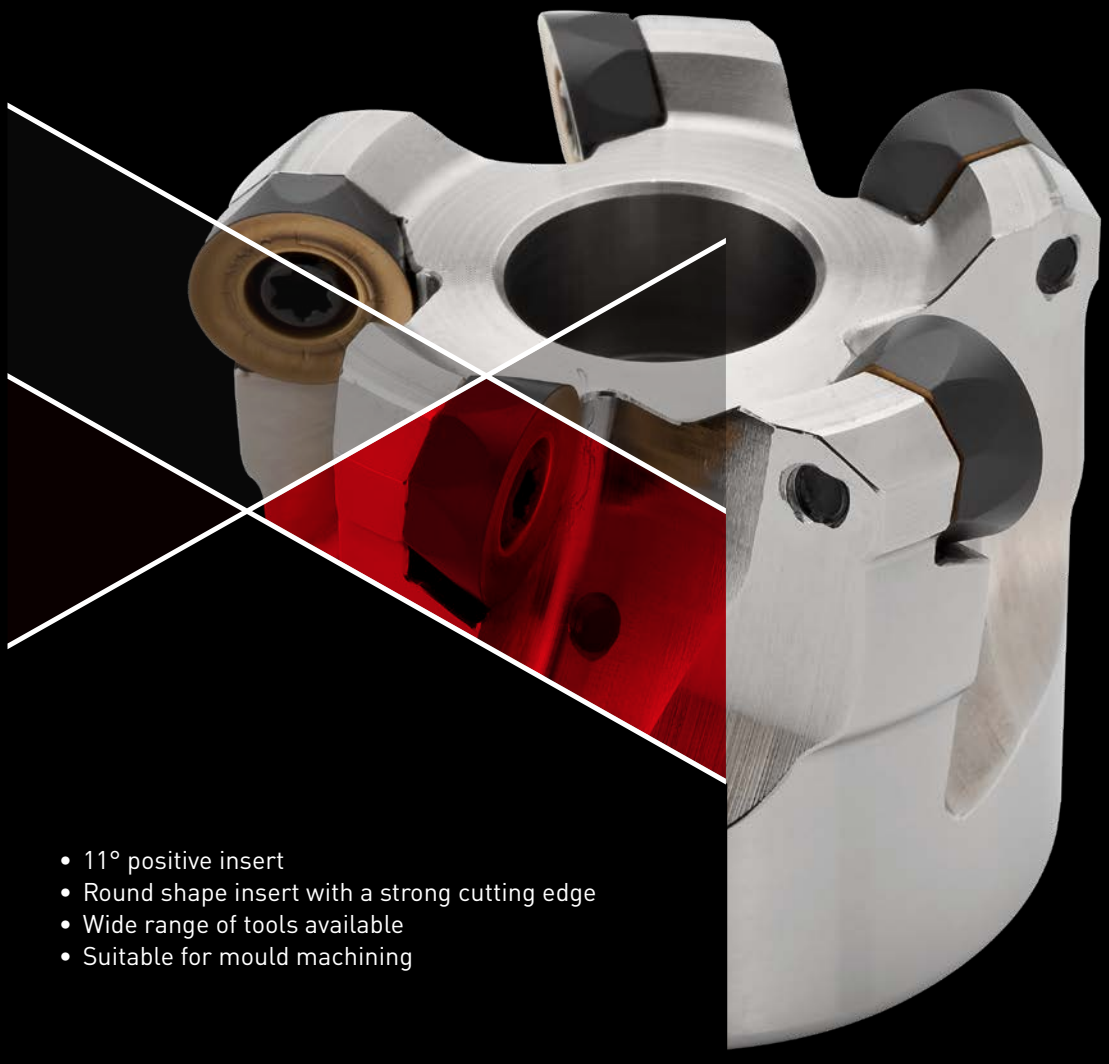
B014E

BRP

MULTI FUNCTIONAL MILLING

MITSUBISHI MATERIALS

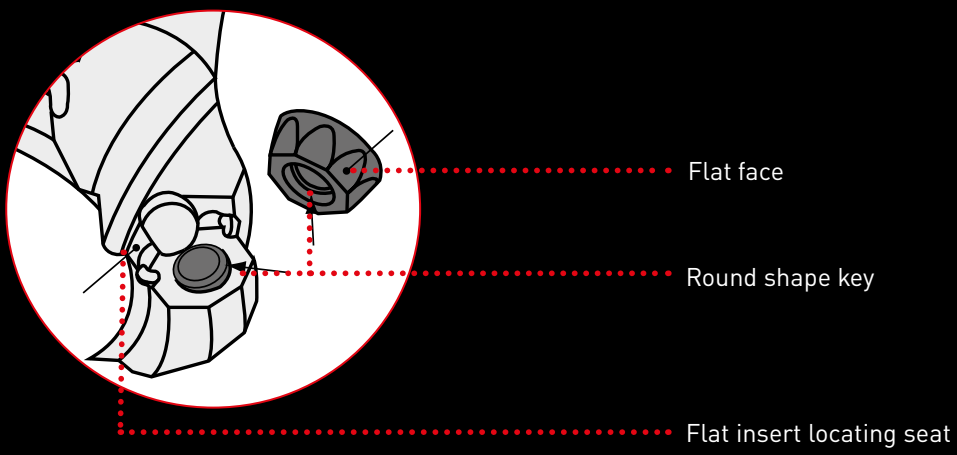
MULTI FUNCTIONAL MILLING



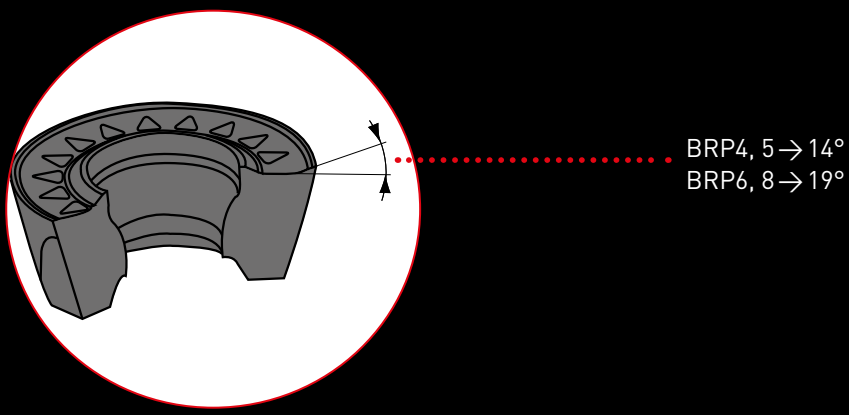
- 11° positive insert
- Round shape insert with a strong cutting edge
- Wide range of tools available
- Suitable for mould machining

BRP

PREVENTION OF INSERT MOVEMENT



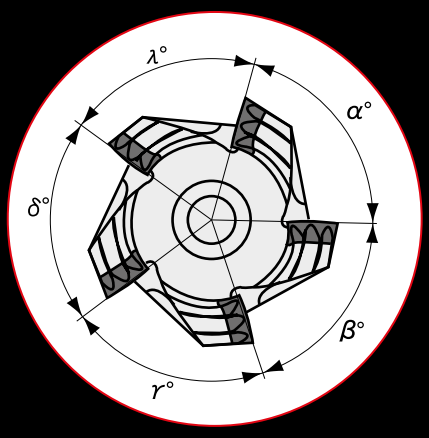
A flat insert locating seat and matching insert face prevents the insert from rotating while cutting. A round shape key prevents insert movement by absorbing the cutting load and resisting the centrifugal force caused by the rotation of the tool.



JS chipbreaker with a large rake angle provides excellent sharpness. The feed rate can be increased by 15 % and the improved chip control helps to prevents insert fracturing.

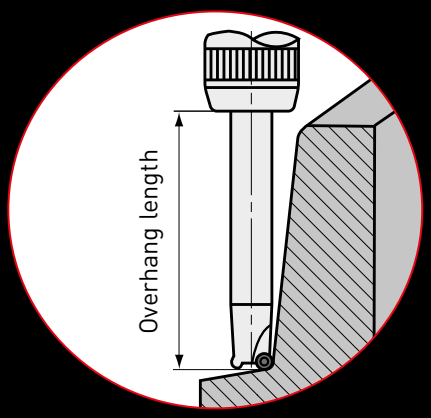
PREVENT CHATTERING/VIBRATION

The inserts are arranged in an irregular pitch.
This arrangement prevents synchronised vibration resulting in the elimintion of chattering.



COMPLETE SERIES LINEUP

The optimum tool can be selected from a variety of insert sizes and body types.



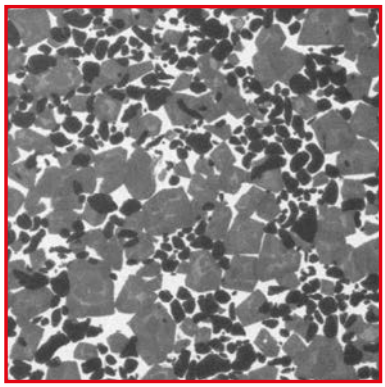
MX3030

NEW CERMET GRADE FOR A WIDER RANGE OF APPLICATIONS

Enables excellent surface finishes even at high efficiency machining conditions.

IMPROVED MACHINING EFFICIENCY BY MAINTAINING EXCELLENT SURFACE FINISHES EVEN AT LARGE DEPTHS OF CUT

Cermet has a low affinity with iron, excellent thermal stability and oxidation resistance, and is therefore a suitable grade for finishing. However, it does not have the same bonding strength as cemented carbide thereby creating the challenge to compensate for fracture resistance.
MX3030 solves the challenge with higher thermal conductivity than conventional products and has excellent thermal cracking resistance. Therefore, it is possible to suppress wear and maintain high quality surface finishes. Also, since MX3030 has excellent toughness, improved machining efficiency even at large depths of cut can be realised.



MX3030

A special alloy is used for the binder material → Fracture resistance properties increased

High hardness Ti compound particles are used in the substrate → High wear resistance properties

MV1000 SERIES

COATED CARBIDE GRADE FOR MILLING

ADVANCED WEAR RESISTANCE

By adopting the newly developed Al-Rich coating technology, the (Al,Ti)N with a high Al content ratio displays very high hardness. This greatly improves oxidation and wear resistance.

ADVANCED THERMAL SHOCK RESISTANCE

The extreme heat resistance of this new series achieves amazing stability, not only during dry cutting, but also when wet cutting where inserts are usually prone to thermal cracking.

Graphical representation

EXCELLENT WELDING RESISTANCE

Smooth surface.

OUTSTANDING WEAR RESISTANCE

Newly developed Al-Rich coating.

EXCELLENT CHIPPING RESISTANCE FOR STABLE MACHINING

Newly developed bonding layer.

FRACTURE RESISTANCE FOR THE ULTIMATE STABILITY

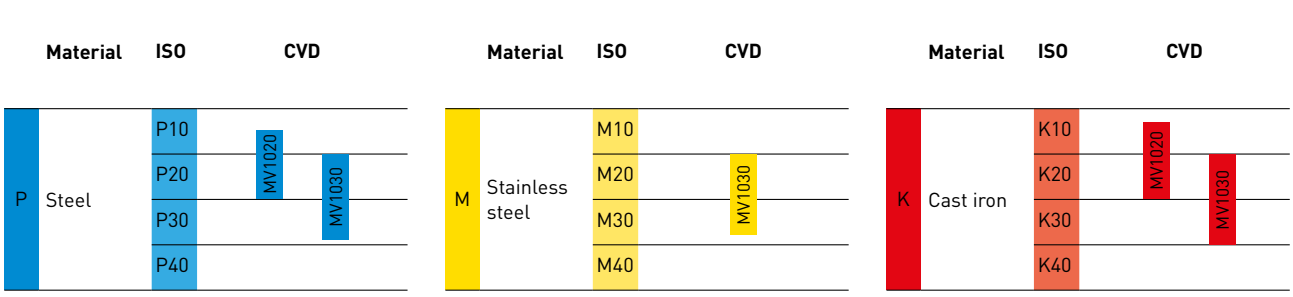
Exclusive cemented carbide substrate.

MV1020

This grade has advanced wear and thermal shock resistance and also achieves stable cutting at unprecedented cutting speeds, especially when machining steel and ductile cast iron, thus greatly reducing work time.

MV1030

The new Al-Rich coating also provides excellent wear resistance. An unprecedented performance against sudden breakage was also realised especially during problematic wet cutting and when machining stainless steels.



1. Dry cutting is recommended for machining stainless steel with MV1030.

BRP

MULTI FUNCTIONAL MILLING

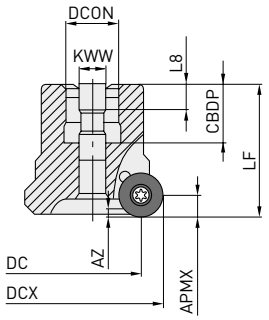
P M K S H

GAMP :+5°
GAMF :-4°–0°

1

ø40
ø42

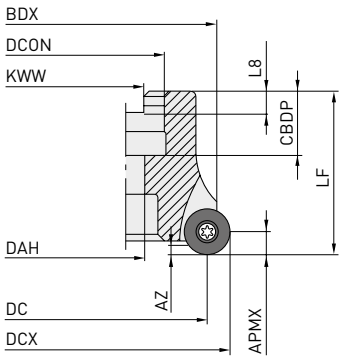
Set bolt
(Attached)



Set an attached bolt.

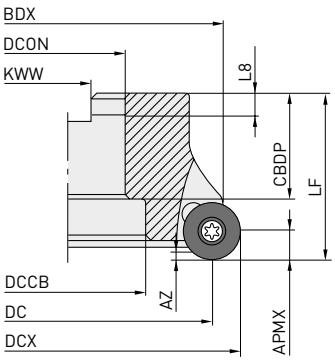
2

ø50
ø52
ø63
ø66
ø80



3

ø100



Right hand tool holder only.

ARBOR TYPE

Order number	Stock	APMX	DC	DCON	DCX	LF	AZ	WT	ZNF	Type
BRP6P-040A03R	★	6	27.9	16	40	40	4	0.4	3	1
BRP6P-050A04R	★	6	37.8	22	50	50	4	0.5	4	2
BRP6P-063A05R	★	6	50.8	22	63	50	4	0.7	5	2
BRP6N-042A04R	●	6	29.8	16	42	40	4	0.4	4	1
BRP6N-050A04R	●	6	37.8	22	50	50	4	0.5	4	2
BRP6N-052A05R	●	6	39.8	22	52	63	4	0.5	5	2
BRP6N-063A05R	●	6	50.8	22	63	50	4	0.7	5	2
BRP6N-066A06R	●	6	53.8	22	66	63	4	0.7	6	2
BRP6N-080A06R	●	6	67.8	27	80	50	4	1.2	6	2
BRP8P-063A04R	★	8	46.8	22	63	50	5.5	0.7	4	2
BRP8N-063A04R	●	8	46.8	22	63	50	5.5	0.7	4	2
BRP8N-080A06R	●	8	63.8	27	80	50	5.5	1.2	6	2
BRP8N-100B07R	●	8	83.8	32	100	50	5.5	1.6	7	3

● : Inventory maintained. ★ : Inventory maintained in Japan.

BRP – MULTI FUNCTIONAL MILLING – ARBOR TYPE

MOUNTING DIMENSIONS

Order number	CBDP	DAH	DCCB	DCON	DCX	KWW	L8	Type
BRP6P-040A03R	18	–	–	16	40	8.4	5.6	1
BRP6P-050A04R	20	11	–	22	50	10.4	6.3	2
BRP6P-063A05R	20	11	–	22	63	10.4	6.3	2
BRP6N-042A04R	18	–	–	16	42	8.4	5.6	1
BRP6N-050A04R	20	11	–	22	50	10.4	6.3	2
BRP6N-052A05R	20	11	–	22	52	10.4	6.3	2
BRP6N-063A05R	20	11	–	22	63	10.4	6.3	2
BRP6N-066A06R	20	11	–	22	66	10.4	6.3	2
BRP6N-080A06R	22	13	–	27	80	12.4	8	2
BRP8P-063A04R	20	11	–	22	63	10.4	6.3	2
BRP8N-063A04R	20	11	–	22	63	10.4	6.3	2
BRP8N-080A06R	22	13	–	27	80	12.4	8	2
BRP8N-100B07R	32	–	45	32	100	14.4	8	3

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12 Vc

SPARE PARTS

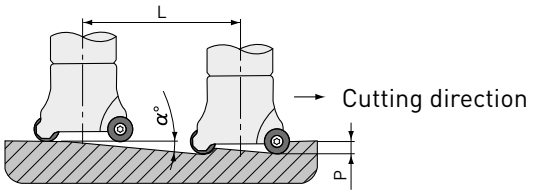
Tool holder type	 *1		
	Clamp screw	Wrench	Set bolt
BRP6	TS43	TKY15D	HDS08030
BRP8	TS54	TKY25D	–

*1 Clamp torque (N • m): TS43 = 3.5, TS54 = 7.5

BRP

RAMPING

Ramp angle and cutting length



Formula for min cutting length,
L min, according to max. ramp angle

$$L = \frac{P}{\tan\alpha} \text{ (mm)}$$

Type	Tool diameter	Max. ramp angle (°)	tan α	Min. cutting length according to max. ramp angle L min(mm)*				
	ø	α° max		P=2 mm	P=4 mm	P=5 mm	P=6 mm (max.)	P=8 mm (max.)
BRP4	16	12.2	0.216	9	18	–	–	–
	20	14.52	0.259	7	15	–	–	–
	25	8.8	0.155	12	25	–	–	–
BRP5	16	4.52	0.079	25	50	63	–	–
	20	11.4	0.202	9	19	24	–	–
	25	14.4	0.257	7	15	19	–	–
	32	8.37	0.147	13	27	33	–	–
BRP6	32	15.91	0.285	7	14	17	21	–
	40	10.29	0.181	11	22	27	33	–
	50	7.12	0.125	16	32	40	48	–
	63	5.08	0.089	22	44	56	67	–
	80	3.69	0.064	31	62	77	93	–
BRP8	40	18.86	0.342	5	11	14	17	23
	50	11.91	0.211	9	18	23	28	37
	63	8.01	0.141	14	28	35	42	56
	80	5.60	0.098	20	40	50	61	81
	100	4.13	0.072	27	55	69	83	110

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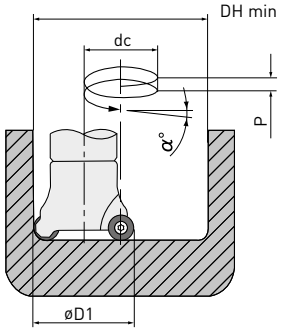
* Decimal points are omitted for values of L min

BRP

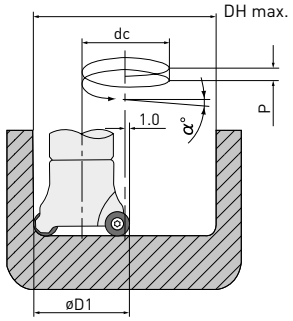
HELICAL MILLING

Cutting hole diameter and depth of cut.

Minimum cutting diameter



Maximum cutting diameter



Type	Tool diameter øD1	øDH*1	ødc*2	Indication angle (α°)					øDH*1	ødc*2	Indication angle (α°)				
				P=2 mm	P=4 mm	P=5 mm	P=6 mm	P=8 mm			P=2 mm	P=4 mm	P=5 mm	P=6 mm	P=8 mm
BRP4	16	24	8	4.55	9.10	–	–	–	30	14	2.60	5.20	–	–	–
	20	32	12	3.04	6.08	–	–	–	38	18	2.03	4.05	–	–	–
	25	42	17	2.15	4.29	–	–	–	48	23	1.59	3.17	–	–	–
BRP5	16	22	6	d=1 mm, %°=3.04°					30	14	2.60	–	6.50	–	–
	20	30	10	3.64	–	9.10	–	–	38	18	2.03	–	5.08	–	–
	25	40	15	2.43	–	6.08	–	–	48	23	1.59	–	3.98	–	–
	32	54	22	1.66	–	4.15	–	–	62	30	1.22	–	3.04	–	–
BRP6	32	52	20	1.82	3.64	–	5.45	–	62	30	1.22	2.43	–	3.64	–
	40	68	28	1.30	2.60	–	3.90	–	78	38	0.96	1.92	–	2.88	–
	50	88	38	0.96	1.92	–	2.88	–	98	48	0.76	1.52	–	2.28	–
	63	114	51	0.72	1.43	–	2.14	–	124	61	0.60	1.20	–	1.79	–
	80	148	68	0.5	1.07	–	1.61	–	158	78	0.47	0.94	–	1.40	–
BRP8	40	64	24	–	3.04	–	4.55	6.06	78	38	–	1.92	–	2.88	3.38
	50	84	34	–	2.14	–	3.22	4.28	98	48	–	1.52	–	2.28	3.04
	63	110	47	–	1.55	–	2.33	3.10	124	61	–	1.20	–	1.79	2.39
	80	144	64	–	1.14	–	1.71	2.28	158	78	–	0.94	–	1.40	1.87
	100	184	84	–	0.87	–	1.30	1.74	198	98	–	0.74	–	1.12	1.49

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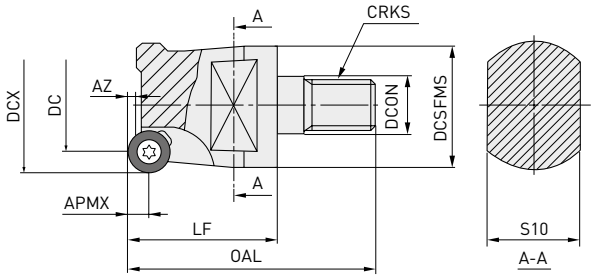
*1 DH = Cutting hole diameter: Ø (mm)
*2 dc = Tool pass diameter: Ø (mm)

BRP4 DH min= (D1 - 4) x 2, DH max = (D1 - 1) x 2, P max = 4 (mm)
BRP5 DH min= (D1 - 5) x 2, DH max = (D1 - 1) x 2, P max = 5 (mm)
BRP6 DH min= (D1 - 6) x 2, DH max = (D1 - 1) x 2, P max = 6 (mm)
BRP8 DH min= (D1 - 8) x 2, DH max = (D1 - 1) x 2, P max = 8 (mm)
dc = (Tool pass diameter) = DH-D

BRP

MULTI FUNCTIONAL MILLING

P M K S H



Right hand tool holder only.

SCREW-IN TYPE

Order number	Stock	APMX	DC	DCON	DCX	LF	OAL	AZ	ZNF
BRP4NR161M08	●	4	7.8	8.5	16	28	46	1	1
BRP4NR202M10	●	4	11.8	10.5	20	28	47	2	2
BRP4NR253M12	●	4	16.8	12.5	25	32	54	2	3
BRP4NR323M16	●	4	23.8	17	32	36	59	2	3
BRP5NR201M10	★	5	9.8	10.5	20	32	51	1.2	1
BRP5NR252M12	●	5	14.8	12.5	25	32	54	2.5	2
BRP5NR323M12	●	5	21.8	12.5	32	36	58	2.5	3
BRP5NR323M16	●	5	21.8	17	32	36	59	2.5	3
BRP6NR322M16	●	6	19.8	17	32	35	58	4	2
BRP6NR403M16	●	6	27.8	17	40	43	66	4	3
BRP6NR424M16	●	6	29.8	17	42	43	66	4	4

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12 Vc

MOUNTING DIMENSIONS

Order number	CRKS	S10	DCON	DCSFMS	DCX
BRP4NR161M08	M8	10	8.5	13	16
BRP4NR202M10	M10	15	10.5	18	20
BRP4NR253M12	M12	17	12.5	21	25
BRP4NR323M16	M16	22	17	29	32
BRP5NR201M10	M10	15	10.5	18	20
BRP5NR252M12	M12	17	12.5	21	25
BRP5NR323M12	M12	17	12.5	21	32
BRP5NR323M16	M16	22	17	29	32
BRP6NR322M16	M16	22	17	29	32
BRP6NR403M16	M16	22	17	29	40
BRP6NR424M16	M16	22	17	29	42

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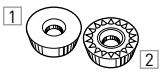
12 Vc

● : Inventory maintained. ★ : Inventory maintained in Japan.

BRP – MULTI FUNCTIONAL MILLING – SCREW-IN TYPE

SPARE PARTS

Tool holder type	 Insert	 Clamp screw	 Wrench
BRP4	1 RPMW08T2M0E/T 2 RPMT08T2M0E-JS	CS250560T	TKY08F
BRP5	1 RPMW10T3M0E/T 2 RPMT10T3M0E-JS	CS350760T CS350860T	TKY15F
BRP6	1 RPMW1204M0E/T 2 RPMW1204M0E-JS	TS43	TKY15F

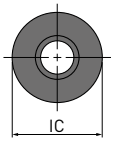
*1 Clamp torque (N • m): CS250560T = 1.0, CS350760T = 3.5, CS350860T = 3.5, TS43 = 3.5

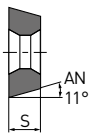
INSERTS

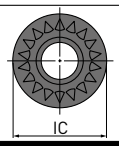
P	Steel	◔	●	◔	●	●	◔	◆	◆	◔	◔	
M	Stainless steel	◔	◔	◔	●	●	◔		◆	◔	◔	
K	Cast iron					●		◆	◆	✤	✤	
S	Heat resistant alloy, Titanium										◔	
H	Hardened steel										◔	

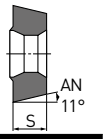
Cutting conditions :
●: Stable cutting ◔: General cutting
✤: Unstable cutting
Honing:
E: Round F: Sharp edge S: Chamfer + round
T: Chamfer Z: Stable

Order number	Class	Edge preparation	AP20M	F7010	F7030	MX3030	NX2525	NX4545	MV1020	MV1030	UTi20T	VP15TF	IC	S	Geometry *Right hand insert only.*
RPMW08T2M0E	M	E									●		8	2.78	
RPMW08T2M0T	M	T										●	8	2.78	
RPMW10T3M0E	M	E			★	★		★	●	●	●		10	3.97	
RPMW10T3M0T	M	T										●	10	3.97	
RPMW1204M0E	M	E	●		●	★	●	●	●	●	●		12	4.76	
RPMW1204M0T	M	T					●					●	12	4.76	
RPMW1606M0E	M	E	●		●		●		●	●	●		16	6.35	
RPMW1606M0T	M	T										●	16	6.35	
RPMT08T2M0E-JS	M	E			●				●	●	●	●	8	2.78	
RPMT10T3M0E-JS	M	E			●				●	●	●	●	10	3.97	
RPMT1204M0E-JS	M	E	●	●	●				●	●	●	●	12	4.76	
RPMT1606M0E-JS	M	E	●		●				●	●		●	16	6.35	





1/1

12 Vc

● : Inventory maintained. ★ : Inventory maintained in Japan.

BRP

RECOMMENDED CUTTING CONDITIONS

	Material	Properties	Grade	Vc
P	Mild steel	≤180HB	MV1020	300 (200 – 400)
			MV1030	250 (200 – 300)
			F7030	250 (200 – 300)
			VP15TF	250 (200 – 300)
			MX3030 *	180 (130 – 250)
			UTi20T	150 (100 – 200)
	Carbon steel Alloy steel	180 – 280HB	MV1020	260 (170 – 350)
			MV1030	220 (170 – 270)
			F7030	180 (130 – 220)
			VP15TF	180 (130 – 220)
			MX3030 *	150 (120 – 180)
			UTi20T	140 (100 – 170)
		280 – 380HB	MV1020	180 (100 – 250)
			F7030	160 (110 – 190)
			VP15TF	160 (110 – 190)
			MV1030	135 (90 – 180)
			MX3030 *	100 (80 – 160)
			UTi20T	100 (70 – 120)
	Pre-hardened steel	35 – 45HRC	F7030	120 (80 – 140)
			VP15TF	120 (80 – 140)
			UTi20T	90 (60 – 100)
	High Alloy steel	300HB	F7030	130 (90 – 160)
			VP15TF	130 (90 – 160)
			UTi20T	100 (70 – 120)
M	Stainless steel	≤260HB	F7030	180 (130 – 220)
			VP15TF	180 (130 – 220)
			MX3030 *	150 (120 – 180)
			UTi20T	140 (100 – 170)
	Austenitic stainless steel	≤200HB	MV1020	250 (200 – 300)
			MV1030	220 (170 – 270)
		>200HB	MV1020	220 (170 – 270)
			MV1030	190 (140 – 240)
	PH stainless steel	<450HB	MV1020	190 (140 – 240)
			MV1030	170 (120 – 220)

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* **MX3030:**
Depth of cut (mm) = 3

BRP

RECOMMENDED CUTTING CONDITIONS

	Material	Properties	Grade	Vc
K	Gray cast iron	≤350MPa	F7030	—
			VP15TF	170 (130 – 220)
			MX3030 *	150 (120 – 180)
			UTi20T	140 (100 – 170)
		≤450MPa	MV1020	240 (130 – 350)
			MV1030	190 (130 – 250)
	Ductile cast iron	360 – 500MPa	F7030	—
			MX3030 *	150 (120 – 180)
			VP15TF	140 (100 – 180)
			UTi20T	120 (80 – 140)
		500 – 800MPa	F7030	—
			VP15TF	110 (80 – 140)
			UTi20T	90 (70 – 110)
		≤800MPa	MV1020	220 (80 – 350)
			MV1030	110 (80 – 150)
H	Hardened steel	40 – 55HRC	F7030	—
			VP15TF	60 (50 – 100)
			UTi20T	60 (40 – 70)

* **MX3030:**
Depth of cut (mm) = 3

RECOMMENDED FEED PER TOOTH (MM/T.)

Type	Depth of cut (mm)							
	1	2	3	4	5	6	7	8
BRP4	0.40	0.30	0.20	0.10	—	—	—	—
BRP5	0.40	0.35	0.30	0.20	0.10	—	—	—
BRP6	0.50	0.40	0.30	0.25	0.23	0.20	—	—
BRP8	0.60	0.50	0.45	0.40	0.33	0.30	0.25	0.20

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