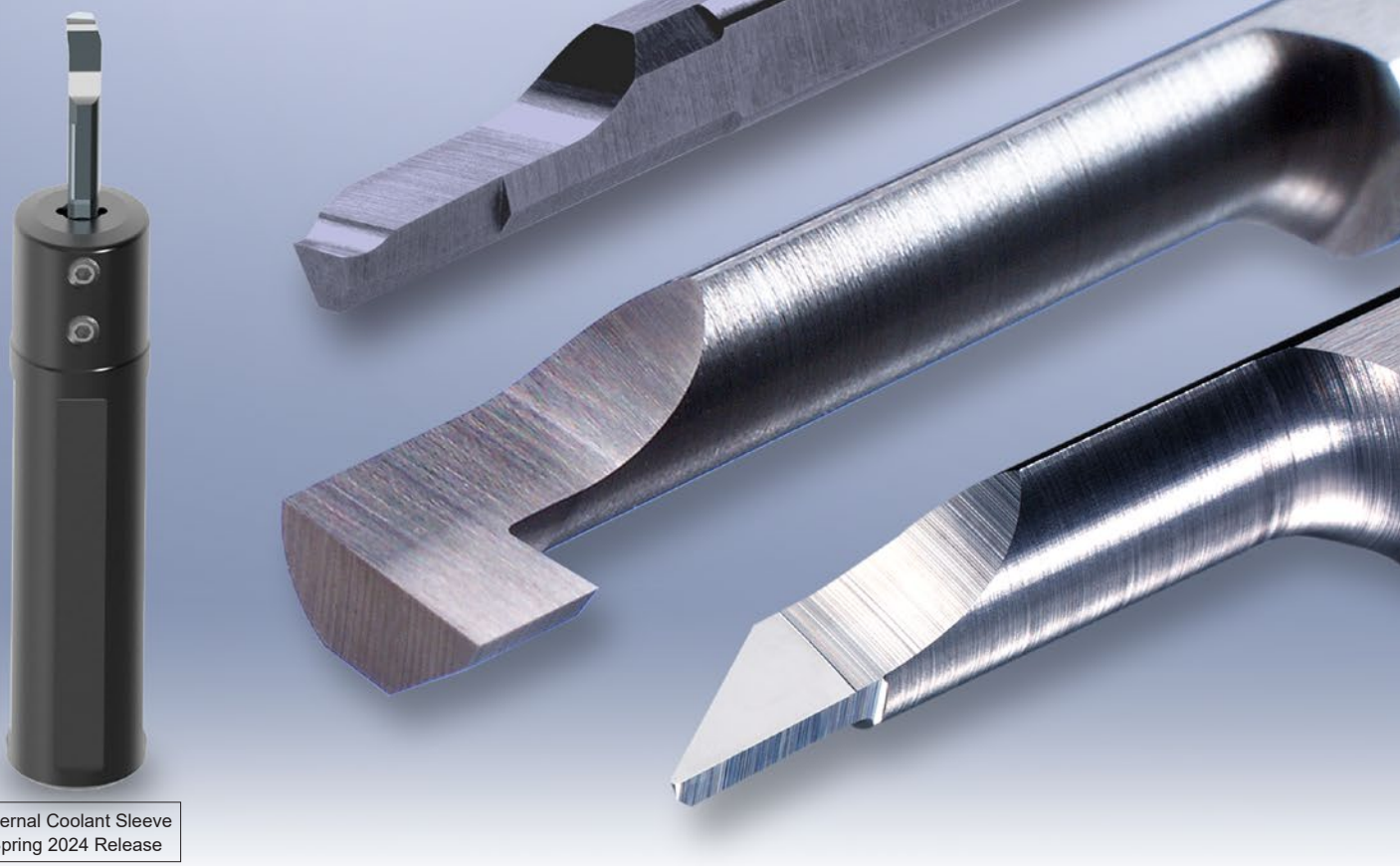
Boring Bar for High Precision and Small Parts Machining

MICRO-MINI TWIN

Series Expansion

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

Economical, solid shank type with two cutting edges.
Added "MS7025" with high welding and wear resistance
Added corner radius 0.15 mm



Internal Coolant Sleeve
Spring 2024 Release

MITSUBISHI MATERIALS CORPORATION

Boring Bar for High Precision and Small Parts Machining

MICRO-MINI TWIN

Features

1 Tool Offering 2 Cutting Edge Types.

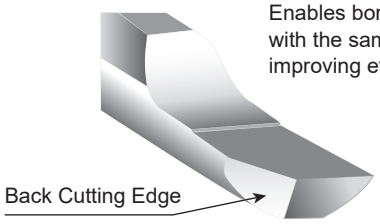
Economical, reduces tooling costs

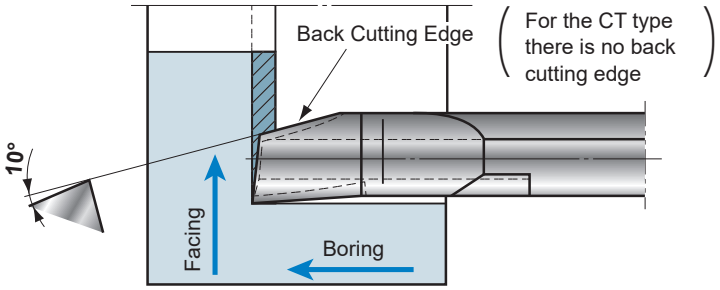
Wide Range Available

·Boring
Minimum Cutting Diameter : ϕ2.2mm～
RE : 0.05, 0.1, 0.15, 0.2
·Grooving
Minimum Cutting Diameter : ϕ3mm～
·Threading
Minimum Cutting Diameter : ϕ3mm～
·Copying
Minimum Cutting Diameter : ϕ3.5mm～

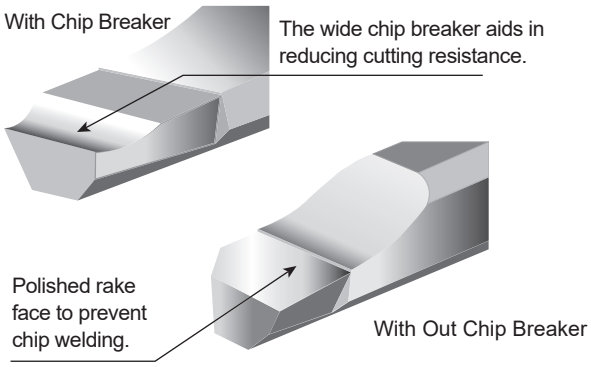
Back Cutting Edge

Enables boring and facing with the same tool, thereby improving efficiency.

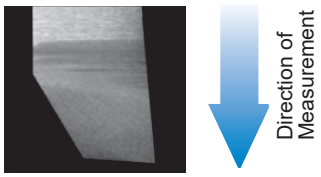


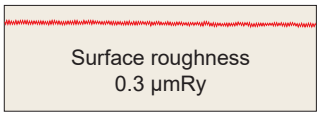


Available With or Without a Chip Breaker

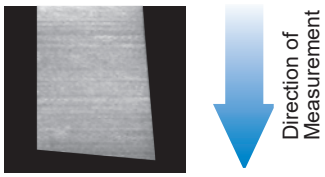


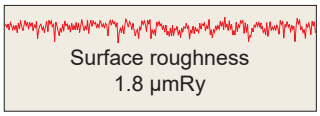
MICRO-MINI TWIN
(Polished rake face)





Conventional





The highly polished rake face and smooth cutting egde surface provides a superior product than conventional boring bars.

Cutting Performance

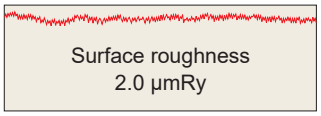
Polished Rake Face

Machining of Stainless Steel

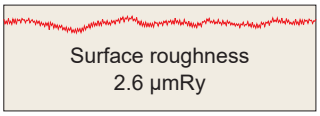
The polished rake face prevents chip welding and provides an excellent surface finish.

<Cutting Conditions>
Workpiece Material : SUS304
Tool : CB05RS,VP15TF
Cutting Speed : vc=100 m/min
Feed per Rev. : fr=0.02 mm/rev
Cutting Depth : ap = 0.1 mm
Cutting Mode : Wet Cutting

MICRO-MINI TWIN
(Polished rake face)



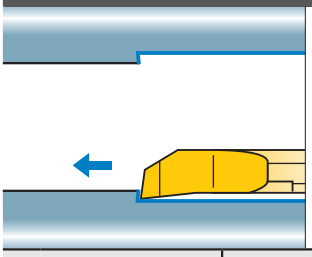
Conventional

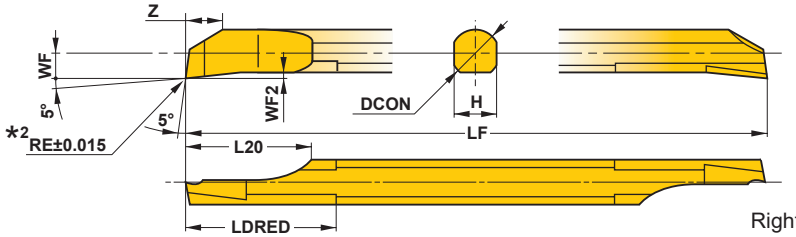


MICRO-MINI TWIN

CB

For internal machining





Right hand tool only.

Order Number	Stock			Chip Breaker	Dimensions(mm)									
	Coated Carbide		Micro-Grain Carbide		DMIN *1		RE	DCON	LF	L20	LDRED	WF	WF2	H	Z
	MS7025	VP15TF	TF15		l/d ≤ 3	l/d>3									
CB02RS		●	●	without	2.2	3.6	0.05	2	50	5	6	1.0	0.25	1.8	1.4
CB02RS-B	●	●	●	with	2.2	4.6	0.05	2	50	5	6	1.0	0.25	1.8	1.4
CB02RS-01		●	●	without	2.2	3.6	0.1	2	50	5	6	1.0	0.25	1.8	1.4
CB02RS-01B	●	●	●	with	2.2	4.6	0.1	2	50	5	6	1.0	0.25	1.8	1.4
NEW CB02RS-015B	●			with	2.2	4.6	0.15	2	50	5	6	1.0	0.25	1.8	1.4
CB02RS-02		●	●	without	2.2	3.6	0.2	2	50	5	6	1.0	0.25	1.8	1.4
CB02RS-02B	●	●	●	with	2.2	4.6	0.2	2	50	5	6	1.0	0.25	1.8	1.4
CB03RS		●	●	without	3.2	4.2	0.05	3	50	7.5	9	1.5	0.35	2.7	2.3
CB03RS-B	●	●	●	with	3.2	4.8	0.05	3	50	7.5	9	1.5	0.35	2.7	2.3
CB03RS-01		●	●	without	3.2	4.2	0.1	3	50	7.5	9	1.5	0.35	2.7	2.3
CB03RS-01B	●	●	●	with	3.2	4.8	0.1	3	50	7.5	9	1.5	0.35	2.7	2.3
NEW CB03RS-015B	●			with	3.2	4.8	0.15	3	50	7.5	9	1.5	0.35	2.7	2.3
CB03RS-02		●	●	without	3.2	4.2	0.2	3	50	7.5	9	1.5	0.35	2.7	2.3
CB03RS-02B	●	●	●	with	3.2	4.8	0.2	3	50	7.5	9	1.5	0.35	2.7	2.3
CB04RS		●	●	without	4.2	5.1	0.05	4	60	10	12	2.0	0.45	3.6	3.1
CB04RS-B	●	●	●	with	4.2	5.5	0.05	4	60	10	12	2.0	0.45	3.6	3.1
CB04RS-01		●	●	without	4.2	5.1	0.1	4	60	10	12	2.0	0.45	3.6	3.1
CB04RS-01B	●	●	●	with	4.2	5.5	0.1	4	60	10	12	2.0	0.45	3.6	3.1
NEW CB04RS-015B	●			with	4.2	5.5	0.15	4	60	10	12	2.0	0.45	3.6	3.1
CB04RS-02		●	●	without	4.2	5.1	0.2	4	60	10	12	2.0	0.45	3.6	3.1
CB04RS-02B	●	●	●	with	4.2	5.5	0.2	4	60	10	12	2.0	0.45	3.6	3.1
CB05RS		●	●	without	5.2	6.0	0.05	5	70	12.5	15	2.5	0.55	4.5	3.9
CB05RS-B	●	●	●	with	5.2	6.4	0.05	5	70	12.5	15	2.5	0.55	4.5	3.9
NEW CB05RS-015B	●			with	5.2	6.4	0.15	5	70	12.5	15	2.5	0.55	4.5	3.9
CB05RS-02		●	●	without	5.2	6.0	0.2	5	70	12.5	15	2.5	0.55	4.5	3.9
CB05RS-02B	●	●	●	with	5.2	6.4	0.2	5	70	12.5	15	2.5	0.55	4.5	3.9
CB06RS		●	●	without	6.2	7.2	0.05	6	75	12.5	18	3.0	0.65	5.4	4.7
CB06RS-B	●	●	●	with	6.2	7.3	0.05	6	75	12.5	18	3.0	0.65	5.4	4.7
CB06RS-02		●	●	without	6.2	7.2	0.2	6	75	12.5	18	3.0	0.65	5.4	4.7
CB06RS-02B	●	●	●	with	6.2	7.8	0.2	6	75	12.5	18	3.0	0.65	5.4	4.7
CB07RS		●	●	without	7.2	8.6	0.05	7	85	12.5	21	3.5	0.75	6.3	5.5
CB07RS-B	●	●	●	with	7.2	8.8	0.05	7	85	12.5	21	3.5	0.75	6.3	5.5
CB07RS-02		●	●	without	7.2	8.6	0.2	7	85	12.5	21	3.5	0.75	6.3	5.5
CB07RS-02B	●	●	●	with	7.2	9.2	0.2	7	85	12.5	21	3.5	0.75	6.3	5.5
CB08RS		●	●	without	8.2	9.5	0.05	8	95	15	24	4.0	0.85	7.2	6.3
CB08RS-B	●	●	●	with	8.2	9.6	0.05	8	95	15	24	4.0	0.85	7.2	6.3
CB08RS-02		●	●	without	8.2	9.5	0.2	8	95	15	24	4.0	0.85	7.2	6.3
CB08RS-02B	●	●	●	with	8.2	9.8	0.2	8	95	15	24	4.0	0.85	7.2	6.3

*1 DMIN : Min. Cutting Diameter

*2 The RE dimension represents the size before grinding a chip breaker.

● = NEW

● : Inventory maintained in Japan.

(MICRO-MINI TWIN is available in 1 piece in one pack.)

RECOMMENDED CUTTING CONDITIONS

	Workpiece Material	Properties	Grade	Cutting Speed **vc** (m/min)	Feed per Rev. **f** (mm/rev)	Depth of Cut **ap** (mm)	Tool Overhang l/d
P	Pure Iron, Free Cutting Steel	—	MS7025	80 (40—120)	0.03 (0.01—0.05)	0.2 (0.1—0.3)	3—5
	Carbon Steel, Alloy Steel	Hardness 180—350HB	MS7025, VP15TF	80 (40—120)	0.03 (0.01—0.05)	0.2 (0.1—0.3)	3—5
M	Stainless Steel	Hardness ≤200HB	MS7025, VP15TF	80 (40—120)	0.03 (0.01—0.05)	0.2 (0.1—0.3)	3—5
K	Gray Cast Iron	Tensile Strength ≤350MPa	VP15TF	80 (40—120)	0.03 (0.01—0.05)	0.2 (0.1—0.3)	3—5
N	Non-Ferrous Metal	—	TF15	120 (80—160)	0.05 (0.01—0.08)	0.3 (0.1—0.5)	3—5

Note 1) Recommend wet cutting.

MS Series - PVD Coated Grades for High Precision and Small Parts Machining

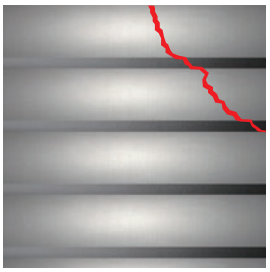
MS7025

Dramatically improved welding and wear resistance in low feed machining with a more precise nano-multilayer coating

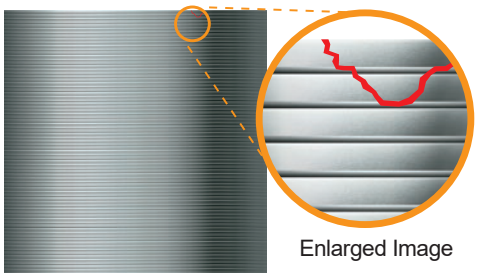
Features

Nano-Multilayer Coating

By combining the high lubrication layer with excellent welding resistance, and the high hardness layer with a greater wear resistance that suppresses the progress of wear at the nano-level, the film damage is significantly reduced and the welding and wear resistance are dramatically improved.



Conventional Multilayer Coating

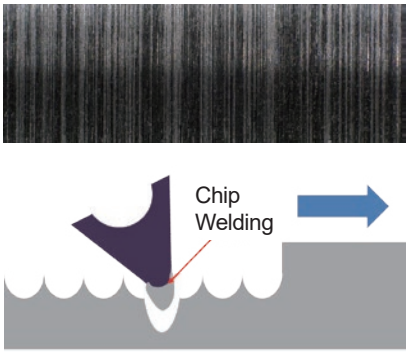


Nano-multilayer Coating

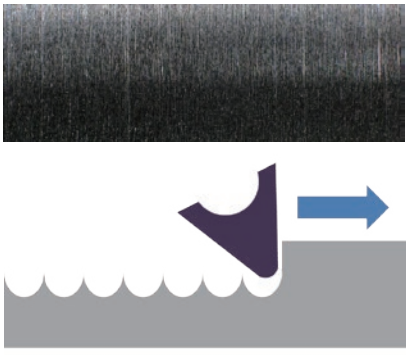
Effects of the High Lubrication Layer

The nano-level, high lubrication layer suppresses built-up edge caused by chip welding which tends to occur in low feed machining and in addition reduces on the machined surface.

Surface Finish



Conventional

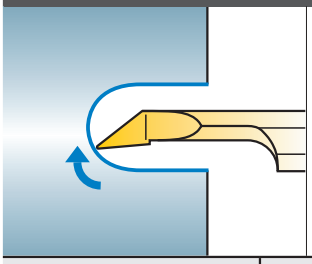


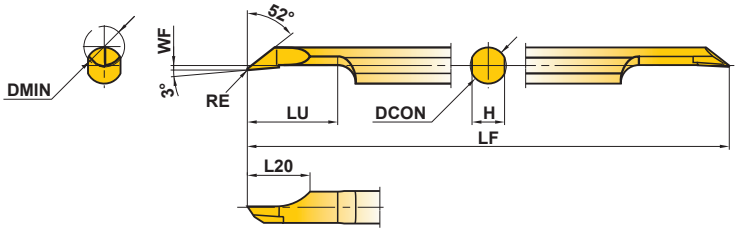
MS7025

MICRO-MINI TWIN

CR

For internal copying





Right hand tool only.

Order Number	Stock		Chip Breaker	Dimensions(mm)							
	Coated Carbide	Micro-Grain Carbide		DMIN	RE	DCON	LF	LU	L20	WF	H
	VP15TF	TF15									
CR03RS-01	●	●	without	**3.5**	0.1	3	50	8	6	0.15	2.7
CR03RS-01B	●	●	with	**3.5**	0.1	3	50	8	6	0.15	2.7
CR04RS-01	●	●	without	**4.5**	0.1	4	60	10	7	0.15	3.6
CR04RS-01B	●	●	with	**4.5**	0.1	4	60	10	7	0.15	3.6
CR05RS-01	●	●	without	**5.5**	0.1	5	70	12	8	0.15	4.5
CR05RS-01B	●	●	with	**5.5**	0.1	5	70	12	8	0.15	4.5

RECOMMENDED CUTTING CONDITIONS

	Workpiece Material	Properties	Cutting Speed **vc** (m/min)	Feed per Rev. **f** (mm/rev)	
				03RS / 04RS	05RS
P	Carbon Steel, Alloy Steel	Hardness 180–350HB	80 (40–120)	0.02 (0.01–0.03)	0.03 (0.01–0.05)
M	Stainless Steel	Hardness ≤200HB	80 (40–120)	0.02 (0.01–0.03)	0.03 (0.01–0.05)
K	Gray Cast Iron	Tensile Strength ≤350MPa	80 (40–120)	0.03 (0.01–0.05)	0.03 (0.01–0.05)
N	Non-Ferrous Metal	–	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 LU+2mm

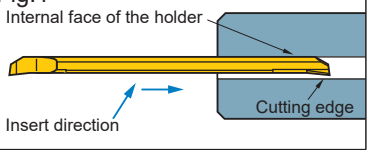
● : Inventory maintained in Japan.
(MICRO-MINI TWIN is available in 1 piece in one pack.)

■PRECAUTIONS WHEN USING THE MICRO-MINI TWIN

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

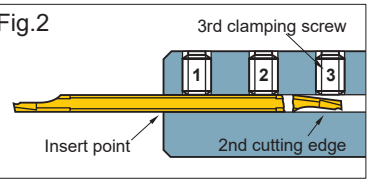
1 To avoid chipping of the 2nd cutting edge take care when inserting the boring bar into the holder. Refer to fig.1. If the 2nd edge contacts the internal face of the holder there is a possibility that it may chip.

Fig.1



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.

Fig.2



◎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.

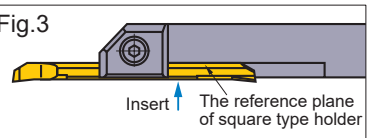
●When using a square type holder:

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.

Fig.3



Tighten the clamping screw ensuring making the micro-mini twin boring bars is in contact with the reference plane of square type holder.

MACHINING METHODS OF THE CR TYPE

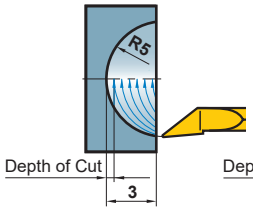
●Profile turning

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

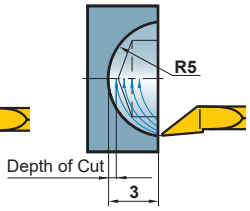
<Cutting Conditions>

Workpiece	: JIS S20C
Tool	: CR05RS-01B
Cutting Speed	: vc =80m/min
Feed	: f = 0.05mm/rev
Depth of Cut	: ap = 0.05mm
Cutting Mode	: Wet Cutting

Machining a work piece without a pre-prepared hole



Machining a work piece with a pre-prepared hole



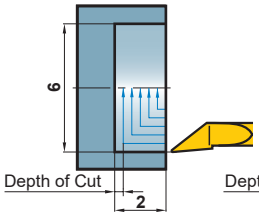
●Inner end facing

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

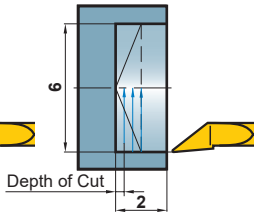
<Cutting Conditions>

Workpiece	: JIS S20C
Tool	: CR05RS-01B
Cutting Speed	: vc =80m/min
Feed	: f = 0.05mm/rev
Depth of Cut	: ap = 0.05mm
Cutting Mode	: Wet Cutting

Machining a work piece without a pre-prepared hole

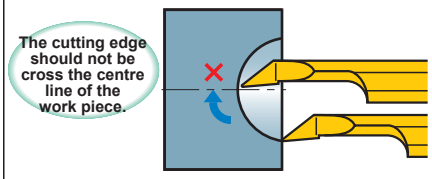


Machining a work piece with a pre-prepared hole



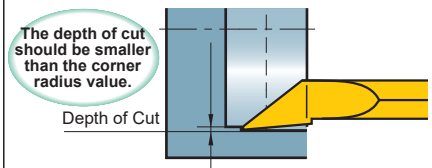
■NOTES FOR USE

Profile turning, Inner end facing



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

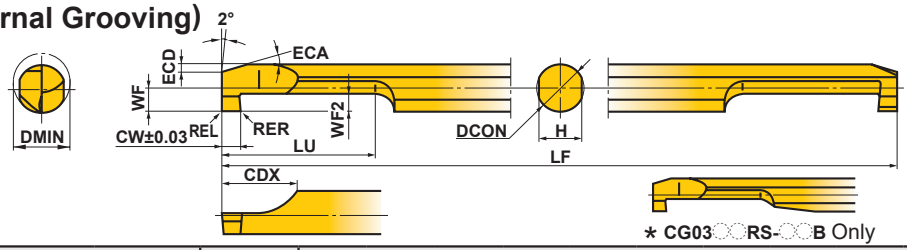
Copying



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

MICRO-MINI TWIN

■CG TYPE (Internal Grooving)



Order Number	Stock		Chip Breaker	Dimensions (mm)											
	Coated Carbide	Micro-Grain Carbide													
	VP15TF	TF15		DMIN	CW	WF2	RER/L	DCON	LF	LU	CDX	WF	H	ECA	ECD
CG0305RS-10	●	●	Without	3	1	1	0.05	3	50	5	6	1.3	2.7	15°	0.3
CG0305RS-10B	●	●	With	3	1	1	0.05	3	50	5	6	1.3	2.7	15°	0.3
CG0306RS-20	●	●	Without	3	2	1	0.1	3	50	6	6	1.3	2.7	15°	0.3
CG0306RS-20B	●	●	With	3	2	1	0.1	3	50	6	6	1.3	2.7	15°	0.3
CG03RS-10	●	●	Without	3	1	1	0.05	3	50	10	6	1.3	2.7	15°	0.3
CG03RS-10B	●	●	With	3	1	1	0.05	3	50	10	6	1.3	2.7	15°	0.3
CG03RS-20	●	●	Without	3	2	1	0.1	3	50	11	6	1.3	2.7	15°	0.3
CG03RS-20B	●	●	With	3	2	1	0.1	3	50	11	6	1.3	2.7	15°	0.3
CG0407RS-10	●	●	Without	4	1	1.5	0.05	4	60	7	7	1.8	3.6	15°	0.5
CG0407RS-10B	●	●	With	4	1	1.5	0.05	4	60	7	7	1.8	3.6	15°	0.5
CG0408RS-20	●	●	Without	4	2	1.5	0.1	4	60	8	7	1.8	3.6	15°	0.5
CG0408RS-20B	●	●	With	4	2	1.5	0.1	4	60	8	7	1.8	3.6	15°	0.5
CG04RS-10	●	●	Without	4	1	1.5	0.05	4	60	15	7	1.8	3.6	15°	0.5
CG04RS-10B	●	●	With	4	1	1.5	0.05	4	60	15	7	1.8	3.6	15°	0.5
CG04RS-20	●	●	Without	4	2	1.5	0.1	4	60	16	7	1.8	3.6	15°	0.5
CG04RS-20B	●	●	With	4	2	1.5	0.1	4	60	16	7	1.8	3.6	15°	0.5
CG0510RS-10	●	●	Without	5	1	2	0.05	5	70	10	8	2.3	4.5	15°	0.7
CG0510RS-10B	●	●	With	5	1	2	0.05	5	70	10	8	2.3	4.5	15°	0.7
CG0511RS-20	●	●	Without	5	2	2	0.1	5	70	11	8	2.3	4.5	15°	0.7
CG0511RS-20B	●	●	With	5	2	2	0.1	5	70	11	8	2.3	4.5	15°	0.7
CG05RS-10	●	●	Without	5	1	2	0.05	5	70	20	8	2.3	4.5	15°	0.7
CG05RS-10B	●	●	With	5	1	2	0.05	5	70	20	8	2.3	4.5	15°	0.7
CG05RS-20	●	●	Without	5	2	2	0.1	5	70	21	8	2.3	4.5	15°	0.7
CG05RS-20B	●	●	With	5	2	2	0.1	5	70	21	8	2.3	4.5	15°	0.7
CG0610RS-10	●	●	Without	6	1	2	0.05	6	75	10	8	2.8	5.4	15°	0.7
CG0610RS-10B	●	●	With	6	1	2	0.05	6	75	10	8	2.8	5.4	15°	0.7
CG0611RS-20	●	●	Without	6	2	2	0.1	6	75	11	8	2.8	5.4	15°	0.7
CG0611RS-20B	●	●	With	6	2	2	0.1	6	75	11	8	2.8	5.4	15°	0.7
CG06RS-10	●	●	Without	6	1	2	0.05	6	75	20	8	2.8	5.4	15°	0.7
CG06RS-10B	●	●	With	6	1	2	0.05	6	75	20	8	2.8	5.4	15°	0.7
CG06RS-20	●	●	Without	6	2	2	0.1	6	75	21	8	2.8	5.4	15°	0.7
CG06RS-20B	●	●	With	6	2	2	0.1	6	75	21	8	2.8	5.4	15°	0.7
CG0712RS-10	●	●	Without	7	1	2	0.05	7	85	12	8	3.3	6.4	15°	0.7
CG0712RS-10B	●	●	With	7	1	2	0.05	7	85	12	8	3.3	6.4	15°	0.7
CG0713RS-20	●	●	Without	7	2	2	0.1	7	85	13	8	3.3	6.4	15°	0.7
CG0713RS-20B	●	●	With	7	2	2	0.1	7	85	13	8	3.3	6.4	15°	0.7
CG07RS-10	●	●	Without	7	1	2	0.05	7	85	25	8	3.3	6.4	15°	0.7
CG07RS-10B	●	●	With	7	1	2	0.05	7	85	25	8	3.3	6.4	15°	0.7
CG07RS-20	●	●	Without	7	2	2	0.1	7	85	26	8	3.3	6.4	15°	0.7
CG07RS-20B	●	●	With	7	2	2	0.1	7	85	26	8	3.3	6.4	15°	0.7

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

RECOMMENDED CUTTING CONDITIONS

	Workpiece Material	Properties	Cutting Speed **vc** (m/min)	Feed **f** (mm/rev)		Recommended Tool Overhang (mm)
				CG03RS/CG04RS	**CG05RS/CG06RS/CG07RS**	
P	Carbon Steel · Alloy Steel	180−280HB	80 (40−120)	0.02 (0.01−0.03)	0.03 (0.01−0.05)	CG Type Micro-Mini Twin **LU + 2** (mm) Holder
M	Stainless Steel	≤200HB	80 (40−120)	0.02 (0.01−0.03)	0.03 (0.01−0.05)	
K	Gray Cast Iron	Tensile Strength ≤350MPa	80 (40−120)	0.03 (0.01−0.05)	0.03 (0.01−0.05)	
N	Non-ferrous Metal	−	120 (80−160)	0.03 (0.01−0.05)	0.05 (0.01−0.08)	

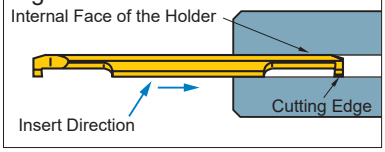
Note 1) Wet cutting is recommended.

■ 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.

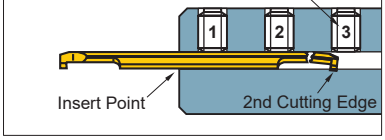
Fig.1



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.

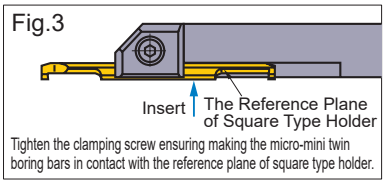
Fig.2



●When using a square type holder:

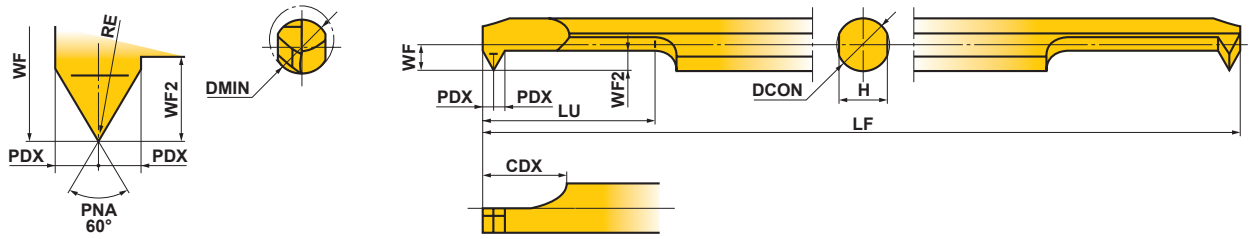
1. When installing the boring bar into the holder, tighten the clamp screws after ensuring the flats on the tool holder are parallel to the reference flats on the micro-mini bar. Refer to fig.3.
2. Make sure that the clamping screws are tightened to the recommended values.
3. Do not tighten the clamp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

Fig.3



MICRO-MINI TWIN

■CT STANDARD



Order Number	Stock		Chip Breaker	Threads				Dimensions (mm)									
	Coated Carbide	Micro-Grain Carbide		Metric Screw		Unified Coarse Screw											
	VP15TF	TF15		Thread	Pitch (mm)	Thread	Pitch (thread/inch)	DMIN	RE	DCON	LF	LU	CDX	WF	PDX	WF2	H
CT0305RS-M4	●	●	Without	≥M4	0.5—1.0	≥NO.8-32UNC	36—24	**3**	0.03	3	50	5.2	6	1.3	0.6	1.2	2.7
CT03RS-M4	●	●	Without	≥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
CT03RS-M4B	●	●	With	≥M4	0.5—1.0		36—24	**3**	0.03	3	50	10.2	6	1.3	0.6	1.2	2.7
CT0407RS-M6	●	●	Without	≥M6	0.75—1.25	≥1/4-20UNC	28—20	**4.5**	0.05	4	60	7.6	7	1.8	0.8	1.7	3.6
CT04RS-M6	●	●	Without	≥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
CT04RS-M6B	●	●	With	≥M6	0.75—1.25		28—20	**4.5**	0.05	4	60	15.6	7	1.8	0.8	1.7	3.6
CT0511RS-M8	●	●	Without	≥M8	0.75—1.5	≥5/16-18UNC	24—18	**6**	0.05	5	70	11	8	2.3	1	2.2	4.5
CT05RS-M8	●	●	Without	≥M8	0.75—1.5	≥5/16-24UNF	24—18	**6**	0.05	5	70	21	8	2.3	1	2.2	4.5
CT05RS-M8B	●	●	With	≥M8	0.75—1.5		24—18	**6**	0.05	5	70	21	8	2.3	1	2.2	4.5
CT0611RS-M10	●	●	Without	≥M10	0.75—1.75	≥3/8-16UNC	24—16	**7**	0.05	6	75	11	8	2.8	1	2.2	5.4
CT06RS-M10	●	●	Without	≥M10	0.75—1.75	≥3/8-24UNF	24—16	**7**	0.05	6	75	21	8	2.8	1	2.2	5.4
CT06RS-M10B	●	●	With	≥M10	0.75—1.75		24—16	**7**	0.05	6	75	21	8	2.8	1	2.2	5.4

RECOMMENDED CUTTING CONDITIONS

	Workpiece Material	Cutting Speed **vc** (m/min)	Recommended Tool Overhang (mm)
P	Carbon Steel Alloy Steel	50 (30—80)	Micro-Mini Twin CT; **LU+2**(mm); Holder
M	Stainless Steel	50 (30—80)	
K	Cast Iron	50 (30—80)	
N	Non-Ferrous Metal	80 (50—100)	

Note 1) Wet cutting is recommended.
Note 2) Pay special attention to machining of small diameters at high revolutions as the feed rate cannot keep up with the speed.

■STANDARD OF DEPTH OF CUT

● The chart on the right shows the cutting depths when machining external ISO metric screw threads.

● Metric

(mm)

P(Pitch)		0.50	0.75	1.00	1.25	1.50	1.75
Total Cutting Depth		**0.29**	**0.43**	**0.58**	**0.72**	**0.87**	**1.01**
Number of Passes	1	0.06	0.06	0.07	0.07	0.07	0.07
	2	0.05	0.06	0.06	0.07	0.07	0.07
	3	0.05	0.05	0.06	0.07	0.07	0.07
	4	0.04	0.05	0.05	0.07	0.07	0.07
	5	0.03	0.04	0.05	0.06	0.06	0.07
	6	0.03	0.04	0.05	0.06	0.06	0.06
	7	0.02	0.04	0.04	0.05	0.06	0.06
	8	0.01	0.03	0.04	0.05	0.06	0.06
	9	—	0.03	0.04	0.05	0.05	0.06
	10	—	0.02	0.03	0.04	0.05	0.05
	11	—	0.01	0.03	0.04	0.05	0.05
	12	—	—	0.03	0.03	0.04	0.05
	13	—	—	0.02	0.03	0.04	0.04
	14	—	—	0.01	0.02	0.03	0.04
	15	—	—	—	0.01	0.03	0.04
	16	—	—	—	—	0.03	0.03
	17	—	—	—	—	0.02	0.03
	18	—	—	—	—	0.01	0.03
	19	—	—	—	—	—	0.03
	20	—	—	—	—	—	0.02
	21	—	—	—	—	—	0.01

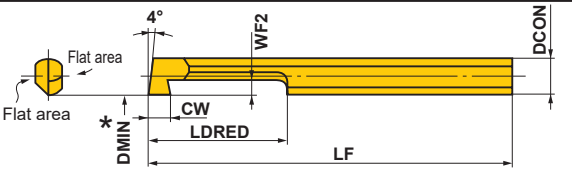
● : Inventory maintained in Japan.
(MICRO-MINI TWIN is available in 1 piece in one pack.)

MICRO-MINI BORING BARS

- Solid carbide type with minimum cutting diameter ϕ3.2mm.
- 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)						Geometry
	TF15	CW	DCON	LF	LDRED	DMIN*	WF2	
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.

*DMIN : Min. Cutting Diameter

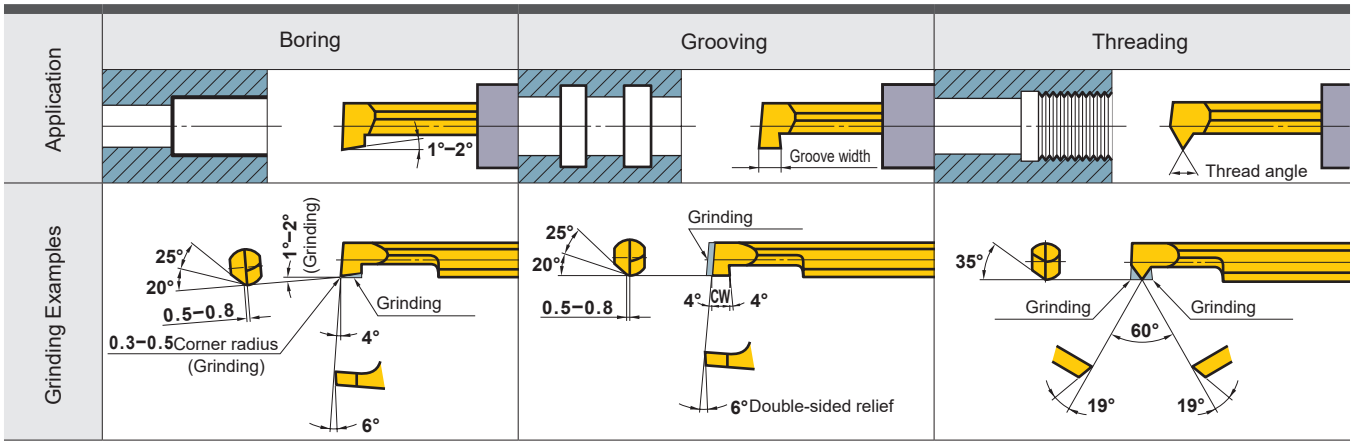
RECOMMENDED CUTTING CONDITIONS

	Workpiece Material	Cutting Speed vc (m/min)	Feed f (mm/rev)	Depth of Cut ap (mm)	l/d	Edge Condition (mm)	
						*Corner Radius or BCH	*Honing
P	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
M	Stainless Steel ≤200HB	40 (30—50)	0.05 (—0.1)	0.2 (0.1—0.3)	5	≤0.4	≤0.03 (Honing not required)
K	Gray Cast Iron ≤350MPa	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 Metal	80 (60—100)	0.05 (—0.1)	0.3 (0.1—0.5)	5	0.1—0.5	≤0.03 (Honing not required)

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

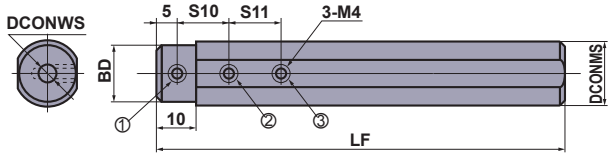
■GRINDING THE CUTTING EDGE OF MICRO-MINI BORING BAR

- 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.

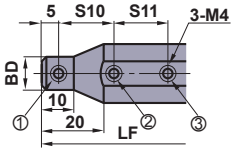


● : Inventory maintained in Japan.
(MICRO MINI is available in 1 piece in one pack.)

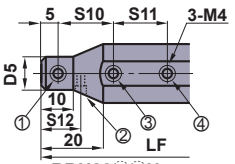
■ROUND TYPE HOLDER



RBH158○○N, RBH16○○N, RBH190○○N



RBH20○○N, RBH25○○N, RBH254○○N



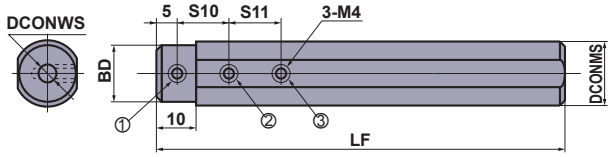
RBH22○○N

Order Number	Stock	Dimensions(mm)						
		DCONMS	DCONWS	BD	LF	S10	S11	S12
RBH15820N	●	15.875	2	15	100	10	—	—
RBH15830N	●	15.875	3	15	100	10	10	—
RBH15840N	●	15.875	4	15	100	15	15	—
RBH15850N	●	15.875	5	15	100	15	15	—
RBH15860N	●	15.875	6	15	100	15	15	—
RBH15870N	●	15.875	7	15	100	20	20	—
RBH15880N	●	15.875	8	15	100	20	20	—
RBH1620N	●	16	2	15	100	10	—	—
RBH1630N	●	16	3	15	100	10	10	—
RBH1640N	●	16	4	15	100	15	15	—
RBH1650N	●	16	5	15	100	15	15	—
RBH1660N	●	16	6	15	100	15	15	—
RBH1670N	●	16	7	15	100	20	20	—
RBH1680N	●	16	8	15	100	20	20	—
RBH19020N	●	19.05	2	18	125	10	—	—
RBH19030N	●	19.05	3	18	125	10	10	—
RBH19040N	●	19.05	4	18	125	15	15	—
RBH19050N	●	19.05	5	18	125	15	15	—
RBH19060N	●	19.05	6	18	125	15	15	—
RBH19070N	●	19.05	7	18	125	20	20	—
RBH19080N	●	19.05	8	18	125	20	20	—
RBH2020N	●	20	2	11	125	10	—	—
RBH2030N	●	20	3	12	125	10	10	—
RBH2040N	●	20	4	13	125	15	15	—
RBH2050N	●	20	5	14	125	15	15	—
RBH2060N	●	20	6	15	125	15	15	—
RBH2070N	●	20	7	16	125	20	20	—
RBH2080N	●	20	8	17	125	20	20	—
RBH2220N	●	22	2	11	125	10	—	10
RBH2230N	●	22	3	12	125	10	10	10
RBH2240N	●	22	4	13	125	15	15	12.5
RBH2250N	●	22	5	14	125	15	15	12.5
RBH2260N	●	22	6	15	125	15	15	15
RBH2270N	●	22	7	16	125	20	20	15
RBH2280N	●	22	8	17	125	20	20	15
RBH2520N	●	25	2	11	150	10	—	—
RBH2530N	●	25	3	12	150	10	10	—
RBH2540N	●	25	4	13	150	15	15	—
RBH2550N	●	25	5	14	150	15	15	—
RBH2560N	●	25	6	15	150	15	15	—
RBH2570N	●	25	7	16	150	20	20	—
RBH2580N	●	25	8	17	150	20	20	—
RBH25420N	●	25.4	2	11	150	10	—	—
RBH25430N	●	25.4	3	12	150	10	10	—
RBH25440N	●	25.4	4	13	150	15	15	—
RBH25450N	●	25.4	5	14	150	15	15	—
RBH25460N	●	25.4	6	15	150	15	15	—
RBH25470N	●	25.4	7	16	150	20	20	—
RBH25480N	●	25.4	8	17	150	20	20	—

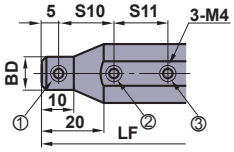
Mounting Chart

Series		Boring Bar Type			Holder Type	
MICRO-DEX	Boring	C	04GS□□□R□□	—	RBH□□40N	RBH□□□40N
MICRO-DEX	Boring	C	05HS□□□R□□	—	RBH□□50N	RBH□□□50N
MICRO-DEX	Boring	C	06JS□□□R□□	—	RBH□□60N	RBH□□□60N
MICRO-DEX	Boring	C	07KS□□□R□□	—	RBH□□70N	RBH□□□70N
MICRO-MINI TWIN	Boring	CB	02RS(-B)	02RS-0□(B)	RBH□□20N	RBH□□□20N
MICRO-MINI TWIN	Boring	CB	03RS(-B)	03RS-0□(B)	RBH□□30N	RBH□□□30N
MICRO-MINI TWIN	Boring	CB	04RS(-B)	04RS-0□(B)	RBH□□40N	RBH□□□40N
MICRO-MINI TWIN	Boring	CB	05RS(-B)	05RS-0□(B)	RBH□□50N	RBH□□□50N
MICRO-MINI TWIN	Boring	CB	06RS(-B)	06RS-0□(B)	RBH□□60N	RBH□□□60N
MICRO-MINI TWIN	Boring	CB	07RS(-B)	07RS-0□(B)	RBH□□70N	RBH□□□70N
MICRO-MINI TWIN	Boring	CB	08RS(-B)	08RS-0□(B)	RBH□□80N	RBH□□□80N
MICRO-MINI TWIN	Boring	CR	03RS-01(-B)	—	RBH□□30N	RBH□□□30N
MICRO-MINI TWIN	Boring	CR	04RS-01(-B)	—	RBH□□40N	RBH□□□40N
MICRO-MINI TWIN	Boring	CR	05RS-01(-B)	—	RBH□□50N	RBH□□□50N
MICRO-MINI TWIN	Grooving	CG	03RS-□□(B)	—	RBH□□30N	RBH□□□30N
MICRO-MINI TWIN	Grooving	CG	04RS-□□(B)	—	RBH□□40N	RBH□□□40N
MICRO-MINI TWIN	Grooving	CG	05RS-□□(B)	—	RBH□□50N	RBH□□□50N
MICRO-MINI TWIN	Grooving	CG	06RS-□□(B)	—	RBH□□60N	RBH□□□60N
MICRO-MINI TWIN	Grooving	CG	07RS-□□(B)	—	RBH□□70N	RBH□□□70N
MICRO-MINI TWIN	Threading	CT	0305RS-M4	03RS-M4(B)	RBH□□30N	RBH□□□30N
MICRO-MINI TWIN	Threading	CT	0407RS-M6	04RS-M6(B)	RBH□□40N	RBH□□□40N
MICRO-MINI TWIN	Threading	CT	0511RS-M8	05RS-M8(B)	RBH□□50N	RBH□□□50N
MICRO-MINI TWIN	Threading	CT	0611RS-M10	06RS-M10(B)	RBH□□60N	RBH□□□60N
MICRO-MINI	General purpose	C	03FR-BLS	—	RBH□□30N	RBH□□□30N
MICRO-MINI	General purpose	C	04FR-BLS	—	RBH□□40N	RBH□□□40N
MICRO-MINI	General purpose	C	05FR-BLS	—	RBH□□50N	RBH□□□50N

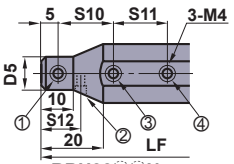
■ROUND TYPE HOLDER



RBH158○○N, RBH16○○N, RBH190○○N



RBH20○○N, RBH25○○N, RBH254○○N



RBH22○○N

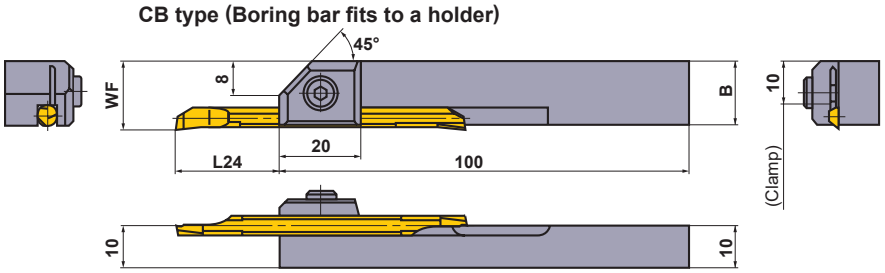
Spare Parts

Holder Type	Clamp Screw				Wrench	Clamp Torque (N・m)
	①	②	③	④		
RBH15820N	HSS04006	HSS04006	—	—	HKY20F	2.0
RBH158○○N	HSS04004	HSS04004	HSS04004	—	HKY20F	2.0
RBH15880N	HSS04003	HSS04003	HSS04003	—	HKY20F	2.0
RBH1620N	HSS04006	HSS04006	—	—	HKY20F	2.0
RBH16○○N	HSS04004	HSS04004	HSS04004	—	HKY20F	2.0
RBH1680N	HSS04003	HSS04003	HSS04003	—	HKY20F	2.0
RBH19020N	HSS04008	HSS04008	—	—	HKY20F	2.0
RBH190○○N	HSS04006	HSS04006	HSS04006	—	HKY20F	2.0
RBH19080N	HSS04004	HSS04004	HSS04004	—	HKY20F	2.0
RBH2020N	HSS04004	HSS04004	—	—	HKY20F	2.0
RBH2030N	HSS04004	HSS04004	HSS04006	—	HKY20F	2.0
RBH20○○N	HSS04004	HSS04006	HSS04006	—	HKY20F	2.0
RBH2080N	HSS04004	HSS04004	HSS04004	—	HKY20F	2.0
RBH2220N	HSS04004	HSS04006	—	HSS04004	HKY20F	2.0
RBH2230N	HSS04004	HSS04006	HSS04008	HSS04004	HKY20F	2.0
RBH22○○N	HSS04004	HSS04006	HSS04006	HSS04004	HKY20F	2.0
RBH2520N	HSS04004	HSS04006	—	—	HKY20F	2.0
RBH2530N	HSS04004	HSS04006	HSS04008	—	HKY20F	2.0
RBH25○N	HSS04004	HSS04008	HSS04008	—	HKY20F	2.0
RBH2580N	HSS04004	HSS04006	HSS04006	—	HKY20F	2.0
RBH25420N	HSS04004	HSS04006	—	—	HKY20F	2.0
RBH25430N	HSS04004	HSS04006	HSS04008	—	HKY20F	2.0
RBH254○N	HSS04004	HSS04008	HSS04008	—	HKY20F	2.0
RBH25480N	HSS04004	HSS04006	HSS04006	—	HKY20F	2.0

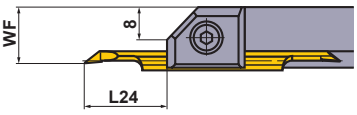
MICRO-MINI TWIN

■ SQUARE TYPE HOLDER

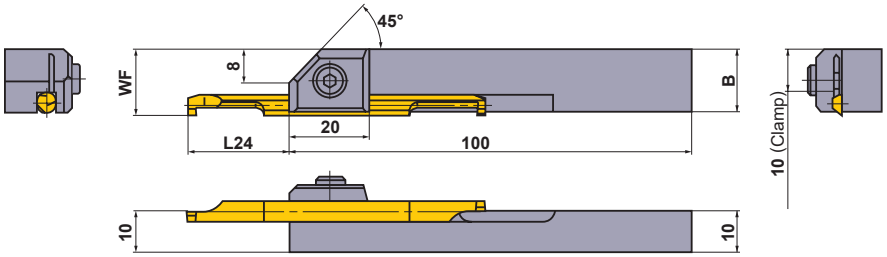
CB type (Boring bar fits to a holder)



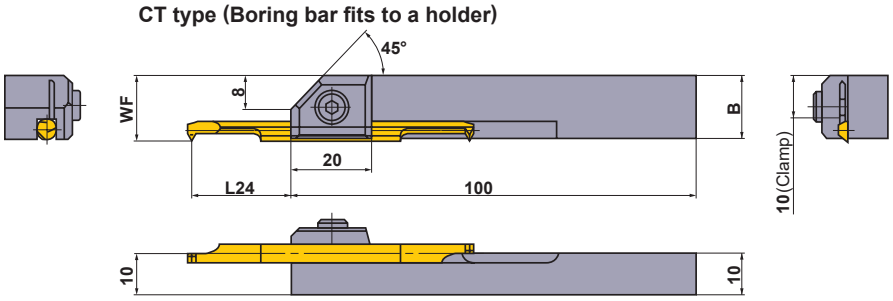
CR type (Boring bar fits to a holder)



CG type (Boring bar fits to a holder)



CT type (Boring bar fits to a holder)



Order Number	Stock	Dimensions(mm)				
		WF				B
		CB	CR	CG	CT	
SBH1020R	●	13	—	—	—	12.9
SBH1030R	●	14	12.65	13.8	13.8	13.8
SBH1040R	●	15	13.15	14.8	14.8	14.7
SBH1050R	●	16	13.65	15.8	15.8	15.6
SBH1060R	●	17	—	16.8	16.8	16.5
SBH1070R	●	18	—	17.8	—	17.4

● : Inventory maintained in Japan.

Tool Overhang Length for Sufficient Clamping

Machining Method	MICRO-MINI TWIN Type			Holder Type	Tool Overhang L24		Recommended for Steel
					Min.	**Max.**	Tool Overhang
Boring	CB	02RS(B)	02RS-0(B)	SBH1020R	6	24	6—10
Boring	CB	03RS(B)	03RS-0(B)	SBH1030R	8.5	22	9—15
Boring	CB	04RS(B)	04RS-0(B)	SBH1040R	11	29.5	12—20
Boring	CB	05RS(B)	05RS-0(B)	SBH1050R	13.5	37	15—25
Boring	CB	06RS(B)	06RS-0(B)	SBH1060R	13.5	42	18—30
Boring	CB	07RS(B)	07RS-0(B)	SBH1070R	13.5	52	21—35
Boring	CR	03RS-01(B)	—	SBH1030R	11	19.5	12
Boring	CR	04RS-01(B)	—	SBH1040R	13	27.5	14
Boring	CR	05RS-01(B)	—	SBH1050R	15	35.5	16
Groove Width 1mm	CG	03RS-10(B)	—	SBH1030R	13	17.5	14
Groove Width 2mm	CG	03RS-20(B)	—	SBH1030R	14	16.5	15
Groove Width 1mm	CG	04RS-10(B)	—	SBH1040R	18	22.5	19
Groove Width 2mm	CG	04RS-20(B)	—	SBH1040R	19	21.5	20
Groove Width 1mm	CG	05RS-10(B)	—	SBH1050R	23	27.5	24
Groove Width 2mm	CG	05RS-20(B)	—	SBH1050R	24	26.5	25
Groove Width 1mm	CG	06RS-10(B)	—	SBH1060R	23	32.5	24
Groove Width 2mm	CG	06RS-20(B)	—	SBH1060R	24	31.5	25
Groove Width 1mm	CG	07RS-10(B)	—	SBH1070R	28	38	29
Groove Width 2mm	CG	07RS-20(B)	—	SBH1070R	29	37	30
Threading	CT	0305RS-M4	03RS-M4(B)	SBH1030R	13	17.5	14
Threading	CT	0407RS-M6	04RS-M6(B)	SBH1040R	18.5	22	19.5
Threading	CT	0511RS-M8	05RS-M8(B)	SBH1050R	24	26.5	25
Threading	CT	0611RS-M10	06RS-M10(B)	SBH1060R	24	31.5	25

Spare Parts

Holder Type	Clamp Screw	Wrench	Clamp Torque
SBH1020R	HSC04010	HKY30R	4.8
SBH1030R	HSC05012	HKY40R	9.5
SBH1040R	HSC05012	HKY40R	9.5
SBH1050R	HSC05012	HKY40R	9.5
SBH1060R	HSC05012	HKY40R	9.5
SBH1070R	HSC05012	HKY40R	9.5

Boring Bar for High Precision and Small Parts Machining

MICRO-MINI TWIN

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

MITSUBISHI MATERIALS CORPORATION

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http://www.mmc-carbide.com/
(Tools specifications subject to change without notice.)

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