

Expanded
**MICRO-MINI
TWIN**

***SMALL BORING
BAR SERIES***

Ideal for small-diameter boring of general and stainless steels.

MICRO-MINI TWIN

Economical, solid shank type with two cutting edges. A back cutting edge enables continuous turning-from internal turning to facing. Minimum bore diameter 2.2mm.

MICRO-DEX

Indexable type boring bars. Adjustable tool overhang. Minimum bore diameter 5.0mm.

MICRO-MINI

Solid shank. Multi-functional bar for threading, grooving and boring. Minimum bore diameter 3.2mm.

Round Type Holder / SquareType Holder

Addition of round type holders that are compatible with any type of automatic lathes. For easy installation to the centre axis of lathes. Good chip disposal and coolant supply.



SMALL BORING BAR SERIES

Features

Tools



MICRO-MINI TWIN (P2-)

- Solid carbide shank
- Minimum cutting diameter \varnothing 2.2mm-
- Economical because of two cutting edges
- Boring, Grooving, Threading, Copying



MICRO-MINI (P6-)

- Solid carbide shank
- Minimum cutting diameter \varnothing 3.2mm-
- Various cutting edge forms are possible



MICRO-DEX (P7-)

- Indexable type solid carbide shank
- Minimum cutting diameter 5.0mm

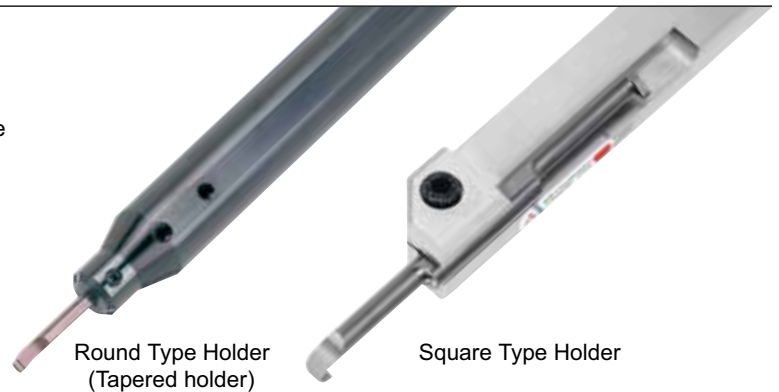
Holders

Round Type Holder / Square Type Holder (P11-)

- Compatible with any type of automatic or NC lathe
- The shape of the cutting point contributes to good chip control and coolant supply
- Square holder for easy tool mounting

<Machine makers>

Citizen Precision Machinery Co.Ltd.
STAR MICRONICS CO.,LTD,
Tsumami Corporation,
MIYANO MACHINERY JAPAN INC.



Round Type Holder
(Tapered holder)

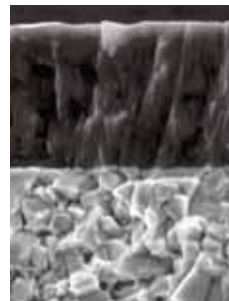
Square Type Holder

Grade



Feature of **VP15TF**

MIRACLE® coating **VP15TF** displays excellent welding resistance for machining a wide range of work piece materials from plain, mild and low carbon steels through to stainless steels.



MIRACLE® coating
(Al,Ti)N

Micro-grain
cemented carbide
TF15

Micro-structure of **VP15TF**

Application

		Minimum cutting diameter (mm)							Reference page
		\varnothing 2	\varnothing 3	\varnothing 4	\varnothing 5	\varnothing 6	\varnothing 7	\varnothing 8	
MICRO-MINI TWIN (Solid carbide type)	Boring	CB02	CB03	CB04	CB05				P2-
	Grooving		CG03	CG04	CG05	CG06	CG07		
	Threading		CT03	CT04		CT05	CT06		
	Copying		NEW CR03	NEW CR04	NEW CR05				
MICRO-MINI (Solid carbide type)	Grooving		C03	C04	C05				P6
		* By grinding the cutting edge, the same bar can be used for boring and threading.							
MICRO-DEX (Indexable insert type)	Boring				C04 SCLC	C05 SCLC	C06 SCLC	C07 SCLC	P7-
							C07 STUC		
					C05 SWUB	C06 SWUB	C07 SWUB		

* Other small tools for automatic lathes can be found in the catalogue C002J.

SMALL BORING BAR SERIES

MICRO-MINI TWIN

Features

● 1 tool offering 2 cutting edge types.

Reduced tooling costs, Economical



● Wide range available

- Boring
Minimum cutting diameter $\varnothing 2.2\text{mm}$ -
- Grooving
Minimum cutting diameter $\varnothing 3\text{mm}$ -
- Threading
Minimum cutting diameter $\varnothing 3\text{mm}$ -
- Copying
Minimum cutting diameter $\varnothing 3.5\text{mm}$ -

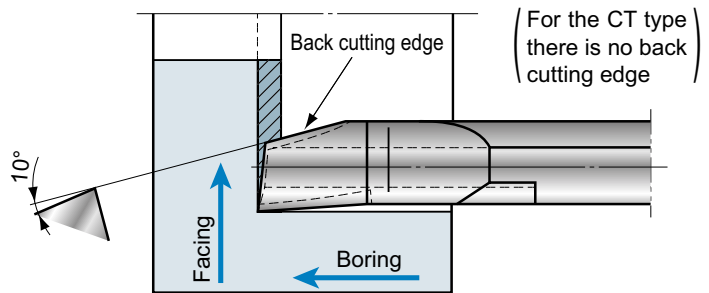
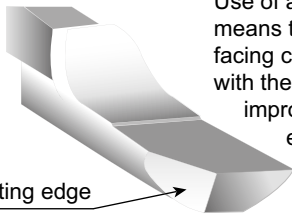
NEW



● Back cutting edge

Use of a back cutting edge means that boring and facing can be performed with the same tool, thereby improving machining efficiency.

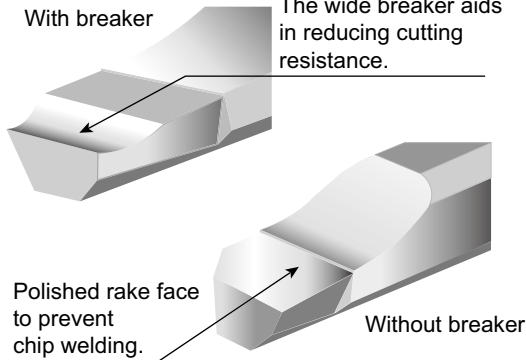
Back cutting edge



● Available with or without a breaker

With breaker

The wide breaker aids in reducing cutting resistance.



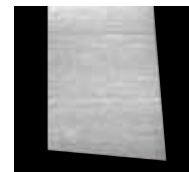
● MICRO-MINI TWIN (Polished rake face)



Direction of measurement

Surface roughness
0.3 μmRy

● Conventional product



Direction of measurement

Surface roughness
1.8 μmRy

Highly polished rake face. The smooth surface of the cutting edge is far superior to that of conventional boring bars.

Cutting performance

● Polished rake face

■ Machining of stainless steel

The polished rake face prevents chip welding and provides an excellent surface finish.

<Cutting conditions>

Workpiece : JIS SUS304

Tool : CB05RS, VP15TF

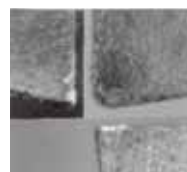
Cutting speed : 100m/min

Feed : 0.02mm/rev

D.O.C : 0.1mm

Wet

● MICRO-MINI TWIN (Polished rake face)



Cutting edge wear

Surface roughness
2.0 μmRy

● Conventional product



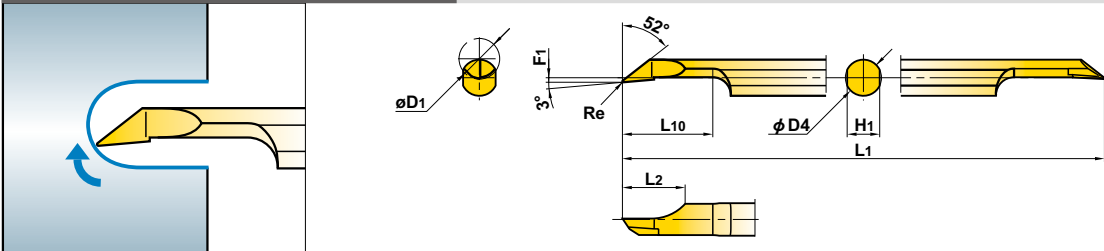
Cutting edge wear

Surface roughness
2.6 μmRy

MICRO-MINI TWIN

CR NEW

(Copying)



Right hand tool only.

Order number	Stock		Breaker	Minimum cutting diameter D1	Dimensions (mm)						
	Micrograin carbide TF15	Coated carbide VP15TF			Re	D4	L1	L10	L2	F1	H1
NEW CR03RS-01	●	●	No	3.5	0.1	3	50	8	6	0.15	2.7
NEW CR03RS-01B	●	●	Yes	3.5	0.1	3	50	8	6	0.15	2.7
NEW CR04RS-01	●	●	No	4.5	0.1	4	60	10	7	0.15	3.6
NEW CR04RS-01B	●	●	Yes	4.5	0.1	4	60	10	7	0.15	3.6
NEW CR05RS-01	●	●	No	5.5	0.1	5	70	12	8	0.15	4.5
NEW CR05RS-01B	●	●	Yes	5.5	0.1	5	70	12	8	0.15	4.5

Machining methods of the CR type

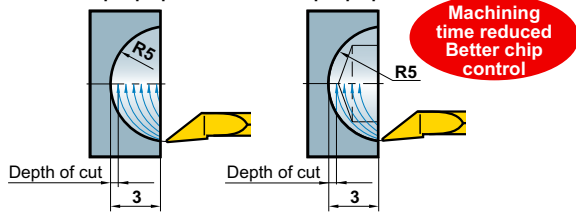
● Profile turning

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

<Cutting conditions>

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

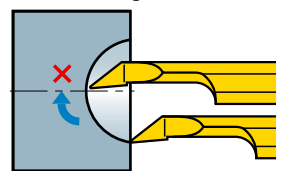
Machining a work piece without a pre-prepared hole Machining a work piece with a pre-prepared hole



Notes for use

Profile turning, Inner end facing

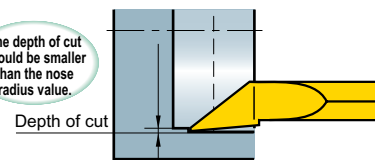
The cutting edge should not be cross the centre line of the work piece.



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 nose radius value.



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

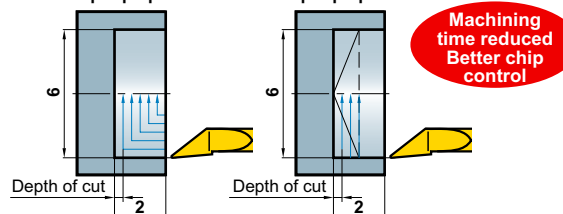
● Inner end facing

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

<Cutting conditions>

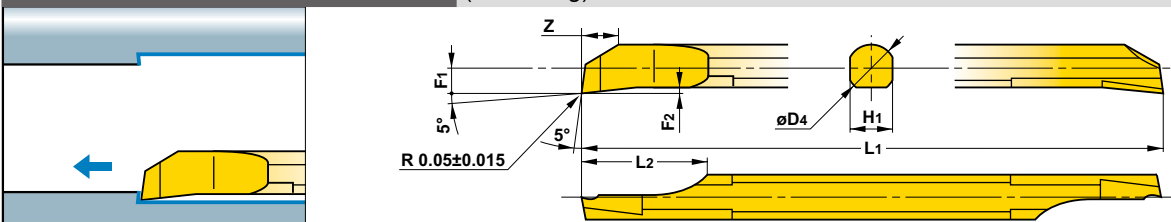
Workpiece : S20C
Holder : CR05RS-01B
Cutting speed : 80m/min
Feed : 0.05mm/rev
Depth of cut : 0.05mm
Wet

Machining a work piece without a pre-prepared hole Machining a work piece with a pre-prepared hole



CB

(For boring)



Right hand tool only.

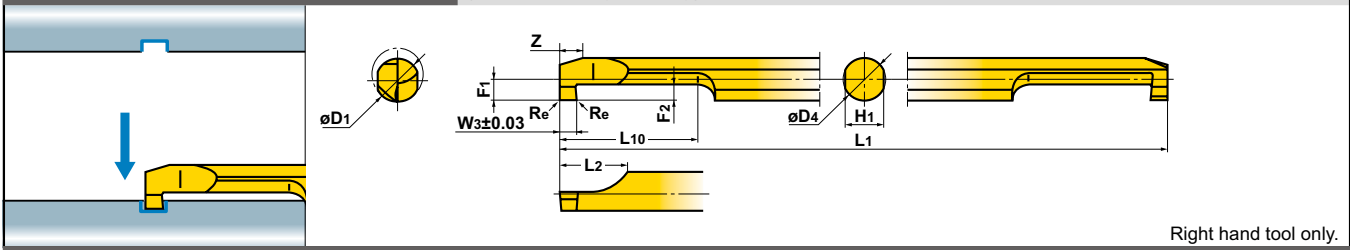
Order number	Stock		Breaker	Minimum cutting diameter D1	Dimensions (mm)						
	Micrograin carbide TF15	Coated carbide VP15TF			D4	L1	L2	F1	F2	H1	Z
CB02RS	●	●	No	2.2	2	50	5	1.0	0.25	1.8	1.4
02RS-B	●	●	Yes	2.2	2	50	5	1.0	0.25	1.8	1.4
03RS	●	●	No	3.2	3	50	7.5	1.5	0.35	2.7	2.3
03RS-B	●	●	Yes	3.2	3	50	7.5	1.5	0.35	2.7	2.3
04RS	●	●	No	4.2	4	60	10	2.0	0.45	3.6	3.1
04RS-B	●	●	Yes	4.2	4	60	10	2.0	0.45	3.6	3.1
05RS	●	●	No	5.2	5	70	12.5	2.5	0.55	4.5	3.9
05RS-B	●	●	Yes	5.2	5	70	12.5	2.5	0.55	4.5	3.9

*Refer to P14 for holders.

● : Inventory maintained.

CG

(For internal grooving)



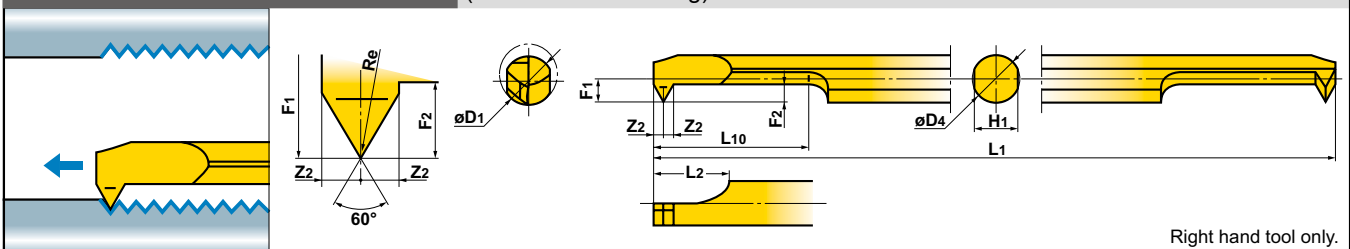
Right hand tool only.

Order number	Stock		Breaker	Minimum cutting diameter D1	Groove width W3	Max groove depth F2	Dimensions (mm)							
	Micrograin carbide TF15	Coated carbide VP15TF					Re	D4	L1	L10	L2	F1	H1	Z
	CG03RS-10	●					●	No	3	1	1	0.05	3	50
03RS-10B	●	●	Yes	3	1	1	0.05	3	50	10	6	1.3	2.7	1.2
03RS-20	●	●	No	3	2	1	0.1	3	50	11	6	1.3	2.7	1.2
03RS-20B	●	●	Yes	3	2	1	0.1	3	50	11	6	1.3	2.7	1.2
04RS-10	●	●	No	4	1	1.5	0.05	4	60	15	7	1.8	3.6	2.0
04RS-10B	●	●	Yes	4	1	1.5	0.05	4	60	15	7	1.8	3.6	2.0
04RS-20	●	●	No	4	2	1.5	0.1	4	60	16	7	1.8	3.6	2.0
04RS-20B	●	●	Yes	4	2	1.5	0.1	4	60	16	7	1.8	3.6	2.0
05RS-10	●	●	No	5	1	2	0.05	5	70	20	8	2.3	4.5	2.8
05RS-10B	●	●	Yes	5	1	2	0.05	5	70	20	8	2.3	4.5	2.8
05RS-20	●	●	No	5	2	2	0.1	5	70	21	8	2.3	4.5	2.8
05RS-20B	●	●	Yes	5	2	2	0.1	5	70	21	8	2.3	4.5	2.8
06RS-10	●	●	No	6	1	2	0.05	6	75	20	8	2.8	5.4	2.8
06RS-10B	●	●	Yes	6	1	2	0.05	6	75	20	8	2.8	5.4	2.8
06RS-20	●	●	No	6	2	2	0.1	6	75	21	8	2.8	5.4	2.8
06RS-20B	●	●	Yes	6	2	2	0.1	6	75	21	8	2.8	5.4	2.8
07RS-10	●	●	No	7	1	2	0.05	7	85	25	8	3.3	6.4	2.8
07RS-10B	●	●	Yes	7	1	2	0.05	7	85	25	8	3.3	6.4	2.8
07RS-20	●	●	No	7	2	2	0.1	7	85	26	8	3.3	6.4	2.8
07RS-20B	●	●	Yes	7	2	2	0.1	7	85	26	8	3.3	6.4	2.8

*Refer to P14 for holders.

CT

(For internal threading)



Right hand tool only.

Order number	Stock		Breaker	Threads				Minimum cutting diameter D1	Dimensions (mm)								
	Micrograin carbide TF15	Coated carbide VP15TF		Metric		Unified			Re	D4	L1	L10	L2	F1	Z2	F2	H1
	Thread	Pitch (mm)		Thread	Pitch (thread/inch)												
CT03RS-M4	●	●	No	≥ M4	0.5-1.0	≥ NO.8-32UNC	36-24	3	0.03	3	50	10.2	6	1.3	0.6	1.2	2.7
03RS-M4B	●	●	Yes	≥ M4	0.5-1.0	≥ NO.8-36UNF	36-24	3	0.03	3	50	10.2	6	1.3	0.6	1.2	2.7
04RS-M6	●	●	No	≥ M6	0.75-1.25	≥ 1/4-20UNC	28-20	4.5	0.05	4	60	15.6	7	1.8	0.8	1.7	3.6
04RS-M6B	●	●	Yes	≥ M6	0.75-1.25	≥ 1/4-28UNF	28-20	4.5	0.05	4	60	15.6	7	1.8	0.8	1.7	3.6
05RS-M8	●	●	No	≥ M8	0.75-1.5	≥ 5/16-18UNC	24-18	6	0.05	5	70	21	8	2.3	1	2.2	4.5
05RS-M8B	●	●	Yes	≥ M8	0.75-1.5	≥ 5/16-24UNF	24-18	6	0.05	5	70	21	8	2.3	1	2.2	4.5
06RS-M10	●	●	No	≥ M10	0.75-1.75	≥ 3/8-16UNC	24-16	7	0.05	6	75	21	8	2.8	1	2.2	5.4
06RS-M10B	●	●	Yes	≥ M10	0.75-1.75	≥ 3/8-24UNF	24-16	7	0.05	6	75	21	8	2.8	1	2.2	5.4

*Refer to P14 for holders.

SMALL BORING BAR SERIES

Recommended cutting conditions

Workpiece	CB type				CG type			CT type	CR type		
	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	Tool overhang (l/d)	Cutting speed (m/min)	Feed (mm/rev)		Cutting speed (m/min)	Cutting speed (m/min)	Feed (mm/rev)	
						03RS/04RS	05RS/06RS/07RS			03RS/04RS	05RS
P General steel (JIS S45C, JIS SCM440 etc.)	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)	50 (30-80)	80 (40-120)	0.02 (0.01-0.03)	0.03 (0.01-0.05)
M Stainless steel (JIS SUS304 etc.)	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)	50 (30-80)	80 (40-120)	0.02 (0.01-0.03)	0.03 (0.01-0.05)
K Cast iron (JIS FC, JIS FCD etc.)	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)	50 (30-80)	80 (40-120)	0.03 (0.01-0.05)	0.03 (0.01-0.05)
N Non-ferrous materials (Aluminium, Brass)	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)	80 (50-100)	120 (80-160)	0.03 (0.01-0.05)	0.05 (0.01-0.08)

Note 1) Wet machining recommended.

Note 2) Please remember when machining small diameters at high speeds there is the possibility that the machine cannot maintain the set feed rate. (CT type)

Note 3) Refer to P12 for recommended tool overhangs of CG, CT and CR types.

Thread pitch for the CT type

Order number	Metric thread								Unified thread						
	P (pitch)								P (thread/inch)						
	0.50	0.70	0.75	0.80	1.00	1.25	1.50	1.75	36	32	28	24	20	18	16
CT03RS-M4 CT03RS-M4B	○	○	○	○	○	—	—	—	○	○	○	○	—	—	—
CT04RS-M6 CT04RS-M6B	—	—	○	—	○	○	—	—	—	—	○	○	○	—	—
CT05RS-M8 CT05RS-M8B	—	—	○	—	○	○	○	—	—	—	—	○	○	○	—
CT06RS-M10 CT06RS-M10B	—	—	○	—	○	○	○	○	—	—	—	○	○	○	○

Note) For internal threads that are larger than the minimum diameter of the Micro Mini Twin (CT type) it is possible to machine the thread pitches above. For the minimum diameter please refer to the tool standards.

Depth of cut for the CT type

●Metric thread

	P (pitch)	0.5	0.7	0.75	0.8	1	1.25	1.5	1.75
	Depth of cut (mm)	0.3	0.43	0.46	0.44	0.49	0.62	0.6	0.76
Re*(Nose radius)	0.03	0.03	0.03	0.05	0.03	0.03	0.05	0.05	0.05
Number of passes	1	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07
	2	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07
	3	0.05	0.06	0.06	0.05	0.06	0.06	0.06	0.07
	4	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.07
	5	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.07
	6	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.06
	7	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.06
	8		0.04	0.04	0.03	0.04	0.04	0.04	0.05
	9		0.03	0.03	0.03	0.03	0.04	0.04	0.05
	10			0.03	0.03	0.03	0.04	0.04	0.05
	11					0.03	0.03	0.03	0.04
	12						0.03	0.03	0.04
	13							0.03	0.04
	14								0.03
	15								0.04
	16								0.04
	17								0.03
	18								0.04
	19								0.04
	20								0.03

●Unified thread

	P (pitch)	36	32	28	24	20	18	16
	Depth of cut (mm)	0.43	0.49	0.56	0.54	0.66	0.64	0.78
Re*(Nose radius)	0.03	0.03	0.03	0.05	0.03	0.05	0.05	0.05
Number of passes	1	0.06	0.06	0.07	0.06	0.07	0.07	0.07
	2	0.06	0.06	0.06	0.06	0.07	0.07	0.07
	3	0.06	0.06	0.06	0.06	0.06	0.06	0.07
	4	0.05	0.05	0.06	0.05	0.06	0.06	0.06
	5	0.05	0.05	0.05	0.05	0.06	0.06	0.06
	6	0.04	0.04	0.05	0.05	0.05	0.05	0.06
	7	0.04	0.04	0.04	0.04	0.05	0.05	0.06
	8	0.04	0.04	0.04	0.04	0.04	0.05	0.06
	9	0.03	0.03	0.04	0.04	0.04	0.04	0.05
	10		0.03	0.03	0.03	0.04	0.04	0.05
	11			0.03	0.03	0.03	0.03	0.04
	12				0.03	0.03	0.03	0.04
	13					0.03	0.03	0.04
	14						0.03	0.04
	15							0.03
	16							0.03
	17							0.03
	18							0.03
	19							0.03
	20							0.03

*Even though the pitch maybe the same, the depth of cut varies according to the nose radius. For the Micro Mini Twin CT type CT03RS-M4, and CT03RS-M4B the nose radius is 0.03mm, for other types it is 0.05mm. For further details please refer to the standards section.

MICRO-MINI

Micro-Mini

Geometry	Order number	Stock	Dimensions (mm)				Minimum cutting diameter	Max groove depth F2
			R	W3	D4	L1		
<p>Right hand tool holder only.</p>	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

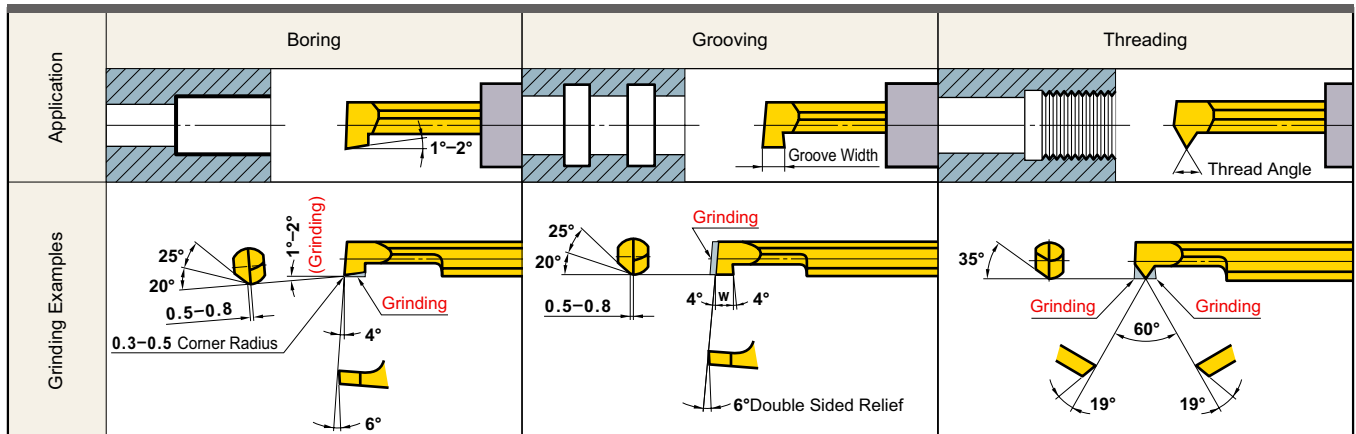
Recommended cutting conditions

	Workpiece	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (mm)	Tool overhang (l/d)	Cutting edge grinding preparation	
						Corner radius*	Honing*
P	General steel (JIS S45C, JIS SCM440 etc.)	40 (30-50)	0.05 (-0.1)	0.2 (0.1-0.3)	5	0.1-0.5	0.01-0.05
M	Stainless steel (JIS SUS304 etc.)	40 (30-50)	0.05 (-0.1)	0.2 (0.1-0.3)	5	≤0.4	≤0.03 (Not required for boring applications)
K	Cast iron (JIS FC, JIS FCD etc.)	40 (30-50)	0.05 (-0.05)	0.2 (0.1-0.3)	5	0.1-0.5	0.01-0.05
N	Non-ferrous materials (Aluminium, Brass)	80 (60-100)	0.05 (-0.1)	0.3 (0.1-0.5)	5	0.1-0.5	≤0.03 (Not required for boring applications)

*The cutting edge is not honed. Please hone according to the application before machining.

GRINDING THE CUTTING EDGE OF THE MICRO-MINI BAR

- MICRO-MINI can be used for boring and grooving. But, 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.



*Refer to P14 for holders.

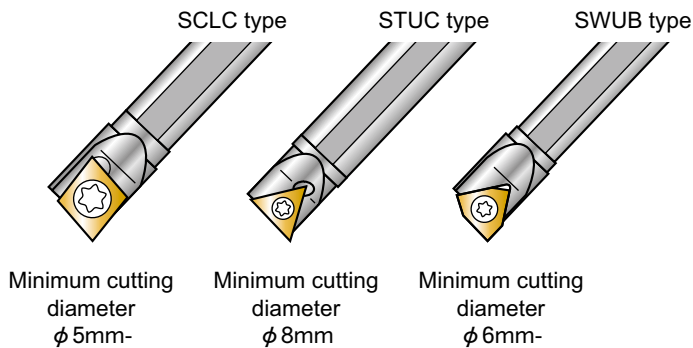
SMALL BORING BAR SERIES

MICRO-DEX

Features

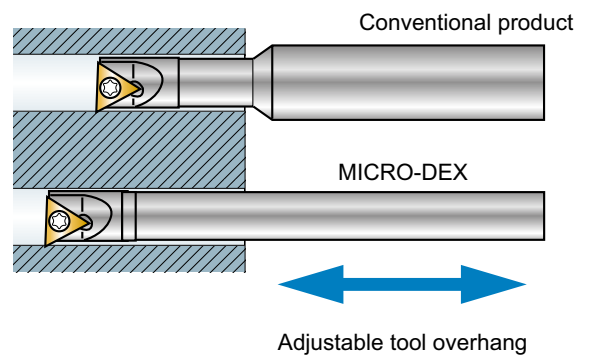
● Indexable type boring bars for a minimum bore diameter of 5.0mm

Screw on type for applications with a minimum bore diameter of 5.0mm (SCLC type)



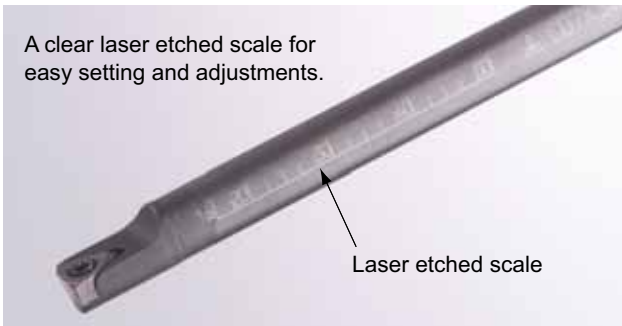
● Constant diameter design

Conventional type boring bars restrict the amount of tool overhang. This straight shank design allows greater adjustability for deeper cutting.



● Highly rigid carbide shank

A clear laser etched scale for easy setting and adjustments.



● Smallest inserts utilised



● Two grades to cover a wide application range.

Two standardised insert grades for all applications are available.

Cermet
NX2525

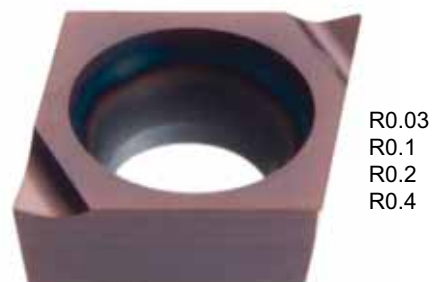
General steel
(JIS S45C, JIS SCM440)

Coated carbide
VP15TF

Stainless steel
(JIS SUS304, 420)
Non-ferrous materials
(Aluminium, Brass)
Cast iron
(JIS FC, JIS FCD)

● Various nose radii

Standardised nose radii of 0.03mm - 0.4mm are available for small parts machining.



SCLC type (Rhombic 80° insert)

Features : A precise, stable cutting edge and a small minimum cutting diameter.

SCLC		(Solid carbide shank)							CC^oinserts		Finish	
											L-F	
Order number	Stock	Insert Number		Dimensions (mm)					Minimum cutting diameter D1	Standard Corner Radius Re		
	R			D4	L1	F1	H1	RR°				
C04GSCLCR03	●	CCGT NP-CCMW	03S1 ^o L-F	4	90	2.5	3.7	15	5	0.2	TS16	TKY06F
C05HSCLCR03	●		03S1 ^o L-F	5	100	3.0	4.7	13	6	0.2	TS16	TKY06F
C06JSCLCR04	●		04T0 ^o L-F	6	110	3.5	5.7	13	7	0.2	TS21	TKY06F
C07KSCLCR04	●		04T0 ^o L-F	7	125	4.0	6.7	11	8	0.2	TS21	TKY06F

*Refer to P14 for holders.

STUC type (Triangular insert)

Features : Cost effective back boring can be utilised.

STUC		(Solid carbide shank)							TCGTinserts		Finish	
											L-F	
Order number	Stock	Insert Number		Dimensions (mm)					Minimum cutting diameter D1	Standard Corner Radius Re		
	R			D4	L1	F1	H1	RR°				
C07KSTUCR06	●	TCGT	0601 ^o L-F	7	125	4.0	6.7	12	8	0.2	TS2C	TKY06F

*Refer to P14 for holders.

SWUB type (Hexagonal insert)

Features : Cost effective back boring can be utilised.

SWUB		(Solid carbide shank)							WBGinserts		Finish	
											L-F	
Order number	Stock	Insert Number		Dimensions (mm)					Minimum cutting diameter D1	Standard Corner Radius Re		
	R			D4	L1	F1	H1	RR°				
C05HSWUBR02	●	WBG	0201 ^o L-F	5	100	3.0	4.7	13	6	0.2	TS21	TKY06F
C06JSWUBR02	●		0201 ^o L-F	6	110	3.5	5.7	13	7	0.2	TS2C	TKY06F
C07KSWUBRL3	●		L302 ^o L-F	7	125	4.0	6.7	11	8	0.2	TS2	TKY06F

*Refer to P14 for holders.

● : Inventory maintained.

MICRO-DEX

Standard inserts

● Coated carbide and cermet

Order Number	Tolerance	Stainless steel Non-ferrous materials Cast iron	General steel	Dimensions (mm)			Geometry
		Coated	Cermet	D1	S1	Re	
		VP15TF	NX2525				
CCGT03S1V3L-F	G	●	●	3.57	1.39	0.03	
03S101L-F	G	●	●	3.57	1.39	0.1	
03S102L-F	G	●	●	3.57	1.39	0.2	
03S104L-F	G	●	●	3.57	1.39	0.4	
CCGT04T0V3L-F	G	●	●	4.37	1.79	0.03	
04T001L-F	G	●	●	4.37	1.79	0.1	
04T002L-F	G	●	●	4.37	1.79	0.2	
04T004L-F	G	●	●	4.37	1.79	0.4	
TCGT0601V3L-F	G	●	●	3.97	1.59	0.03	
060101L-F	G	●	●	3.97	1.59	0.1	
060102L-F	G	●	●	3.97	1.59	0.2	
060104L-F	G	●	●	3.97	1.59	0.4	
WBG0201V3L-F	G	●	●	3.97	1.59	0.03	
020101L-F	G	●	●	3.97	1.59	0.1	
020102L-F	G	●	●	3.97	1.59	0.2	
020104L-F	G	●	●	3.97	1.59	0.4	
WBGTL302V3L-F	G	●	●	4.76	2.38	0.03	
L30201L-F	G	●	●	4.76	2.38	0.1	
L30202L-F	G	●	●	4.76	2.38	0.2	
L30204L-F	G	●	●	4.76	2.38	0.4	

● CBN and polycrystalline diamond inserts

Order Number	Tolerance	Non-ferrous materials	Brazed steel	Dimensions (mm)			Geometry
		Diamond	CBN	D1	S1	Re	
		MD220	MB810				
NP-CCMW03S102	M	●		3.57	1.39	0.2	
03S104	M	●		3.57	1.39	0.4	
04T002	M	●		4.37	1.79	0.2	
04T004	M	●		4.37	1.79	0.4	
NP-CCMW03S102F	M		●	3.57	1.39	0.2	
03S104F	M		●	3.57	1.39	0.4	
04T002F	M		●	4.37	1.79	0.2	
04T004F	M		●	4.37	1.79	0.4	

Recommended cutting conditions

Workpiece	Grade	Cutting speed (m/min)	Feed (mm/rev)	Depth of cut (m/m)	Tool overhang (l/d)
P General steel (JIS S45C, JIS SCM440 etc.)	NX2525	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5
H Brazed steel (JIS SKD, JIS SKH etc.)	MB810	80 (40–120)	0.03 (0.01–0.05)	0.1 (0.03–0.2)	3–5
M Stainless steel (JIS SUS304 etc.)	VP15TF	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5
K Cast iron (JIS FC, JIS FCD etc.)	VP15TF	80 (40–120)	0.03 (0.01–0.05)	0.2 (0.1–0.3)	3–5
N Non-ferrous materials (Aluminium, Brass)	VP15TF	120 (80–160)	0.05 (0.01–0.08)	0.4 (0.1–0.6)	3–5
	MD220	120 (80–160)	0.05 (0.01–0.08)	0.4 (0.1–0.6)	3–5

Precautions when using the *Micro-Dex* and *Micro-Nini Twin*

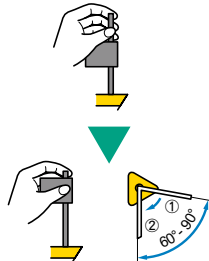
MICRO-DEX

- We recommended using cutting fluid to improve tool life and accuracy of the machined surface.
- Indexable inserts and clamp screws are small and can easily be lost.
- If the insert screw is overtightened, the screw or wrench may be damaged.

Follow the guidelines shown below when tightening the clamp screw. The appropriate insert tightening torque is **0.5 (N/m)**.

Tightening of insert screw

① Hold the wrench flag as shown in the diagram and turn it until finger tight.



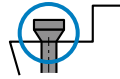
② Hold the wrench flag and turn it approximately 60° to 90° (reference tightening angle).



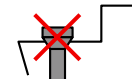
Screw tightening without an insert

The main screw part may be damaged if tightened.

Correct

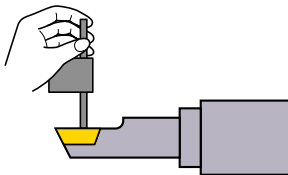


Incorrect



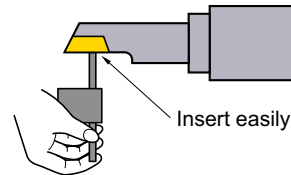
- Note that the procedures are performed starting with the insert screw on the back side when using a reverse holder.

Normal use



Start with the insert clamp on the front side.

Reverse holder use



Start with the insert clamp on the back side.

- Use within recommended specification ranges.

Maximum $L/d=5$ (L : total length; d : shank diameter)

If the L/d ratio exceeds the recommended value, lower the cutting conditions.

Repair

- If the holders break, Mitsubishi Materials will repair them.

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

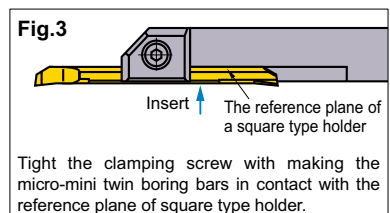
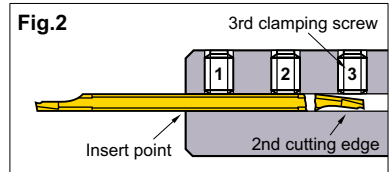
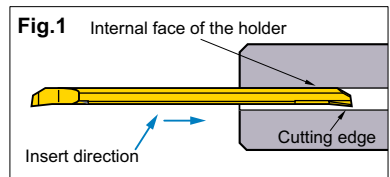
When using holders with a tool overhang of recommended quantity, ensure that the 3rd clamping screw is removed prior to machining. The set torque value for clamping screw is 2.0 N•m.

- 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.



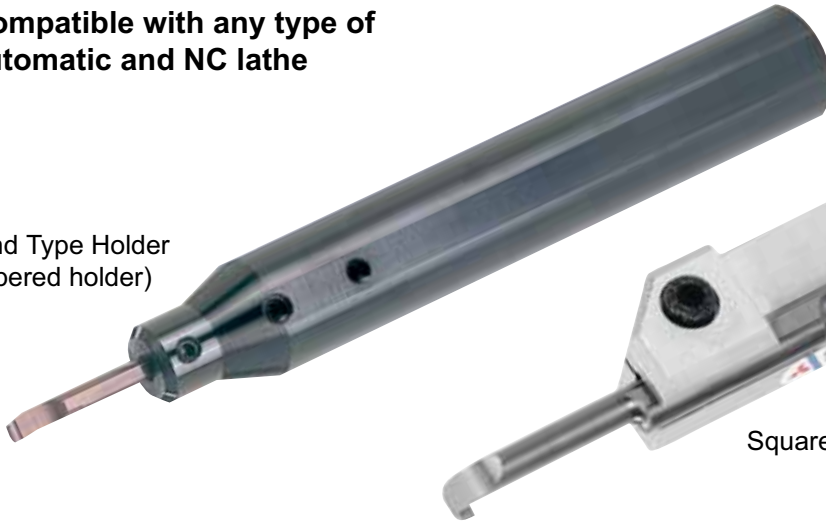
SMALL BORING BAR SERIES

HOLDERS

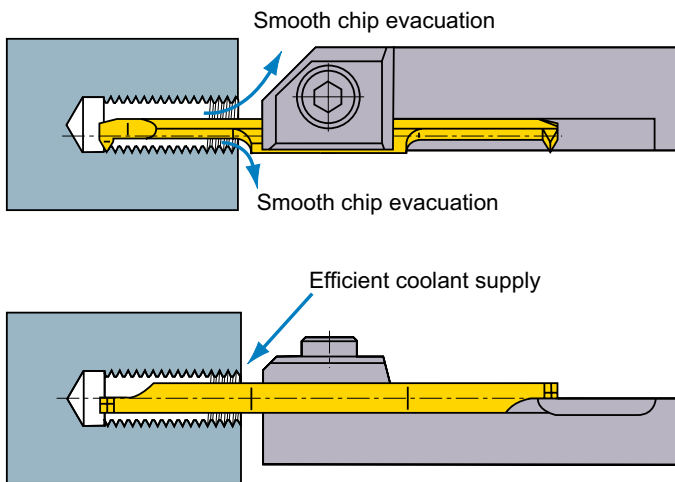
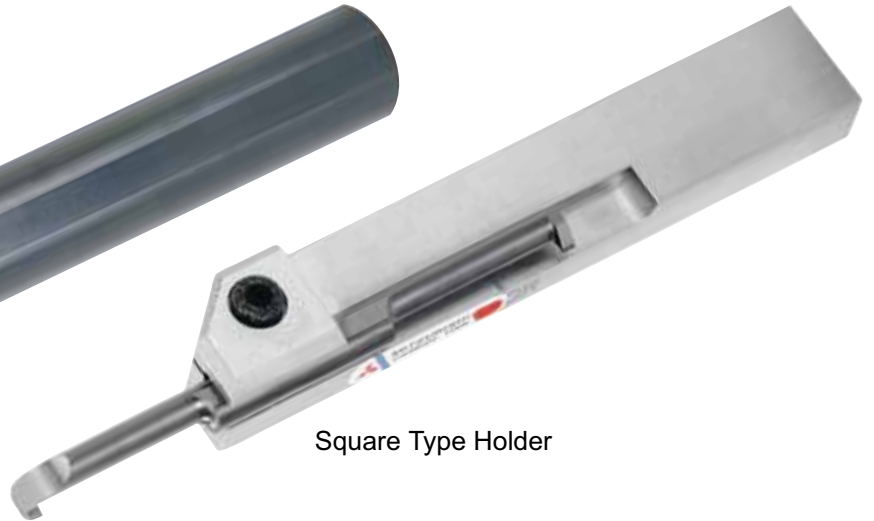
Features

- Compatible with any type of automatic and NC lathe

Round Type Holder
(Tapered holder)

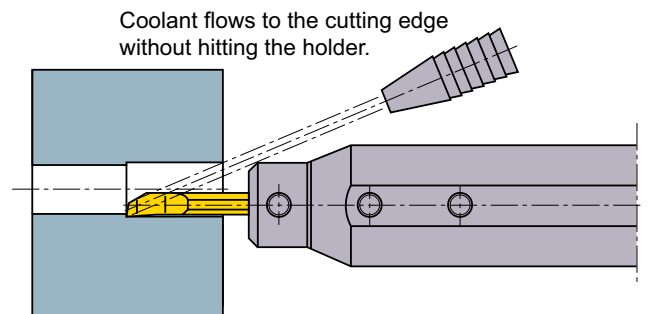


Square Type Holder



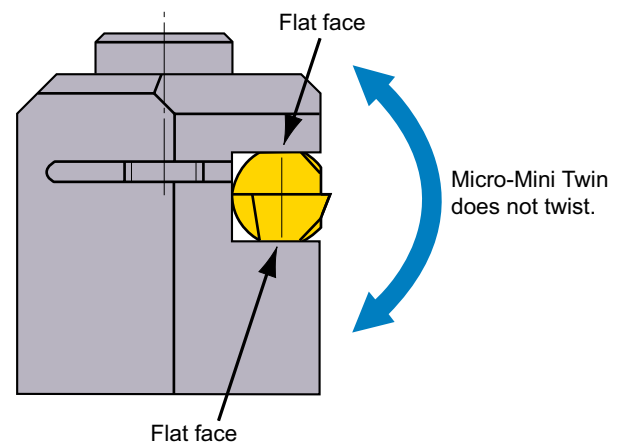
- The shape of the tip of contributes to good chip control and coolant supply.

Small holder for easy coolant supply as well as excellent chip evacuation.



- Square holder for easy installation

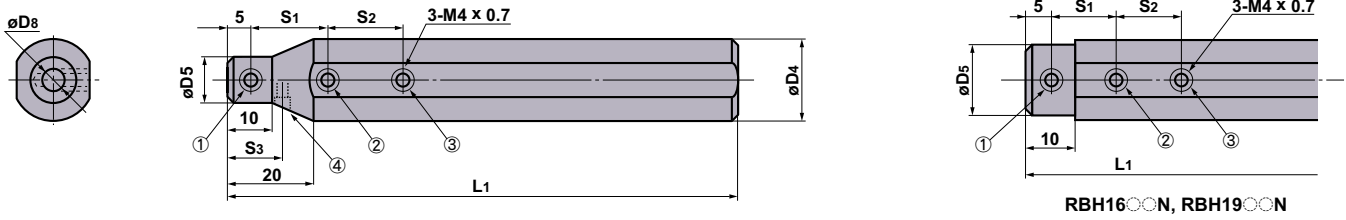
Flat clamp faces fix the position of the top cutting edge.



*The MICRO-DEX and MICRO-MINI cannot be fitted to square holders.

HOLDER

Round Type Holder

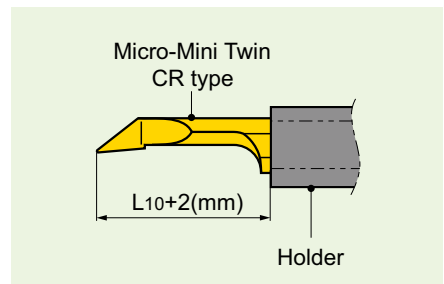
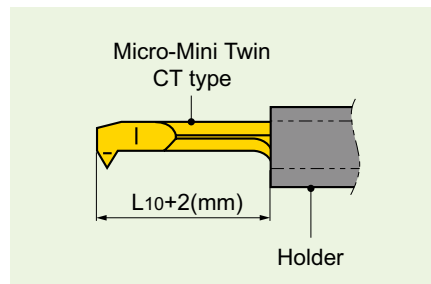
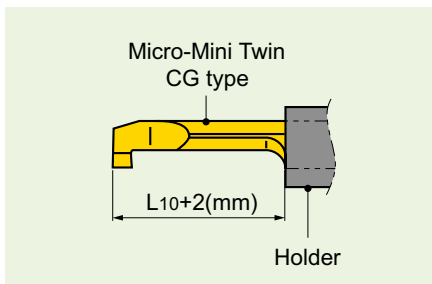


RBH2200N has a temporary set screw for different machine specifications.
(Represented by number 4)

Order number	Stock	Dimensions (mm)							Clamp Screw*				Wrench	Torque (N/m)
		D4	D8	D5	L1	S1	S2	S3	①	②	③	④		
RBH1620N	●	16	2	15	100	10	—	—	B	B	—	—	HKY20F	2.0
1630N	●	16	3	15	100	10	10	—	A	A	A	—	HKY20F	2.0
1640N	●	16	4	15	100	15	15	—	A	A	A	—	HKY20F	2.0
1650N	●	16	5	15	100	15	15	—	A	A	A	—	HKY20F	2.0
1660N	●	16	6	15	100	20	20	—	A	A	A	—	HKY20F	2.0
1670N	●	16	7	15	100	20	20	—	A	A	A	—	HKY20F	2.0
RBH1920N	●	19.05	2	18	125	10	—	—	C	C	—	—	HKY20F	2.0
1930N	●	19.05	3	18	125	10	10	—	B	B	B	—	HKY20F	2.0
1940N	●	19.05	4	18	125	15	15	—	B	B	B	—	HKY20F	2.0
1950N	●	19.05	5	18	125	15	15	—	B	B	B	—	HKY20F	2.0
1960N	●	19.05	6	18	125	20	20	—	B	B	B	—	HKY20F	2.0
1970N	●	19.05	7	18	125	20	20	—	B	B	B	—	HKY20F	2.0
RBH2020N	●	20	2	11	125	10	—	—	A	A	—	—	HKY20F	2.0
2030N	●	20	3	12	125	10	10	—	A	A	B	—	HKY20F	2.0
2040N	●	20	4	13	125	15	15	—	A	B	B	—	HKY20F	2.0
2050N	●	20	5	14	125	15	15	—	A	B	B	—	HKY20F	2.0
2060N	●	20	6	15	125	20	20	—	A	B	B	—	HKY20F	2.0
2070N	●	20	7	16	125	20	20	—	A	B	B	—	HKY20F	2.0
RBH2220N	●	22	2	11	125	10	—	10	A	B	—	A	HKY20F	2.0
2230N	●	22	3	12	125	10	10	10	A	B	C	A	HKY20F	2.0
2240N	●	22	4	13	125	15	15	12.5	A	B	B	A	HKY20F	2.0
2250N	●	22	5	14	125	15	15	12.5	A	B	B	A	HKY20F	2.0
2260N	●	22	6	15	125	20	20	15	A	B	B	A	HKY20F	2.0
2270N	●	22	7	16	125	20	20	15	A	B	B	A	HKY20F	2.0
RBH2520N	●	25	2	11	150	10	—	—	A	B	—	—	HKY20F	2.0
2530N	●	25	3	12	150	10	10	—	A	B	C	—	HKY20F	2.0
2540N	●	25	4	13	150	15	15	—	A	C	C	—	HKY20F	2.0
2550N	●	25	5	14	150	15	15	—	A	C	C	—	HKY20F	2.0
2560N	●	25	6	15	150	20	20	—	A	C	C	—	HKY20F	2.0
2570N	●	25	7	16	150	20	20	—	A	C	C	—	HKY20F	2.0

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

Recommended tool overhang



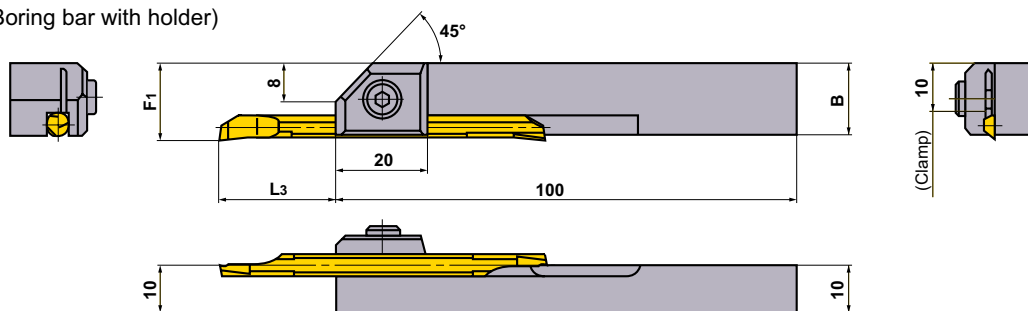
Note) For L10, refer to page 3.

● : Inventory maintained.

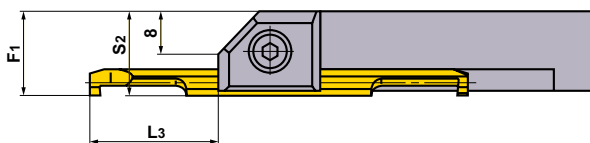
HOLDER

Square Type Holder

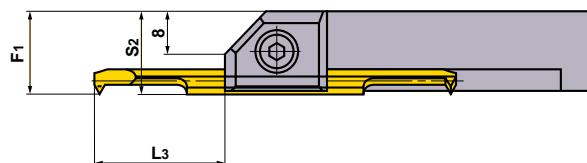
CB type (Boring bar with holder)



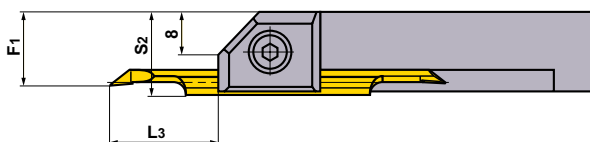
CG type (Boring bar with holder)



CT type (Boring bar with holder)



CR type (Boring bar with holder)



Order Number	Stock	Dimensions (mm)										Micro-Mini Twin				Clamp Screw	Wrench	Torque (N/m)	
		F1				Maximum tool overhang L3 (Recommended tool overhang when machining general steels)				S2	B	CB	CG	CT	CR				
		CB	CG	CT	CR	CB	CG..RS-10 CG..RS-10B	CG..RS-20 CG..RS-20B	CT	CR	CG CT CR								CB CG CT CR
SBH1020R	●	13	—	—	—	6-24 (6-10)	—	—	—	—	—	12.9	02RS 02RS-B	—	—	—	HSC 04010	HKY 30R	4.8
1030R	●	14	13.8	13.8	12.65	8.5-22 (9-15)	13-17.5 (14)	14-16.5 (15)	13-17.5 (14)	11-19.5 (12)	14	13.8	03RS 03RS-B	03RS-00 03RS-00B	03RS-M4 03RS-M4B	03RS-01 03RS-01B	HSC 05012	HKY 40R	9.5
1040R	●	15	14.8	14.8	13.15	11-29.5 (12-20)	18-22.5 (19)	19-21.5 (20)	18.5-22 (19.5)	13-27.5 (14)	15	14.7	04RS 04RS-B	04RS-00 04RS-00B	04RS-M6 04RS-M6B	04RS-01 04RS-01B	HSC 05012	HKY 40R	9.5
1050R	●	16	15.8	15.8	13.65	13.5-37 (15-25)	23-27.5 (24)	24-26.5 (25)	24-26.5 (25)	15-35.5 (16)	16	15.6	05RS 05RS-B	05RS-00 05RS-00B	05RS-M8 05RS-M8B	05RS-01 05RS-01B	HSC 05012	HKY 40R	9.5
1060R	●	—	16.8	16.8	—	—	23-32.5 (24)	24-31.5 (25)	24-31.5 (25)	—	17	16.5	—	06RS-00 06RS-00B	06RS-M10 06RS-M10B	—	HSC 05012	HKY 40R	9.5
1070R	●	—	17.8	—	—	—	28-38 (29)	29-37 (30)	—	—	18	17.4	—	07RS-00 07RS-00B	—	—	HSC 05012	HKY 40R	9.5

*The MICRO-DEX and MICRO-MINI cannot be fitted to square holders.

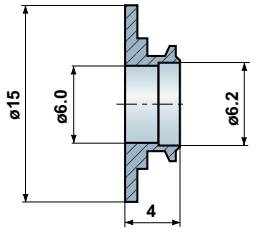
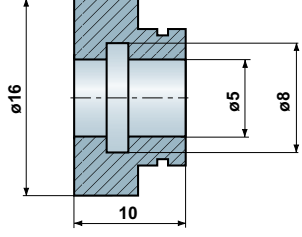
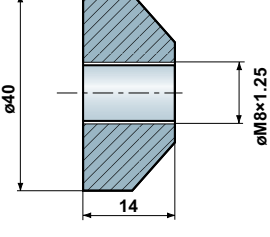
Holder Cross Reference List

Holder		MICRO-MINI TWIN				MICRO-DEX	MICRO-MINI	Machine Makers
Type	Order Number	CB	CG	CT	CR		C	
Round Type Holder Ø16	RBH1620N	02RS 02RS-B	—	—	—	—	—	Miyano Machinery Japan Inc. NC lathes
	1630N	03RS 03RS-B	03RS-○○ 03RS-○○B	03RS-M4 03RS-M4B	03RS-01 03RS-01B	—	03FR-BLS	
	1640N	04RS 04RS-B	04RS-○○ 04RS-○○B	04RS-M6 04RS-M6B	04RS-01 04RS-01B	C04GS○○○R○○	04FR-BLS	
	1650N	05RS 05RS-B	05RS-○○ 05RS-○○B	05RS-M8 05RS-M8B	05RS-01 05RS-01B	C05HS○○○R○○	05HR-BLS	
	1660N	—	06RS-○○ 06RS-○○B	06RS-M10 06RS-M10B	—	C06JS○○○R○○	—	
	1670N	—	07RS-○○ 07RS-○○B	—	—	C07KS○○○R○○	—	
Round Type Holder Ø19.05	RBH1920N	02RS 02RS-B	—	—	—	—	—	Citizen Precision Machinery Co.,Ltd
	1930N	03RS 03RS-B	03RS-○○ 03RS-○○B	03RS-M4 03RS-M4B	03RS-01 03RS-01B	—	03FR-BLS	
	1940N	04RS 04RS-B	04RS-○○ 04RS-○○B	04RS-M6 04RS-M6B	04RS-01 04RS-01B	C04GS○○○R○○	04FR-BLS	
	1950N	05RS 05RS-B	05RS-○○ 05RS-○○B	05RS-M8 05RS-M8B	05RS-01 05RS-01B	C05HS○○○R○○	05HR-BLS	
	1960N	—	06RS-○○ 06RS-○○B	06RS-M10 06RS-M10B	—	C06JS○○○R○○	—	
	1970N	—	07RS-○○ 07RS-○○B	—	—	C07KS○○○R○○	—	
Round Type Holder Ø20	RBH2020N	02RS 02RS-B	—	—	—	—	—	Citizen Precision Machinery Co.,Ltd Tsugami Corporation Miyano Machinery Japan Inc. NC lathes
	2030N	03RS 03RS-B	03RS-○○ 03RS-○○B	03RS-M4 03RS-M4B	03RS-01 03RS-01B	—	03FR-BLS	
	2040N	04RS 04RS-B	04RS-○○ 04RS-○○B	04RS-M6 04RS-M6B	04RS-01 04RS-01B	C04GS○○○R○○	04FR-BLS	
	2050N	05RS 05RS-B	05RS-○○ 05RS-○○B	05RS-M8 05RS-M8B	05RS-01 05RS-01B	C05HS○○○R○○	05HR-BLS	
	2060N	—	06RS-○○ 06RS-○○B	06RS-M10 06RS-M10B	—	C06JS○○○R○○	—	
	2070N	—	07RS-○○ 07RS-○○B	—	—	C07KS○○○R○○	—	
Round Type Holder Ø22	RBH2220N	02RS 02RS-B	—	—	—	—	—	Star Micronics Co., Ltd
	2230N	03RS 03RS-B	03RS-○○ 03RS-○○B	03RS-M4 03RS-M4B	03RS-01 03RS-01B	—	03FR-BLS	
	2240N	04RS 04RS-B	04RS-○○ 04RS-○○B	04RS-M6 04RS-M6B	04RS-01 04RS-01B	C04GS○○○R○○	04FR-BLS	
	2250N	05RS 05RS-B	05RS-○○ 05RS-○○B	05RS-M8 05RS-M8B	05RS-01 05RS-01B	C05HS○○○R○○	05HR-BLS	
	2260N	—	06RS-○○ 06RS-○○B	06RS-M10 06RS-M10B	—	C06JS○○○R○○	—	
	2270N	—	07RS-○○ 07RS-○○B	—	—	C07KS○○○R○○	—	
Round Type Holder Ø25	RBH2520N	02RS 02RS-B	—	—	—	—	—	Tsugami Corporation Miyano Machinery Japan Inc. NC lathes
	2530N	03RS 03RS-B	03RS-○○ 03RS-○○B	03RS-M4 03RS-M4B	03RS-01 03RS-01B	—	03FR-BLS	
	2540N	04RS 04RS-B	04RS-○○ 04RS-○○B	04RS-M6 04RS-M6B	04RS-01 04RS-01B	C04GS○○○R○○	04FR-BLS	
	2550N	05RS 05RS-B	05RS-○○ 05RS-○○B	05RS-M8 05RS-M8B	05RS-01 05RS-01B	C05HS○○○R○○	05HR-BLS	
	2560N	—	06RS-○○ 06RS-○○B	06RS-M10 06RS-M10B	—	C06JS○○○R○○	—	
	2570N	—	07RS-○○ 07RS-○○B	—	—	C07KS○○○R○○	—	
Square Type Holder □10	SBH1020R	02RS 02RS-B	—	—	—	—	—	NC lathes
	1030R	03RS 03RS-B	03RS-○○ 03RS-○○B	03RS-M4 03RS-M4B	03RS-01 03RS-01B	—	—	
	1040R	04RS 04RS-B	04RS-○○ 04RS-○○B	04RS-M6 04RS-M6B	04RS-01 04RS-01B	—	—	
	1050R	05RS 05RS-B	05RS-○○ 05RS-○○B	05RS-M8 05RS-M8B	05RS-01 05RS-01B	—	—	
	1060R	—	06RS-○○ 06RS-○○B	06RS-M10 06RS-M10B	—	—	—	
	1070R	—	07RS-○○ 07RS-○○B	—	—	—	—	

*Mitsubishi Materials obtained the maker's approval before entering their names in the list.

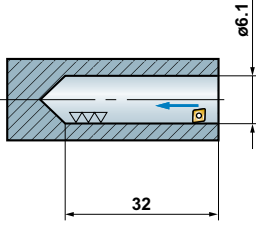
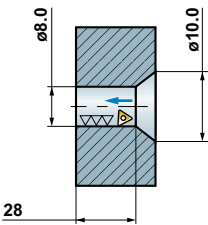
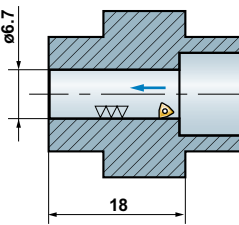
MICRO-MINI TWIN

Application examples

Tool		CB05RS-B	CG05RS-20B	CT05RS-M8B
Grade		VP15TF	VP15TF	VP15TF
Overhang (mm)		15	23	23
Machine		Small NC lathe	Small NC lathe	Small NC lathe
Workpiece		Flange: JIS SUS316 	JIS S45C 	JIS S45C 
Cutting conditions	Cutting speed (m/min)	60	40	40
	Feed (mm/rev)	0.02	0.03	—
	Depth of cut (mm)	0.1	Groove depth : 1.5	14 passes, M8 x 1.25 (0.07-0.03)
Coolant		Cutting oil	WSO	WSO
Results		Problems related with poor chip control were eliminated.	Conventional tools with a flat land on the rake face caused high cutting resistance and tended to break. The sharp edge of the Micro Mini Twin improves cutting edge reliability.	Conventional tools left burrs on the thread, whereas the Micro Mini Twin with a chip breaker left no burrs.

MICRO-DEX

Application examples

Tool		C05HSCLCR03	C07KSTUCR06	C05HSWUBR02
Overhang (mm)		35	35	15
Insert		CCGT03S101L-F(VP15TF)	TCGT060102L-F(VP15TF)	WBG0201V3L-F(VP15TF)
Machine		NC automatic lathe	NC automatic lathe	NC automatic lathe
Workpiece		JIS SUS303 	JIS SUS303 	JIS SUS303 
Cutting conditions	Cutting speed (m/min)	57	63	110
	Feed (mm/rev)	0.05	0.04	0.03
	Depth of cut (mm)	0.1	0.08	0.03
Coolant		WSO	Cutting oil	Cutting oil
Results		Improved resistance to insert wear and tool life increased by 300%.	Improved resistance to insert wear and tool life increased by 30%.	Compared to non coated inserts, tool life is extended by 50%.

For Your Safety

- Don't touch inserts and chips without gloves.
- Please machine within the recommended application range, and exchange expired tools with new ones in advance of breakage.
- Please use safety cover and wear safety glasses.
- When using compounded cutting oils, please take fire preventions.
- When attaching inserts or spare parts, please use the attached wrench or spanner.
- Grinding or heating of cutting tools produces dust and mist. Inhaling large amount of dust or contacting with eyes and skins may harm your body.

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(Tools specifications subject to change without notice.)