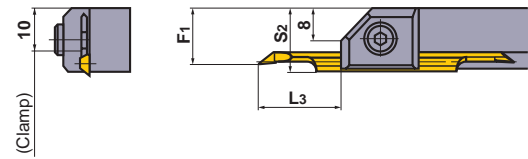
# MICRO-MINI TWIN

## ■ SQUARE TYPE HOLDER

CB type (Boring bar fits to a holder)



CR type (Boring bar fits to a holder)



Order Number	Stock	Dimensions(mm)						Micro-Mini Twin		Clamp Screw	Wrench	Torque (N·m)
		F1		L3 *		S2	B					
		CB	CR	CB	CR	CR	CR	CB	CR			
<b>SBH1020R</b>	●	13	—	6—24 (6—10)	—	—	12.9	02RS(-B) 02RS-0(B)	—	HSC04010	HKY30R	4.8
<b>1030R</b>	●	14	12.65	8.5—22 (9—15)	11—19.5 (12)	14	13.8	03RS(-B) 03RS-0(B)	03RS-01(B)	HSC05012	HKY40R	9.5
<b>1040R</b>	●	15	13.15	11—29.5 (12—20)	13—27.5 (14)	15	14.7	04RS(-B) 04RS-0(B)	04RS-01(B)	HSC05012	HKY40R	9.5
<b>1050R</b>	●	16	13.65	13.5—37 (15—25)	15—35.5 (16)	16	15.6	05RS(-B) 05RS-0(B)	05RS-01(B)	HSC05012	HKY40R	9.5
<b>1060R</b>	●	17	—	13.5—42 (18—30)	—	17	16.5	06RS(-B) 06RS-0(B)	—	HSC05012	HKY40R	9.5
<b>1070R</b>	●	18	—	13.5—52 (21—35)	—	18	17.4	07RS(-B) 07RS-0(B)	—	HSC05012	HKY40R	9.5

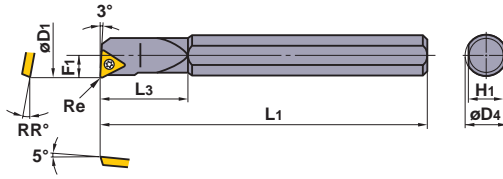
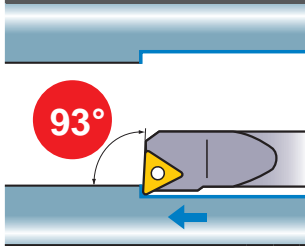
(Note) The MICRO-DEX and the MICRO-MINI cannot be fit to square holders.

\*L3 is the length of overhang for sufficient clamping, and ( ) is the recommended length for machining of carbon and alloy steel.

# F TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 10$ .
- 11° positive insert.
- Screw-on type.
- $l/d$  is 3 to 5 times the diameter (up to 7 times with the carbide shank).

## FSTU1



### TP $\odot$ inserts

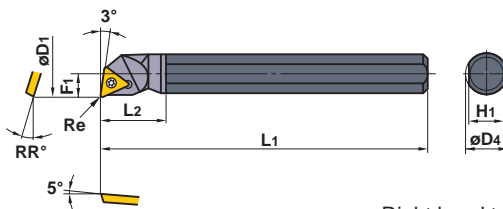
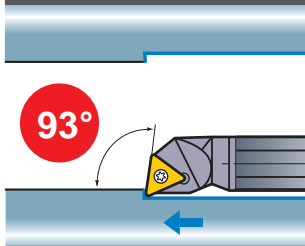
Light	Flat Top
R/L	
(08,09,11)	(08,09,11)
PCD	CBN/PCD
R/L-F	
(08,09,11)	(11)

Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter $D_1$ (mm)	Standard Corner Radius $Re$ (mm)	*	
	R	L		$D_4$	$L_1$	$L_3$	$F_1$	$H_1$	$RR^\circ$					
FSTU108R/L	●	●	TPGX TPMX NP-TPGX NP-TPMX	0802 $\odot$	8	125	18	5	7	15	10	0.4	CS200T	TKY06F
110R/L	●	●		0902 $\odot$	10	150	22	6	9	13	12	0.4	CS250T	TKY08F
112R/L	●	●		0902 $\odot$	12	180	25	8	11	10	16	0.4	CS250T	TKY08F
116R/L	●	●		1103 $\odot$	16	200	30	11	14	7	22	0.4	CS300890T	TKY08F

\* Clamp Torque (N · m) : CS200T=0.6, CS250T=1.0, CS300890T=1.0

## FSTU2



### Carbide shank

### TP $\odot$ inserts

Light	Flat Top
R/L	
(08,09,11)	(08,09,11)
PCD	CBN/PCD
R/L-F	
(08,09,11)	(11)

Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter $D_1$ (mm)	Standard Corner Radius $Re$ (mm)	*	
	R	L		$D_4$	$L_1$	$L_2$	$F_1$	$H_1$	$RR^\circ$					
FSTU208R/L	●	●	TPGX TPMX NP-TPGX NP-TPMX	0802 $\odot$	8	125	13	5	7	15	10	0.4	CS200T	TKY06F
210R/L	●	●		0902 $\odot$	10	150	16	6	9	13	12	0.4	CS250T	TKY08F
212R/L	●	●		0902 $\odot$	12	180	19	8	11	10	16	0.4	CS250T	TKY08F
216R/L	●	●		1103 $\odot$	16	200	26	11	14	7	22	0.4	CS300890T	TKY08F

\* Clamp Torque (N · m) : CS200T=0.6, CS250T=1.0, CS300890T=1.0

## RECOMMENDED CUTTING CONDITIONS

Steel Shank			$l/d \leq 3$			$l/d = 3-4$ (Shank Diameter $\geq 25$ mm)		
Carbide Shank			$l/d \leq 5$			$l/d = 6-7$		
Work Material	Hardness	Cutting Mode	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
P Carbon Steel Alloy Steel	180-350HB	Light Cutting	130 (90-160)	0.1 (0.05-0.15)	0.2	120 (80-150)	0.1 (0.05-0.15)	0.2
		Medium Cutting	90 (60-120)	0.25 (0.15-0.35)	-3.0	80 (50-110)	0.15 (0.1-0.2)	-1.5
M Stainless Steel	$\leq 200$ HB	Light Cutting	140 (100-180)	0.1 (0.05-0.15)	0.2	140 (100-180)	0.1 (0.05-0.15)	0.2
		Medium Cutting	70 (50-90)	0.2 (0.15-0.25)	-2.0	60 (40-80)	0.15 (0.1-0.2)	-1.0
N Aluminium Alloy	—	Light Cutting	300 (200-400)	0.1 (0.05-0.15)	0.2	300 (200-400)	0.1 (0.05-0.15)	0.2
		Medium Cutting	200 (150-250)	0.1 (0.05-0.15)	-2.0	200 (150-250)	0.1 (0.05-0.15)	-1.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

TP $\odot$ type inserts	> A117, A118
SPARE PARTS	> P001
TECHNICAL DATA	> Q001

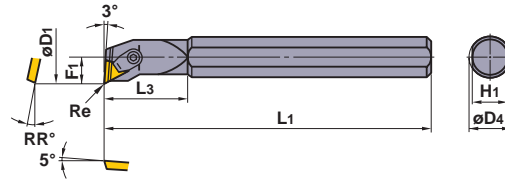
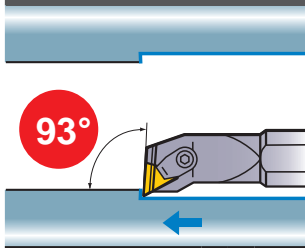
# BORING BARS

## F TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 22$ .
- 11° positive insert.
- Clamp-on type.
- $l/d$  is 3 to 5 times the diameter (up to 7 times with the carbide shank).

### FCTU1

#### TP $\odot$ inserts



Right hand tool holder shown.

M Class	M Class	G class
		R/L 
(11,16)	(11,16)	(11,16)
G class	CBN/PCD	
(11,16)	(11,16)	

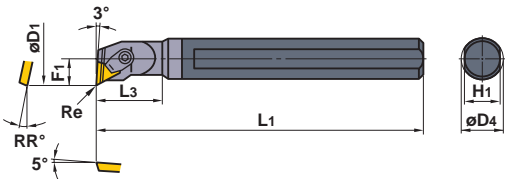
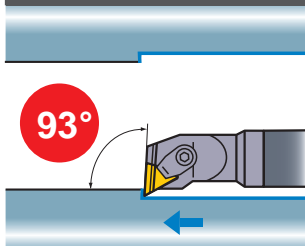
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Tools				
	R	L		D4	L1	L3	F1	H1	RR°	Shim			Shim Pin	Clamp Set*	Breaker Piece	Wrench	
<b>FCTU116R/L</b>	●	●	TPMN TPMR TPGN TPGR	1103 $\odot$	16	200	30	11	14	7	22	0.4	—	—	C3	CBT2N	HKY25R
<b>120R/L</b>	●	●		1603 $\odot$	20	200	37	13	18	5	26	0.8	—	—	C4	CBT3F	HKY30R
<b>125R/L</b> (4 Side Flat Shank)	●	●		1603 $\odot$	25	250	40	16	22	5	32	0.8	PT32	BCP202	C4	CBT3F	HKY30R
<b>132R/L</b> (4 Side Flat Shank)	●	●		1603 $\odot$	32	300	45	20	29	0	40	0.8	PT32	BCP201	C4	CBT3F	HKY30R

\* Clamp Torque (N · m) : C3=2.2, C4=3.3

### FCTU2

#### Carbide shank

#### TP $\odot$ inserts



Right hand tool holder only.

M Class	M Class	G class
		R/L 
(11,16)	(11,16)	(11,16)
G class	CBN/PCD	
(11,16)	(11,16)	

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Tools				
	R	L		D4	L1	L3	F1	H1	RR°	Shim			Shim Pin	Clamp Set*	Breaker Piece	Wrench	
<b>FCTU216R</b>	●	●	TPMN TPMR TPGN TPGR	1103 $\odot$	16	200	26	11	14	7	22	0.4	—	—	C3	CBT2N	HKY25R
<b>220R</b>	●	●		1603 $\odot$	20	200	33	13	18	5	26	0.8	—	—	C4	CBT3F	HKY30R
<b>225R</b>	●	●		1603 $\odot$	25	250	37	16	22	5	32	0.8	PT32	BCP202	C4	CBT3F	HKY30R

\* Clamp Torque (N · m) : C3=2.2, C4=3.3

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

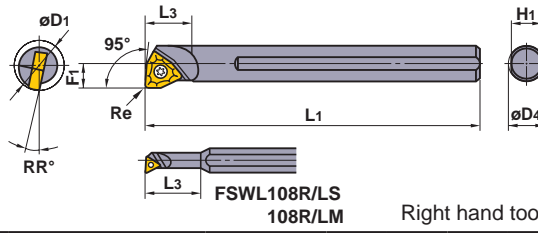
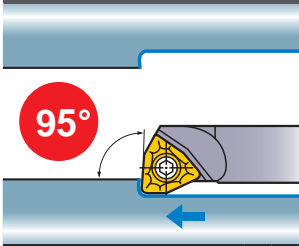
# F TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 5.8$ .
- 7° positive insert.
- Screw-on type.
- $l/d$  is 3 to 5 times the diameter (up to 7 times with the carbide shank).

## FSWL1

WC $\circ$ inserts

Light	Light
	R/L
(02,L3,04,06)	(02,L3)
PCD	
(L3,04,06)	



Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter $D_1$ (mm)	Standard Corner Radius $Re$ (mm)	*		
	R	L		$D_4$	$L_1$	$L_3$	$F_1$	$H_1$	$RR^\circ$					Clamp Screw
<b>FSWL108R/LS</b>	●	●	WCMT WCGT	0201 $\circ$	8	100	19	2.9	7	17	5.8	0.4	TS21	TKY06F
<b>108R/LM</b>	●	●	WCMT WCGT WCMW	L302 $\circ$	8	100	25	4	7	15	8	0.4	TS2	TKY06F
<b>108R/L</b>	●	●	WCMT WCMW	0402 $\circ$	8	125	10	5	7	15	10	0.4	TS25	TKY08F
<b>110R/L</b>	●	●		0402 $\circ$	10	150	12	6	9	13	12	0.4	TS25	TKY08F
<b>112R/L</b>	●	●		06T3 $\circ$	12	180	15	8	11	13	16	0.8	TS4	TKY15F
<b>116R/L</b>	●	●		06T3 $\circ$	16	200	20	11	14	7	22	0.8	TS4	TKY15F

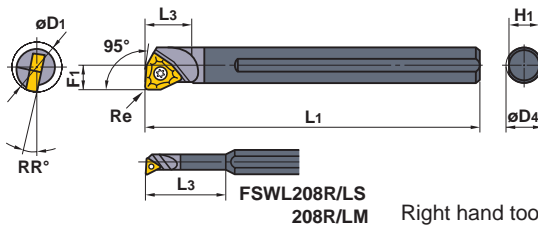
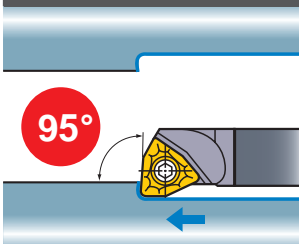
\* Clamp Torque (N · m) : TS21=0.6, TS2=0.6, TS25=1.0, TS4=3.5

## FSWL2

Carbide shank

WC $\circ$ inserts

Light	Light
	R/L
(02,L3,04,06)	(02,L3)
PCD	
(L3,04,06)	



Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter $D_1$ (mm)	Standard Corner Radius $Re$ (mm)	*		
	R	L		$D_4$	$L_1$	$L_3$	$F_1$	$H_1$	$RR^\circ$					Clamp Screw
<b>FSWL208R/LS</b>	●	●	WCMT WCGT	0201 $\circ$	8	122	25	2.9	7	17	5.8	0.4	TS21	TKY06F
<b>208R/LM</b>	●	●	WCMT WCGT WCMW	L302 $\circ$	8	125	33	4	7	15	8	0.4	TS2	TKY06F
<b>208R/L</b>	●	●	WCMT WCMW	0402 $\circ$	8	125	10	5	7	15	10	0.4	TS25	TKY08F
<b>210R/L</b>	●	●		0402 $\circ$	10	150	12	6	9	13	12	0.4	TS25	TKY08F
<b>212R/L</b>	●	●		06T3 $\circ$	12	180	15	8	11	13	16	0.8	TS4	TKY15F
<b>216R/L</b>	●	●		06T3 $\circ$	16	200	20	11	14	7	22	0.8	TS4	TKY15F

\* Clamp Torque (N · m) : TS21=0.6, TS2=0.6, TS25=1.0, TS4=3.5

## RECOMMENDED CUTTING CONDITIONS

Steel Shank			$l/d \leq 3$			$l/d = 3-4$ (Shank Diameter $\geq 25$ mm)		
Carbide Shank			$l/d \leq 5$			$l/d = 6-7$		
Work Material	Hardness	Cutting Mode	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Light Cutting	130 (90-160)	0.1 (0.05-0.15)	0.2	120 (80-150)	0.1 (0.05-0.15)	0.2
		Medium Cutting	90 (60-120)	0.25 (0.15-0.35)	-3.0	80 (50-110)	0.15 (0.1-0.2)	-1.5
<b>M</b> Stainless Steel	$\leq 200$ HB	Light Cutting	140 (100-180)	0.1 (0.05-0.15)	0.2	140 (100-180)	0.1 (0.05-0.15)	0.2
		Medium Cutting	70 (50-90)	0.2 (0.15-0.25)	-2.0	60 (40-80)	0.15 (0.1-0.2)	-1.0
<b>N</b> Aluminium Alloy	—	Light Cutting	300 (200-400)	0.1 (0.05-0.15)	0.2	300 (200-400)	0.1 (0.05-0.15)	0.2
		Medium Cutting	200 (150-250)	0.1 (0.05-0.15)	-2.0	200 (150-250)	0.1 (0.05-0.15)	-1.5

WC $\circ$ type inserts	> A127
CBN & PCD inserts	> B046, B062
SPARE PARTS	> P001
TECHNICAL DATA	> Q001

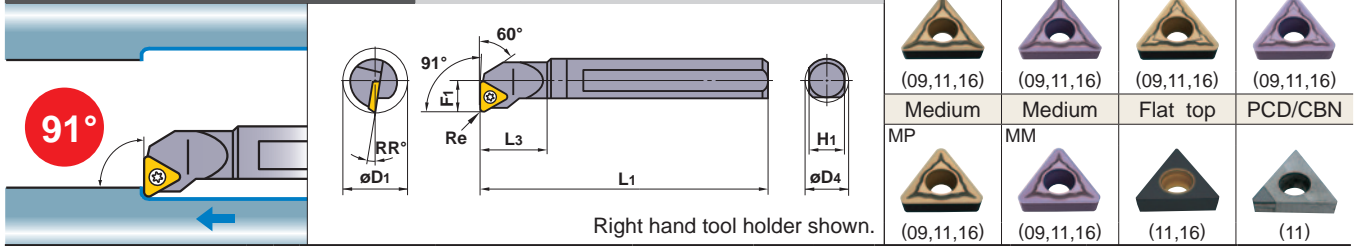
# BORING BARS


## S TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 11$ .
- ISO standard.
- 7° positive insert.
- Screw-on type.
- l/d is 3 to 5 times the diameter (up to 7 times with the carbide shank).

### STFC

### TC<sup>○</sup>inserts

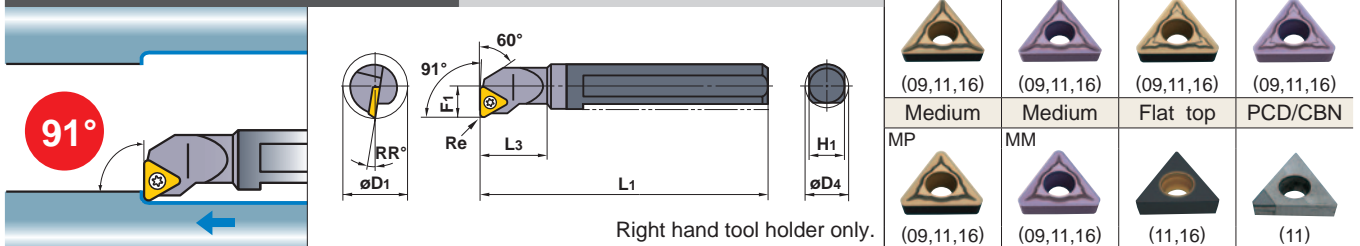



Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* 		
	R	L		D4	L1	L3	F1	H1	RR°			Clamp Screw	Wrench	
S08STFCR/L09	●	●	TCMT 0902 <sup>○</sup>	8	80	12	6	7	15	11	0.4	TS22	TKY06F	
S10HSTFCR/L11	●	●	TCMW TCMT	1102 <sup>○</sup>	10	100	16	7	9	13	13	0.4	TS25	TKY08F
S12KSTFCR/L11	●	●		1102 <sup>○</sup>	12	125	20	9	11	10	16	0.4	TS25	TKY08F
S16MSTFCR/L11	●	●		1102 <sup>○</sup>	16	150	25	11	14	7	20	0.4	TS25	TKY08F
S20QSTFCR/L16	●	●		16T3 <sup>○</sup>	20	180	32	13	18	7	25	0.8	TS4	TKY15F
S25RSTFCR/L16	●	●		16T3 <sup>○</sup>	25	200	40	17	23	5	32	0.8	TS4	TKY15F
S32SSTFCR/L16	●	●		16T3 <sup>○</sup>	32	250	50	22	30	5	40	0.8	TS4	TKY15F

\* Clamp Torque (N · m) : TS22=0.6, TS25=1.0, TS4=3.5

### STFC

### Carbide shank TC<sup>○</sup>inserts



Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* 		
	R	L		D4	L1	L3	F1	H1	RR°			Clamp Screw	Wrench	
C08HSTFCR09	●	●	TCMT 0902 <sup>○</sup>	8	100	12	6	7	15	11	0.4	TS22	TKY06F	
C10KSTFCR11	●	●	TCMW TCMT	1102 <sup>○</sup>	10	125	16	7	9	13	13	0.4	TS25	TKY08F
C12MSTFCR11	●	●		1102 <sup>○</sup>	12	150	20	9	11	10	16	0.4	TS25	TKY08F
C16RSTFCR11	●	●		1102 <sup>○</sup>	16	200	25	11	14	7	20	0.4	TS25	TKY08F
C20SSTFCR16	●	●		16T3 <sup>○</sup>	20	250	32	13	18	7	25	0.8	TS4	TKY15F
C25TSTFCR16	●	●		16T3 <sup>○</sup>	25	300	40	17	23	5	32	0.8	TS4	TKY15F

\* Clamp Torque (N · m) : TS22=0.6, TS25=1.0, TS4=3.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

TC<sup>○</sup> type inserts > A113, A114  
CBN & PCD inserts > B042, B058

**SDUC** **DC $\odot$ inserts**

Right hand tool holder shown.

Finish	Finish	Light	Light
FP (07,11)	FM (07,11)	LP (07,11)	LM (07,11)
Medium	Medium	Medium	Flat top
MP (07,11,15)	MM (07,11,15)	Standard (07,11,15)	(07,11)

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* Clamp Screw	Wrench	
	R	L		D4	L1	L3	F1	F2	H1	RR°					
S10HSDUCR/L07	●	●	DCMT DCET DCGT DCMW DCGW NP-DCGW NP-DCMT	0702 $\odot$	10	100	16	7	2.4	9	13	13	0.4	TS25	TKY08F
S12KSDUCR/L07	●	●		0702 $\odot$	12	125	20	9	3.4	11	10	16	0.4	TS25	TKY08F
S16MSDUCR/L07	●	●		0702 $\odot$	16	150	25	11	3.9	14	7	20	0.4	TS25	TKY08F
S20QSDUCR/L11	●	●		11T3 $\odot$	20	180	32	13	4.4	18	7	25	0.8	TS4	TKY15F
S25RSDUCR/L15	●	●		1504 $\odot$	25	200	40	17	6.9	23	5	32	0.8	TS5	TKY25F
S32SSDUCR/L15	●	●		1504 $\odot$	32	250	50	22	8.4	30	5	40	0.8	TS5	TKY25F
S40TSDUCR/L15	●	●		1504 $\odot$	40	300	63	27	9.4	37	5	50	0.8	TS5	TKY25F

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5, TS5=7.5

**SDUC** **Carbide shank DC $\odot$ inserts**

Right hand tool holder only.

Finish	Finish	Light	Light
FP (07,11)	FM (07,11)	LP (07,11)	LM (07,11)
Medium	Medium	Medium	Flat top
MP (07,11,15)	MM (07,11,15)	Standard (07,11,15)	(07,11)

Order Number	Stock	Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* Clamp Screw	Wrench	
	R		D4	L1	L3	F1	F2	H1	RR°					
C10KSDUCR07	●	DCMT DCET DCGT DCMW DCGW NP-DCGW NP-DCMT	0702 $\odot$	10	125	16	7	2.1	9	13	13	0.4	TS25	TKY08F
C12MSDUCR07	●		0702 $\odot$	12	150	20	9	3.1	11	10	16	0.4	TS25	TKY08F
C16RSDUCR07	●		0702 $\odot$	16	200	25	11	3.1	14	7	20	0.4	TS25	TKY08F
C20SSDUCR11	●		11T3 $\odot$	20	250	32	13	3.1	18	7	25	0.8	TS4	TKY15F
C25TSDUCR15	●		1504 $\odot$	25	300	40	17	4.9	23	5	32	0.8	TS5	TKY25F

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5, TS5=7.5

## RECOMMENDED CUTTING CONDITIONS

Steel Shank			l/d ≤ 3			l/d = 3-4 (Shank Diameter ≥ 25mm)		
Carbide Shank			l/d ≤ 5			l/d = 6-7		
Work Material	Hardness	Cutting Mode	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Light Cutting	130 (90-160)	0.1 (0.05-0.15)	0.2	120 (80-150)	0.1 (0.05-0.15)	0.2
		Medium Cutting	90 (60-120)	0.25 (0.15-0.35)	-3.0	80 (50-110)	0.15 (0.1-0.2)	-1.5
<b>M</b> Stainless Steel	≤200HB	Light Cutting	140 (100-180)	0.1 (0.05-0.15)	0.2	140 (100-180)	0.1 (0.05-0.15)	0.2
		Medium Cutting	70 (50-90)	0.2 (0.15-0.25)	-2.0	60 (40-80)	0.15 (0.1-0.2)	-1.0
<b>N</b> Aluminium Alloy	—	Light Cutting	300 (200-400)	0.1 (0.05-0.15)	0.2	300 (200-400)	0.1 (0.05-0.15)	0.2
		Medium Cutting	200 (150-250)	0.1 (0.05-0.15)	-2.0	200 (150-250)	0.1 (0.05-0.15)	-1.5

DC $\odot$ type inserts	> A103-A107
CBN & PCD inserts	> B040, B041, B057
SPARE PARTS	> P001
TECHNICAL DATA	> Q001

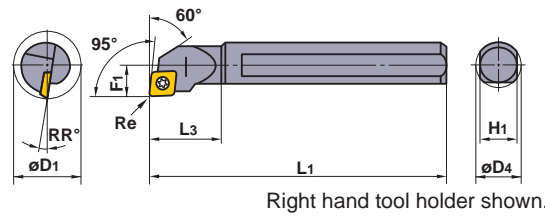
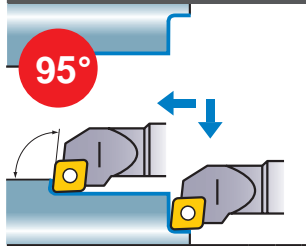
# BORING BARS


## S TYPE BORING BARS



- The minimum cutting diameter is from  $\phi 11$ .
- ISO standard.
- 7° positive insert.
- Screw-on type.
- l/d is 3 to 5 times the diameter (up to 7 times with the carbide shank).

### SCLC

### CC<sup>o</sup>inserts



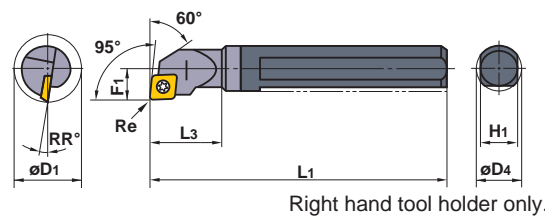
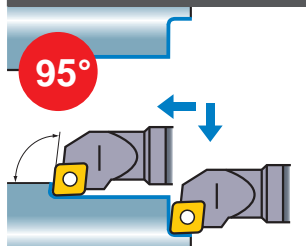
Finish	Finish	Light	Light
FP	FM	LP	LM
 (06,09)	 (06,09)	 (06,09)	 (06,09)
Medium	Medium	Flat top	PCD/CBN
MP	MM		
 (06,09,12)	 (06,09,12)	 (06,09,12)	 (06,09,12)

Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	*  		
	R	L		D4	L1	L3	F1	H1	RR°			Clamp Screw	Wrench	
S08FSCLCR/L06	●	●	CCMH CCMT CCET CCGT CCMW CCGW NP-CCGW	0602 <sup>o</sup>	8	80	12	6	7	15	11	0.4	TS25	TKY08F
S10HSCLCR/L06	●	●		0602 <sup>o</sup>	10	100	16	7	9	13	13	0.4	TS25	TKY08F
S12KSCLCR/L06	●	●		0602 <sup>o</sup>	12	125	20	9	11	10	16	0.4	TS25	TKY08F
S16MSCLCR/L09	●	●		09T3 <sup>o</sup>	16	150	25	11	14	7	20	0.8	TS4	TKY15F
S20QSCLCR/L09	●	●		09T3 <sup>o</sup>	20	180	32	13	18	7	25	0.8	TS4	TKY15F
S25RSCLCR/L12	●	●		1204 <sup>o</sup>	25	200	40	17	23	5	32	0.8	TS5	TKY25F
S32SSCLCR/L12	●	●		1204 <sup>o</sup>	32	250	50	22	30	5	40	0.8	TS5	TKY25F
S40TSCLCR/L12	●	●		1204 <sup>o</sup>	40	300	63	27	37	5	50	0.8	TS5	TKY25F



\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5, TS5=7.5

### SCLC

### Carbide shank CC<sup>o</sup>inserts



Finish	Finish	Light	Light
FP	FM	LP	LM
 (06,09)	 (06,09)	 (06,09)	 (06,09)
Medium	Medium	Medium	Flat top
MP	MM	Standard	
 (06,09)	 (06,09)	 (06,09)	 (06,09)

Order Number	Stock	Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	*  		
	R		D4	L1	L3	F1	H1	RR°			Clamp Screw	Wrench	
C08HSCLCR06	●	CCMH CCMT CCET CCGT CCMW CCGW NP-CCGW	0602 <sup>o</sup>	8	100	12	6	7	15	11	0.4	TS25	TKY08F
C10KSCLCR06	●		0602 <sup>o</sup>	10	125	16	7	9	13	13	0.4	TS25	TKY08F
C12MSCLCR06	●		0602 <sup>o</sup>	12	150	20	9	11	10	16	0.4	TS25	TKY08F
C16RSCLCR09	●		09T3 <sup>o</sup>	16	200	25	11	14	7	20	0.8	TS4	TKY15F
C20SSCLCR09	●		09T3 <sup>o</sup>	20	250	32	13	18	7	25	0.8	TS4	TKY15F

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

CC<sup>o</sup> type inserts > A097—A101  
CBN & PCD inserts > B036—B038, B056

SDQC		DC $\odot$ inserts									Finish	Finish	Light	Light	
		Right hand tool holder shown.									FP	FM	LP	LM	
											(07,11)	(07,11)	(07,11)	(07,11)	
											Medium	Medium	Flat top	PCD/CBN	
											MP	MM			
											(07,11,15)	(07,11,15)	(07,11,15)	(07,11)	
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	*		
	R	L		D4	L1	L3	F1	F2	H1	RR°					Clamp Screw
S10HSDQCR/L07	●	●	DCMT DCET DCGT DCMW DCGW NP-DCMW NP-DCMT	0702 $\odot$	10	100	16	7	2.4	9	13	13	0.4	TS25	TKY08F
S12KSDQCR/L07	●	●		0702 $\odot$	12	125	20	9	3.4	11	10	16	0.4	TS25	TKY08F
S16MSDQCR/L07	●	●		0702 $\odot$	16	150	25	11	3.9	14	7	20	0.4	TS25	TKY08F
S20QSDQCR/L11	●	●		11T3 $\odot$	20	180	32	13	4.4	18	7	25	0.8	TS4	TKY15F
S25RSDQCR/L15	●	●		1504 $\odot$	25	200	40	17	6.9	23	5	32	0.8	TS5	TKY25F
S32SSDQCR15	●	●		1504 $\odot$	32	250	50	22	8.4	30	5	40	0.8	TS5	TKY25F
S40TSDQCR15	●	●		1504 $\odot$	40	300	63	27	9.4	37	5	50	0.8	TS5	TKY25F

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5, TS5=7.5

SDQC		Carbide shank DC $\odot$ inserts									Finish	Finish	Light	Light	
		Right hand tool holder only.									FP	FM	LP	LM	
											(07,11)	(07,11)	(07,11)	(07,11)	
											Medium	Medium	Flat top	PCD/CBN	
											MP	MM			
											(07,11,15)	(07,11,15)	(07,11,15)	(07,11)	
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	*		
	R	L		D4	L1	L3	F1	F2	H1	RR°					Clamp Screw
C10KSDQCR07	●	●	DCMT DCET DCGT DCMW DCGW NP-DCMW NP-DCMT	0702 $\odot$	10	125	16	7	2.1	9	13	13	0.4	TS25	TKY08F
C12MSDQCR07	●	●		0702 $\odot$	12	150	20	9	3.1	11	10	16	0.4	TS25	TKY08F
C16RSDQCR07	●	●		0702 $\odot$	16	200	25	11	3.1	14	7	20	0.4	TS25	TKY08F
C20SSDQCR11	●	●		11T3 $\odot$	20	250	32	13	3.1	18	7	25	0.8	TS4	TKY15F
C25TSDQCR15	●	●		1504 $\odot$	25	300	40	17	4.9	23	5	32	0.8	TS5	TKY25F

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5, TS5=7.5

## RECOMMENDED CUTTING CONDITIONS

Steel Shank			l/d ≤ 3			l/d = 3-4 (Shank Diameter ≥ 25mm)		
Carbide Shank			l/d ≤ 5			l/d = 6-7		
Work Material	Hardness	Cutting Mode	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
P Carbon Steel Alloy Steel	180-350HB	Light Cutting	130 (90-160)	0.1 (0.05-0.15)	0.2	120 (80-150)	0.1 (0.05-0.15)	0.2
		Medium Cutting	90 (60-120)	0.25 (0.15-0.35)	-3.0	80 (50-110)	0.15 (0.1-0.2)	-1.5
M Stainless Steel	≤200HB	Light Cutting	140 (100-180)	0.1 (0.05-0.15)	0.2	140 (100-180)	0.1 (0.05-0.15)	0.2
		Medium Cutting	70 (50-90)	0.2 (0.15-0.25)	-2.0	60 (40-80)	0.15 (0.1-0.2)	-1.0
N Aluminium Alloy	-	Light Cutting	300 (200-400)	0.1 (0.05-0.15)	0.2	300 (200-400)	0.1 (0.05-0.15)	0.2
		Medium Cutting	200 (150-250)	0.1 (0.05-0.15)	-2.0	200 (150-250)	0.1 (0.05-0.15)	-1.5

DC $\odot$ type inserts	> A103-A107
CBN & PCD inserts	> B040, B041, B057
SPARE PARTS	> P001
TECHNICAL DATA	> Q001



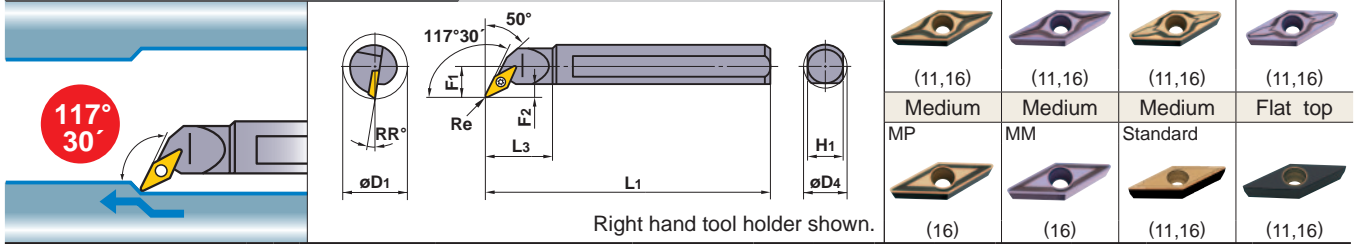
# BORING BARS

## S TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 20$ .
- ISO standard.
- 7° positive insert.
- Screw-on type.
- l/d is 3 to 5 times the diameter (up to 7 times with the carbide shank).

### SVQC

### VC $\circ$ inserts

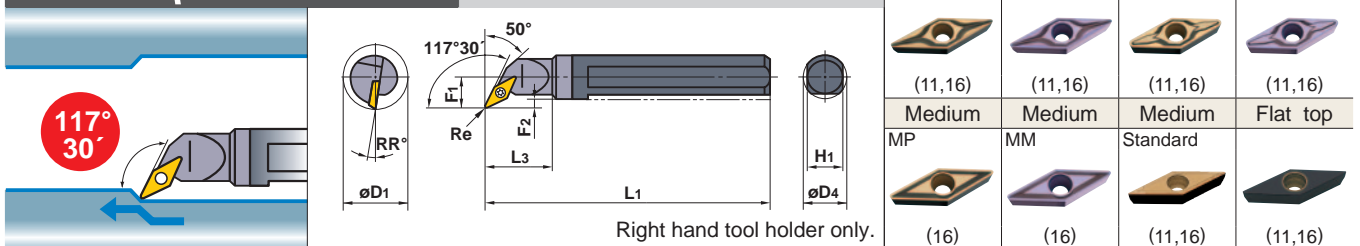


Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* Clamp Screw	Wrench	
	R	L		D4	L1	L3	F1	F2	H1	RR°					
S16MSVQCR/L11	●	●	VCMW VCMT	1103 $\circ$	16	150	25	11	3.9	14	7	20	0.4	TS25	TKY08F
S20QSVQCR/L11	●	●		1103 $\circ$	20	180	32	13	4.4	18	7	25	0.4	TS25	TKY08F
S25RSVQCR/L16	●	●		1604 $\circ$	25	200	40	17	6.9	23	5	32	0.8	TS4	TKY15F
S32SSVQCR/L16	●	●		1604 $\circ$	32	250	50	22	8.4	30	5	40	0.8	TS4	TKY15F
S40TSVQCR16	●	●		1604 $\circ$	40	300	63	27	9.4	37	5	50	0.8	TS4	TKY15F

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5

### SVQC

### Carbide shank VC $\circ$ inserts



Order Number	Stock	Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* Clamp Screw	Wrench	
			D4	L1	L3	F1	F2	H1	RR°					
C16RSVQCR11	●	VCMT VCMW	1103 $\circ$	16	200	25	11	3.1	14	7	20	0.4	TS25	TKY08F
C20SSVQCR11	●		1103 $\circ$	20	250	32	13	3.1	18	7	25	0.4	TS25	TKY08F
C25TSVQCR16	●		1604 $\circ$	25	300	40	17	4.9	23	5	32	0.8	TS4	TKY15F

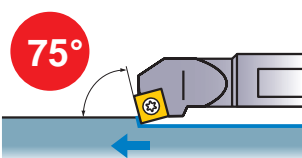
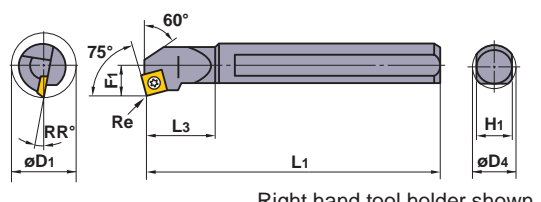










\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

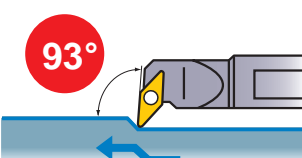
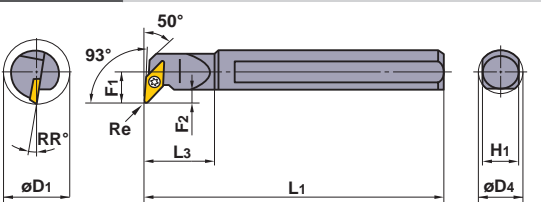










(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

VC $\circ$  type inserts > A122, A123  
CBN & PCD inserts > B046, B061

<b>SSKC</b>		<b>SC<math>\odot</math>inserts</b>								Finish	Finish	Light	Light		
															
		Right hand tool holder shown.								(09)	(09)	(09)	(09)		
										Medium	Medium	Medium	Flat top		
															
										(09,12)	(09,12)	(09,12)	(09,12)		
Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* 			
	R	L		D4	L1	L3	F1	H1	RR°			Clamp Screw	Wrench		
<b>S16SSKCR/L09</b>	●	●	SCMW SCMT	09T3 $\odot$	16	150	25	11	14	7	20	0.8	TS4	TKY15F	
<b>S20QSSKCR/L09</b>	●	●		09T3 $\odot$	20	180	32	13	18	7	25	0.8	TS4	TKY15F	
<b>S25RSSKCR/L12</b>	●	●		1204 $\odot$	25	200	40	17	23	5	32	0.8	TS5	TKY25F	

\* Clamp Torque (N · m) : TS4=3.5, TS5=7.5

<b>SVUC</b>		<b>VC<math>\odot</math>inserts</b>								Finish	Finish	Light	Light		
															
		Right hand tool holder only.								(11,16)	(11,16)	(11,16)	(11,16)		
										Medium	Medium	Medium	Flat top		
															
										(16)	(16)	(11,16)	(11,16)		
Order Number	Stock		Insert Number	Dimensions(mm)						Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* 			
	R	L		D4	L1	L3	F1	F2	H1			RR°	Clamp Screw	Wrench	
<b>S20QSVUCR/L11</b>	●	●	VCMW VCMT	1103 $\odot$	20	180	32	13	4.4	18	7	25	0.4	TS25	TKY08F
<b>S25RSVUCR/L16</b>	●	●		1604 $\odot$	25	200	40	17	6.9	23	5	32	0.8	TS4	TKY15F
<b>S32SSVUCR/L16</b>	●	●		1604 $\odot$	32	250	50	22	8.4	30	5	40	0.8	TS4	TKY15F
<b>S40TSVUCR/L16</b>	●	●		1604 $\odot$	40	300	63	27	9.4	37	5	50	0.8	TS4	TKY15F

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5

## RECOMMENDED CUTTING CONDITIONS

Steel Shank			$l/d \leq 3$			$l/d = 3-4$ (Shank Diameter $\geq 25$ mm)		
Carbide Shank			$l/d \leq 5$			$l/d = 6-7$		
Work Material	Hardness	Cutting Mode	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Light Cutting	130 (90-160)	0.1 (0.05-0.15)	0.2	120 (80-150)	0.1 (0.05-0.15)	0.2
		Medium Cutting	90 (60-120)	0.25 (0.15-0.35)	-3.0	80 (50-110)	0.15 (0.1-0.2)	-1.5
<b>M</b> Stainless Steel	$\leq 200$ HB	Light Cutting	140 (100-180)	0.1 (0.05-0.15)	0.2	140 (100-180)	0.1 (0.05-0.15)	0.2
		Medium Cutting	70 (50-90)	0.2 (0.15-0.25)	-2.0	60 (40-80)	0.15 (0.1-0.2)	-1.0
<b>N</b> Aluminium Alloy	—	Light Cutting	300 (200-400)	0.1 (0.05-0.15)	0.2	300 (200-400)	0.1 (0.05-0.15)	0.2
		Medium Cutting	200 (150-250)	0.1 (0.05-0.15)	-2.0	200 (150-250)	0.1 (0.05-0.15)	-1.5

SC $\odot$  type inserts > A110, A111  
 VC $\odot$  type inserts > A122, A123  
 CBN inserts > B046

SPARE PARTS > P001  
 TECHNICAL DATA > Q001

# BORING BARS

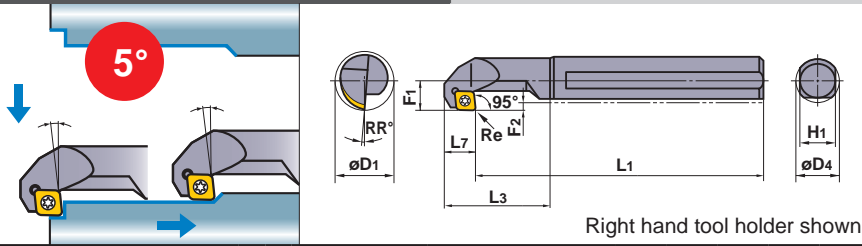
## S TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 20$ .
- ISO standard.
- 7° positive insert.
- Screw-on type.

- l/d is 3 to 5 times the diameter (up to 7 times with the carbide shank).



### SCZC

### CC<sup>o</sup>inserts



Finish	Finish	Light	Light
FP	FM	LP	LM
 (06,09)	 (06,09)	 (06,09)	 (06,09)
Medium	Medium	Flat top	PCD/CBN
MP	MM		
 (06,09)	 (06,09)	 (06,09)	 (06,09)

Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions(mm)								Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* 		
	R	L		D4	L1	L3	L7	F1	F2	H1	RR°					Clamp Screw
<b>S16MSCZCR/L06</b>	●	●	CCMH CCMT CCET CCGT CCMW	0602 <sup>o</sup>	16	150	36	11	11	3	14	10	20	0.4	TS25	TKY08F
<b>S20QSCZCR/L09</b>	●	●		09T3 <sup>o</sup>	20	180	50	18	13	3	18	7	25	0.8	TS4	TKY15F

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use right hand insert for right hand holder and left hand insert for left hand holder.

\* Clamp Torque (N · m) : TS25=1.0, TS4=3.5

## RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Cutting Mode	l/d ≤ 3			l/d = 3-4 (Shank Diameter ≥ 25mm)		
			Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
P Carbon Steel Alloy Steel	180-350HB	Light Cutting	130 (90-160)	0.1 (0.05-0.15)	0.2	120 (80-150)	0.1 (0.05-0.15)	0.2
		Medium Cutting	90 (60-120)	0.25 (0.15-0.35)	-3.0	80 (50-110)	0.15 (0.1-0.2)	-1.5
M Stainless Steel	≤200HB	Light Cutting	140 (100-180)	0.1 (0.05-0.15)	0.2	140 (100-180)	0.1 (0.05-0.15)	0.2
		Medium Cutting	70 (50-90)	0.2 (0.15-0.25)	-2.0	60 (40-80)	0.15 (0.1-0.2)	-1.0
N Aluminium Alloy	-	Light Cutting	300 (200-400)	0.1 (0.05-0.15)	0.2	300 (200-400)	0.1 (0.05-0.15)	0.2
		Medium Cutting	200 (150-250)	0.1 (0.05-0.15)	-2.0	200 (150-250)	0.1 (0.05-0.15)	-1.5

● : Inventory maintained in Japan.

▲ : Inventory maintained in Japan. To be replaced by new products.

CC<sup>o</sup> type inserts > A097-A101

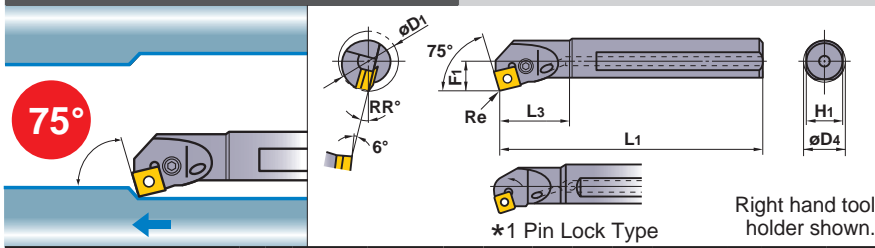
CBN & PCD inserts > B036-B038, B056

# P TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 25$ .
- ISO standard.
- Economical negative insert.
- Lever lock type.
- $l/d$  is 3 times the diameter.

## PSKN

With coolant hole **SN** inserts



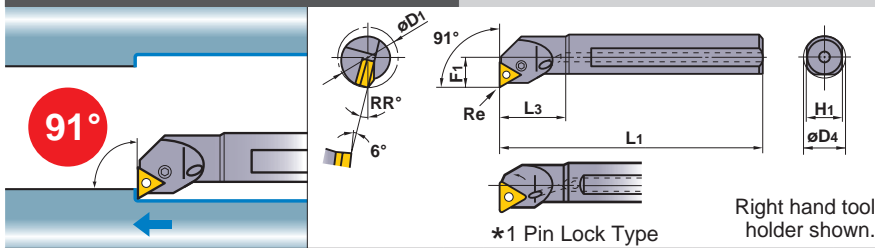
Finish	Light	Medium	Medium
FH (09,12)	LP (12)	MP (12)	MH (12)
Medium	Stainless	G class	CBN
Standard (09,12)	MM (12)	R/L (09,12)	

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Shim	Shim Pin	Clamp Lever	Clamp Screw	Wrench	Plug	Clamp Pin	Pin	Screw
	R	L		D4	L1	L3	F1	H1	RR°												
*1 A20QPSKNR/L09	●	●	SNMA 0903	20	180	32	13	18	13	25	0.8	—	—	—	—	—	—	—	—	—	—
*1 A25RPSKNR/L12	●	●	SNMG 1204	25	200	40	17	23	13	32	0.8	MLSP42	—	—	—	—	—	—	—	—	
A32SPSKNR/L12	●	●	SNMM 1204	32	250	50	22	30	13	44	0.8	LLSSN42	LLP14	LLCL14	LLCS108S	HKY30R	HGM-PT3/8	—	—	—	
A40TPSKNR12	▲	●	SNGA 1204	40	300	63	27	37	10	54	0.8	LLSSN42	LLP14	LLCL14	LLCS108S	HKY30R	HGM-PT3/8	—	—	—	

\*2 Clamp Torque (N · m) : LLCS108S=3.3, HP3T=2.2, HP43=3.3

## PTFN

With coolant hole **TN** inserts



Finish	Light	Medium	Medium
FH (16)	LP (16)	MP (16,22)	MH (16,22)
Medium	Stainless	G class	CBN
Standard (16,22)	MM (16,22)	R/L (16,22)	

Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Shim	Shim Pin	Clamp Lever	Clamp Screw	Wrench	Plug	Clamp Pin	Pin	Screw
	R	L		D4	L1	L3	F1	H1	RR°												
*1 A20QPTFNR/L16	●	●	TNMA 1604	20	180	32	13	18	15	25	0.8	—	—	—	—	—	—	—	—	—	
*1 A25RPTFNR/L16	●	●	TNMG 1604	25	200	40	17	23	13	32	0.8	MLTP32	—	—	—	—	—	—	—	—	
A32SPTFNR/L16	●	●	TNMM 1604	32	250	50	22	30	13	44	0.8	LLSTN32	LLP13	LLCL13	LLCS106	HKY25R	HGM-PT3/8	—	—	—	
A40TPTFNR/L22	●	●	TNGA 2204	40	300	63	27	37	10	54	0.8	LLSTN42	LLP14	LLCL14	LLCS108S	HKY30R	HGM-PT3/8	—	—	—	
A50UPTFNR/L22	●	●	TNGG 2204	50	350	80	35	47	9	70	0.8	LLSTN42	LLP14	LLCL14	LLCS108S	HKY30R	HGM-PT3/8	—	—	—	

\*2 Clamp Torque (N · m) : LLCS106=2.2, LLCS108S=3.3, HP31=2.2, HP33=2.2

## RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Cutting Mode	$l/d \leq 3$			$l/d = 3-4$		
			Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Medium Cutting	110 (80-140)	0.25 (0.1-0.4)	-5.0	110 (80-140)	0.2 (0.1-0.3)	-4.0
<b>M</b> Stainless Steel	$\leq 200$ HB	Medium Cutting	80 (60-100)	0.2 (0.1-0.3)	-4.0	70 (50-100)	0.15 (0.1-0.25)	-3.0
<b>K</b> Gray Cast Iron	Tensile Strength $\leq 350$ MPa	Medium Cutting	80 (60-100)	0.25 (0.1-0.4)	-5.0	80 (60-100)	0.2 (0.1-0.3)	-4.0

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

SN type inserts	> A077 - A081
TN type inserts	> A082 - A087
CBN & PCD inserts	> B027 - B029, B053

SPARE PARTS	> P001
TECHNICAL DATA	> Q001

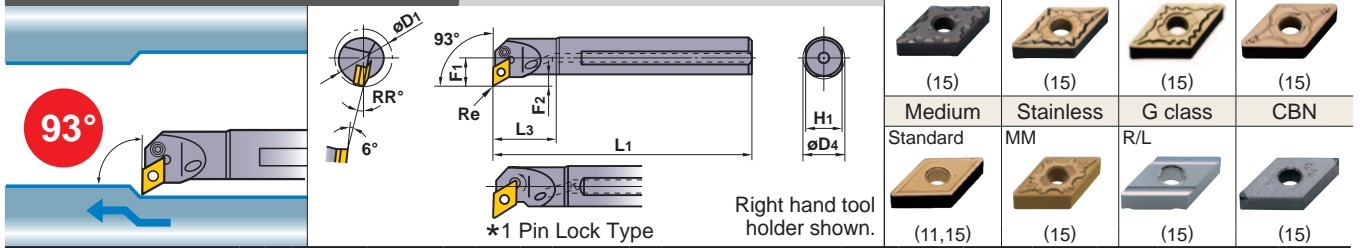
# BORING BARS

## P TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 20$ .
- ISO standard.
- Economical negative insert.
- Lever lock type.
- $l/d$  is 3 times the diameter.

### PDUN

#### With coolant hole DN inserts

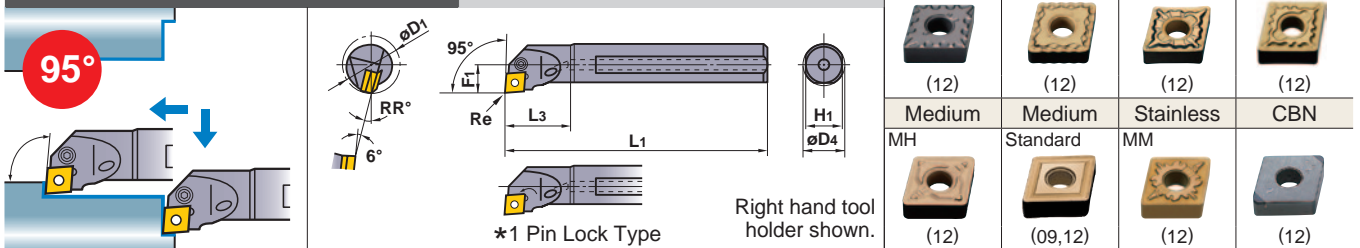


Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Tools											
	R	L		D4	L1	L3	F1	F2	H1	RR°			Shim	Shim Pin	Clamp Lever	Clamp Screw	Wrench	Plug	Clamp Pin	Pin	Screw			
A20QPDUNR/L11	●	●	DNMA DNMG DNMX DNMM DNMA DNMA DNMG	1104	20	180	32	15	6.4	18	13	26	0.8	—	—	LLCL23S	LLCS125	HKY20R	HGM-PT1/8	—	—	—		
A25RPDUNR/L11	●	●		1104	25	200	40	17	6.9	23	15	32	0.8	LLSDN32	LLP13	LLCL23	LLCS106	HKY25R	HGM-PT1/4	—	—	—		
*1 A25RPDUNR/L15	●	●		1504	25	200	40	17	6.9	23	13	32	0.8	MLDP42	—	—	—	HKY15R HKY30R	HGM-PT1/4	HP43	P210AM	HSS03005		
A32SPDUNR/L11	●	●		1104	32	250	50	22	8.4	30	13	44	0.8	LLSDN32	LLP13	LLCL23	LLCS106	HKY25R	HGM-PT3/8	—	—	—		
A32SPDUNR/L15	●	●		1504	32	250	50	22	8.4	30	13	44	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—		
A40TPDUNR/L15	●	●		1504	40	300	63	27	9.4	37	10	54	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—		
A50UPDUNR/L15	●	●		1504	50	350	80	35	12.4	47	9	70	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—		

\*2 Clamp Torque (N · m) : LLCS125=1.5, LLCS106=2.2, LLCS108S=3.3, HP43=3.3

### PCLN

#### With coolant hole CN inserts



Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Tools											
	R	L		D4	L1	L3	F1	H1	RR°	Shim			Shim Pin	Clamp Lever	Clamp Screw	Wrench	Plug	Clamp Pin	Pin	Screw				
A16MPCLNR/L09	●	●	CNMA CNMG CNMX CNMM CNMA CNMA CNMG CNMG	09T3	16	150	25	11	14	15	20	0.8	—	—	LLCL13S	LLCS105	HKY20R	HGM-PT1/8	—	—	—			
*1 A20QPCLNR/L09	●	●		09T3	20	180	32	13	18	13	25	0.8	—	—	—	—	HKY25R HKY15R	HGM-PT1/8	HP3T	P208AM	HSS03005			
A20QPCLNR/L09N	●	●		09T3	20	180	32	13	18	13	25	0.8	—	—	LLCL13S	LLCS105	HKY20R	HGM-PT1/8	—	—	—			
A25RPCLNR/L09	●	●		09T3	25	200	40	17	23	13	32	0.8	—	—	LLCL13S	LLCS105	HKY20R	HGM-PT1/4	—	—	—			
*1 A25RPCLNR/L12	●	●		1204	25	200	40	17	23	13	32	0.8	MLCP42	—	—	—	HKY30R HKY15R	HGM-PT1/4	HP43	P210AM	HSS03005			
A32SPCLNR/L09	▲	▲		09T3	32	250	50	22	30	13	44	0.8	LLSCN3T3	LLP13	LLCL13	LLCS106	HKY25R	HGM-PT3/8	—	—	—			
A32SPCLNR/L12	●	●		1204	32	250	50	22	30	13	44	0.8	LLSCN42	LLP14	LLCL14	LLCS108S	HKY30R	HGM-PT3/8	—	—	—			
A40TPCLNR/L12	●	●		1204	40	300	63	27	37	10	54	0.8	LLSCN42	LLP14	LLCL14	LLCS108S	HKY30R	HGM-PT3/8	—	—	—			
A50UPCLNR12	●	●		1204	50	350	80	35	47	10	63	0.8	LLSCP42	LLP14	LLCL14	LLCS108S	HKY30R	HGM-PT3/8	—	—	—			

\*2 Clamp Torque (N · m) : LLCS105=1.5, LLCS106=2.2, LLCS108S=3.3, HP3T=2.2, HP43=3.3

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

- : Inventory maintained in Japan.
- ▲ : Inventory maintained in Japan. To be replaced by new products.

- DN type inserts > A071 – A075
- CN type inserts > A066 – A070
- CBN & PCD inserts > B022 – B026, B052

<b>PWLN</b>		With coolant hole										<b>WN<math>\odot</math>inserts</b>				Light	Medium
																SH (06)	MP (06)
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)					
	R	L		D4	L1	L3	F1	H1	RR°	Clamp Lever							Clamp Screw
A16MPWLN/L06	●	●	WNMG	06T3 $\odot$	16	150	25	11	14	15	20	0.8	LLCL13S	LLCS105	HKY20R	HGM-PT1/8	
A20QPWLN/L06	●	●		06T3 $\odot$	20	180	32	13	18	13	25	0.8	LLCL13S	LLCS105	HKY20R	HGM-PT1/8	
A25RPWLN/L06	●	●		06T3 $\odot$	25	200	40	17	23	13	32	0.8	LLCL13S	LLCS105	HKY20R	HGM-PT1/4	

\* Clamp Torque (N · m) : LLCS105=1.5

<b>PDQN</b>		With coolant hole										<b>DN<math>\odot</math>inserts</b>				Finish	Light	Medium	Medium			
																FH (15)	LP (15)	MP (15)	MH (15)			
Order Number	Stock		Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)										
	R	L		D4	L1	L3	F1	F2	H1	RR°												Shim
*1 A25RPDQNR/L15	●	●	DNMA DNMG DNMM DNGA DNGG	1504 $\odot$	25	200	40	17	6.9	23	13	32	0.8	MLDP42	—	—	—	HKY15R HKY30R	HGM-PT1/4	HP43	P210AM	HSS03005
A32SPDQNR/L15	●	●		1504 $\odot$	32	250	50	22	8.4	30	13	44	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—
A40TPDQNR/L15	●	●		1504 $\odot$	40	300	63	27	9.4	37	10	54	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—
A50UPDQNR15	●	●		1504 $\odot$	50	350	80	35	12.4	47	9	70	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—

\*2 Clamp Torque (N · m) : LLCS108S=3.3, HP43=3.3

## RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Cutting Mode	l/d ≤ 3			l/d = 3-4		
			Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Medium Cutting	110 (80-140)	0.25 (0.1-0.4)	-5.0	110 (80-140)	0.2 (0.1-0.3)	-4.0
<b>M</b> Stainless Steel	≤200HB	Medium Cutting	80 (60-100)	0.2 (0.1-0.3)	-4.0	70 (50-100)	0.15 (0.1-0.25)	-3.0
<b>K</b> Gray Cast Iron	Tensile Strength ≤350MPa	Medium Cutting	80 (60-100)	0.25 (0.1-0.4)	-5.0	80 (60-100)	0.2 (0.1-0.3)	-4.0

WN $\odot$  type inserts > A091-A093

DN $\odot$  type inserts > A071-A075

CBN & PCD inserts > B025, B026, B052

SPARE PARTS > P001

TECHNICAL DATA > Q001

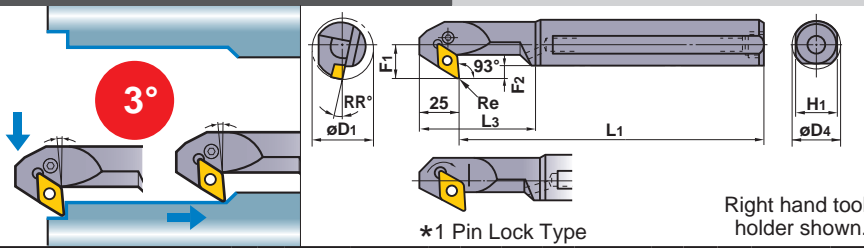
# BORING BARS

## P TYPE BORING BARS

- The minimum cutting diameter is from  $\phi 32$ .
- ISO standard.
- Economical negative insert.
- Lever lock type.
- $l/d$  is 3 times the diameter.

### PDZN

With coolant hole **DN** inserts



Finish	Light	Medium	Medium
FH	LP	MP	MH
(15)	(15)	(15)	(15)
Medium	Stainless	G class	CBN
Standard	MM	R/L	
(15)	(15)	(15)	(15)

Order Number	Stock		Insert Number	Dimensions(mm)								Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Shim	Shim Pin	Clamp Lever	Clamp Screw	Wrench	Plug	Clamp Pin	Pin	Screw
	R	L		D4	L1	L3	F1	F2	H1	RR°												
*1 A25RPDZNR/L15	●	●	DNMA	1504	25	200	65	17	6.7	23	13	32	0.8	MLDP42	—	—	—	HKY15R HKY30R	HGM-PT1/4	HP43	P210AM	HSS03005
A32SPDZNR/L15	●	●	DNMG DNMX	1504	32	250	75	22	8.2	30	13	40	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—
A40TPDZNR/L15	●	●	DNMM	1504	40	300	88	27	9.2	37	10	50	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—
A50UPDZNR/L15	●	●	DNGA DNGG	1504	50	350	105	35	12.2	47	9	63	0.8	LLSDN42	LLP14	LLCL24	LLCS108S	HKY30R	HGM-PT3/8	—	—	—

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use right hand insert for right hand holder and left hand insert for left hand holder.

\*2 Clamp Torque (N · m) : LLCS108S=3.3, HP43=3.3

## RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Cutting Mode	$l/d \leq 3$			$l/d = 3-4$		
			Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Medium Cutting	110 (80-140)	0.25 (0.1-0.4)	-5.0	110 (80-140)	0.2 (0.1-0.3)	-4.0
<b>M</b> Stainless Steel	≤200HB	Medium Cutting	80 (60-100)	0.2 (0.1-0.3)	-4.0	70 (50-100)	0.15 (0.1-0.25)	-3.0
<b>K</b> Gray Cast Iron	Tensile Strength ≤350MPa	Medium Cutting	80 (60-100)	0.25 (0.1-0.4)	-5.0	80 (60-100)	0.2 (0.1-0.3)	-4.0

● : Inventory maintained in Japan.

▲ : Inventory maintained in Japan. To be replaced by new products.

DN type inserts > A071 - A075

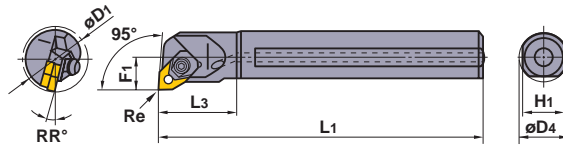
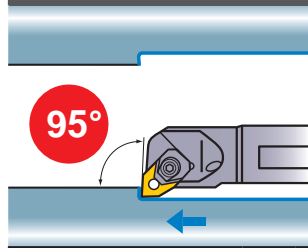
CBN & PCD inserts > B025, B026, B052

# M TYPE BORING BARS

- The minimum cutting is from  $\phi 32$ .
- Negative trigon shape insert.
- Double clamp type.
- $l/d$  is 3 times the diameter.

## MWLN

With coolant hole WN○○inserts



Right hand (R) only for the standard.

Finish	Light	Medium
FH	LM	MP
(08)	(08)	(08)
Medium	Medium	Stainless
MA	GM	MM
(08)	(08)	(08)

Order Number	Stock	Insert Number	Dimensions(mm)							Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)								
	R		D4	L1	L3	F1	H1	RR°											
<b>A50UMWLN08</b>	▲	WNMA WNMG 0804○○	50	350	80	35	63	9	63	0.8	WPS WC43	CCP44	CCK13	CPT24	MES2	SLCS105	HKY25R HKY40R	HGM- PT3/8	

(Note) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

\* Clamp Torque (N · m) : SLCS105=7.0

BORING

## RECOMMENDED CUTTING CONDITIONS

Work Material	Hardness	Cutting Mode	$l/d \leq 3$			$l/d = 3-4$		
			Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
<b>P</b> Carbon Steel Alloy Steel	180-350HB	Medium Cutting	110 (80-140)	0.25 (0.1-0.4)	-5.0	110 (80-140)	0.2 (0.1-0.3)	-4.0
<b>M</b> Stainless Steel	≤200HB	Medium Cutting	80 (60-100)	0.2 (0.1-0.3)	-4.0	70 (50-100)	0.15 (0.1-0.25)	-3.0
<b>K</b> Gray Cast Iron	Tensile Strength ≤350MPa	Medium Cutting	80 (60-100)	0.25 (0.1-0.4)	-5.0	80 (60-100)	0.2 (0.1-0.3)	-4.0

WN○○ type inserts	> A091 - A094
CBN inserts	> B031
SPARE PARTS	> P001
TECHNICAL DATA	> Q001



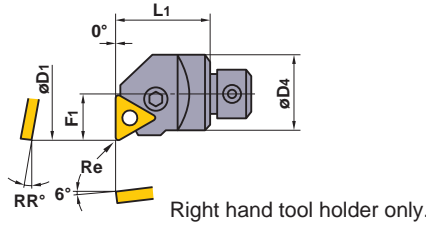
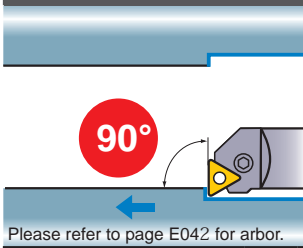
# BORING BARS








## D TYPE BORING HEAD






- The minimum cutting diameter is from  $\phi 40$ .
- Economical negative insert.
- Lever lock type.
- Exchangeable head type.

### DPTF

### TN $\odot$ inserts



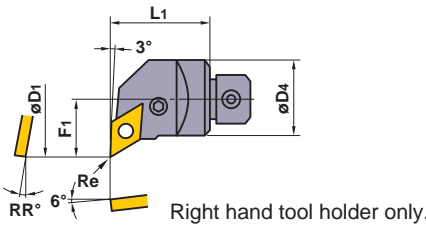
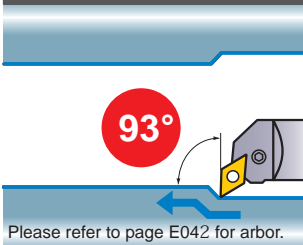
Finish	Light	Medium	Medium
FH  (16)	SH  (16,22)	MP  (16,22)	MH  (16,22)
Medium	Stainless	G class	CBN
Standard  (16,22)	MM  (16,22)	L  (16,22)	 (16)









Order Number	Stock R	Insert Number	Dimensions(mm)				Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)				 *		
			D4	L1	F1	RR°								
DPTF132R	●	TNMA TNMG TNMM TNGA TNMG	1604 $\odot$	32	40	20	12	40	0.8	LLSTN32	LLP13	LLCL13	LLCS106	HKY25R
140R	●	TNMA TNMG TNMM TNGA TNMG	2204 $\odot$	40	50	25	10	50	0.8	LLSTN42	LLP14	LLCL14	LLCS108	HKY30R






\* Clamp Torque (N · m) : LLCS106=2.2, LLCS108=3.3

### DPDU

### DN $\odot$ inserts



Finish	Light	Medium	Medium
FH  (15)	SH  (15)	MP  (15)	MH  (15)
Medium	Stainless	G class	CBN
Standard  (15)	MM  (15)	L  (15)	 (15)

Order Number	Stock R	Insert Number	Dimensions(mm)				Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)				 *		
			D4	L1	F1	RR°								
DPDU132R	●	DNMA DNMG DNMX DNMM DNMA DNMG	1504 $\odot$	32	40	25	10	50	0.8	LLSDN42	LLP14	LLCL24	LLCS108	HKY30R
140R	●	DNMA DNMG DNMX DNMM DNMA DNMG	1504 $\odot$	40	50	30	9	60	0.8	LLSDN42	LLP14	LLCL24	LLCS108	HKY30R

\* Clamp Torque (N · m) : LLCS108=3.3

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

TN $\odot$  type inserts > A082 – A087

DN $\odot$  type inserts > A071 – A075

CBN & PCD inserts > B025, B026, B028, B029, B052, B053

DPCL		CN $\odot$ inserts								Finish	Light	Light	Medium	
		<p>95° Please refer to page E042 for arbor. Right hand tool holder only.</p>								FH  (12)	SA  (12)	LP  (12)	MP  (12)	
Order Number	Stock R	Insert Number	Dimensions(mm)				Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)						
			D4	L1	F1	RR°			Shim	Shim Pin	Clamp Lever	Clamp Screw*	Wrench	
DPCL132R	●	CNMA CNMG CNMM CNGG	1204 $\odot$	32	40	20	12	40	0.8	LLSCN42	LLP14	LLCL14	LLCS108	HKY30R
140R	●		1204 $\odot$	40	50	25	10	50	0.8	LLSCN42	LLP14	LLCL14	LLCS108	HKY30R

\* Clamp Torque (N · m) : LLCS108=3.3

DPDH		DN $\odot$ inserts								Finish	Light	Medium	Medium	
		<p>107° 30° Please refer to page E042 for arbor. Right hand tool holder only.</p>								FH  (15)	LP  (15)	MP  (15)	MH  (15)	
Order Number	Stock R	Insert Number	Dimensions(mm)				Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)						
			D4	L1	F1	RR°			Shim	Shim Pin	Clamp Lever	Clamp Screw*	Wrench	
DPDH132R	●	DNMA DNMG DNMM DNMA DNMG DNMM DNMA DNMG DNMM DNMA DNMG DNMM	1504 $\odot$	32	40	25	10	50	0.8	LLSDN42	LLP14	LLCL24	LLCS108	HKY30R
140R	●		1504 $\odot$	40	50	30	9	60	0.8	LLSDN42	LLP14	LLCL24	LLCS108	HKY30R

\* Clamp Torque (N · m) : LLCS108=3.3

- CN $\odot$  type inserts > A066 – A070
- DN $\odot$  type inserts > A071 – A075
- CBN & PCD inserts > B022 – B026, B052

- SPARE PARTS > P001
- TECHNICAL DATA > Q001

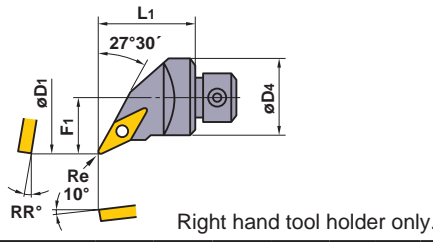
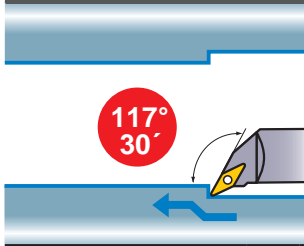
# BORING BARS








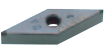
## D TYPE BORING HEAD






- The minimum cutting diameter is from  $\phi 40$ .
- Economical negative insert.
- Lever lock type.
- Exchangeable head type.

### DPVP

### VN $\circ$ inserts

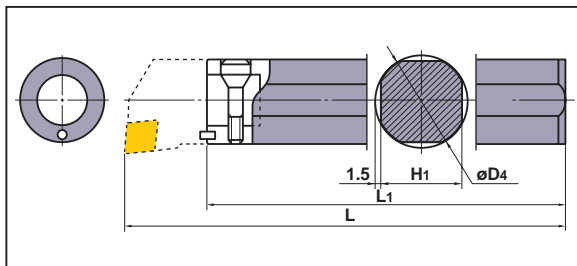
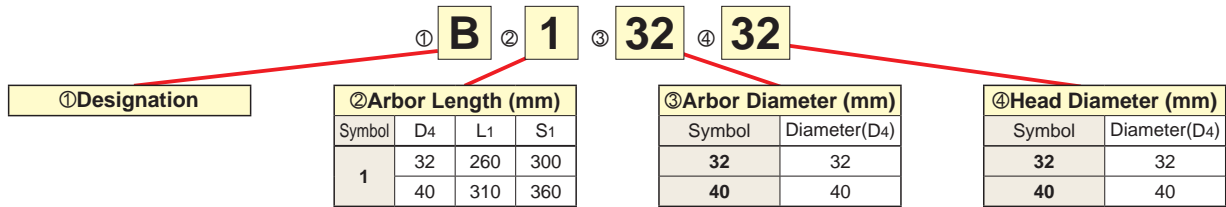


Finish	Light	Medium	Medium
FH	SH	MP	MH
			
(16)	(16)	(16)	(16)
Stainless	G class	PCD	CBN
MM	L	L-F	
			
(16)	(16)	(16)	(16)

Order Number	Stock	Insert Number	Dimensions(mm)					Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	Accessories				
			D4	L1	F1	RR°	Shim			Lock Pin	Lock Screw *	Stop Ring	Wrench	
DPVP132R	●	VNMG	32	40	25	13	50	0.8						
140R	●	VNGA	40	50	30	13	60	0.8	PV322	P11S	HSP05008C	E03	HKY25R	
		VNGG	40	50	30	13	60	0.8	PV322	P11S	HSP05008C	E03	HKY25R	

\* Clamp Torque (N · m) : HSP05008C=2.5

## STANDARD ARBOR FOR D TYPE BORING HEAD



Order Number	Stock	Dimensions (mm)				Set Bolt	Wrench	Head Order Number
		D1	L1	H1	S1			
B13232	●	32	260	29	300	SD32	HKY60R	DP $\circ$ 132R
B14040	●	40	310	37	360	SD40	HKY60R	DP $\circ$ 140R




# AL TYPE BORING BARS

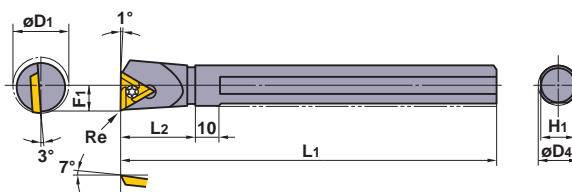
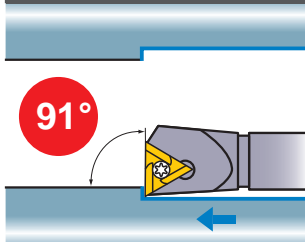
- Suitable for non-ferrous metal.
- 20° positive insert.
- Screw-on type.
- l/d is 6 times the diameter.

- Excellent vibration resistance.
- The minimum cutting diameter is from  $\phi 20$ .


## STFE

## TEGO inserts

Medium	PCD
R/L  (16)	R/L  (16)
PCD  (16)	



Right hand tool holder shown.

Order Number	Stock		Insert Number	Dimensions(mm)					Min. Cutting Diameter D1 (mm)	Standard Corner Radius Re (mm)	* 		
	R	L		D4	L1	L2	F1	H1			Clamp Screw	Wrench	
S16RSTFER/L16	●	●	TEGX...R/L	1603	16	200	30	11	14.6	20	0.4	FC400890T	TKY10F
S20RSTFER/L16	●	●		1603	20	200	37	13	18	25	0.4	FC400890T	TKY10F
S25SSTFER/L16	●	●		1603	25	250	40	17	23	32	0.4	FC400890T	TKY10F

\* Clamp Torque (N · m) : FC400890T=2.5

BORING

## RECOMMENDED CUTTING CONDITIONS

Work Material	Grade	Cutting Speed (m/min)	l/d=3		l/d=4		l/d=5		l/d=6	
			Feed (mm/rev)	Depth of Cut (mm)	Feed (mm/rev)	Depth of Cut (mm)	Feed (mm/rev)	Depth of Cut (mm)	Feed (mm/rev)	Depth of Cut (mm)
N Aluminium Alloy	HT110	400 (200-600)	0.15 (0.05-0.25)	-3.0	0.15 (0.05-0.25)	-3.0	0.1 (0.05-0.2)	-2.5	0.1 (0.05-0.2)	-1.0
	MD220	800 (200-1500)	0.15 (0.05-0.25)	-3.0	0.15 (0.05-0.25)	-3.0	0.1 (0.05-0.2)	-2.5	0.1 (0.05-0.2)	-1.0

(Note 1) The insert photos are only examples. The letters refer to the chip breaker and the dimension refers to the inscribed circle.

(Note 2) When using insert with right and left hand chip breaker, please use left hand insert for right hand holder and right hand insert for left hand holder.

● : Inventory maintained in Japan.

TEGO type inserts > A115 SPARE PARTS > P001  
PCD inserts > B063 TECHNICAL DATA > Q001

E043