MOLDINO
The Edge To Innovation

RV type

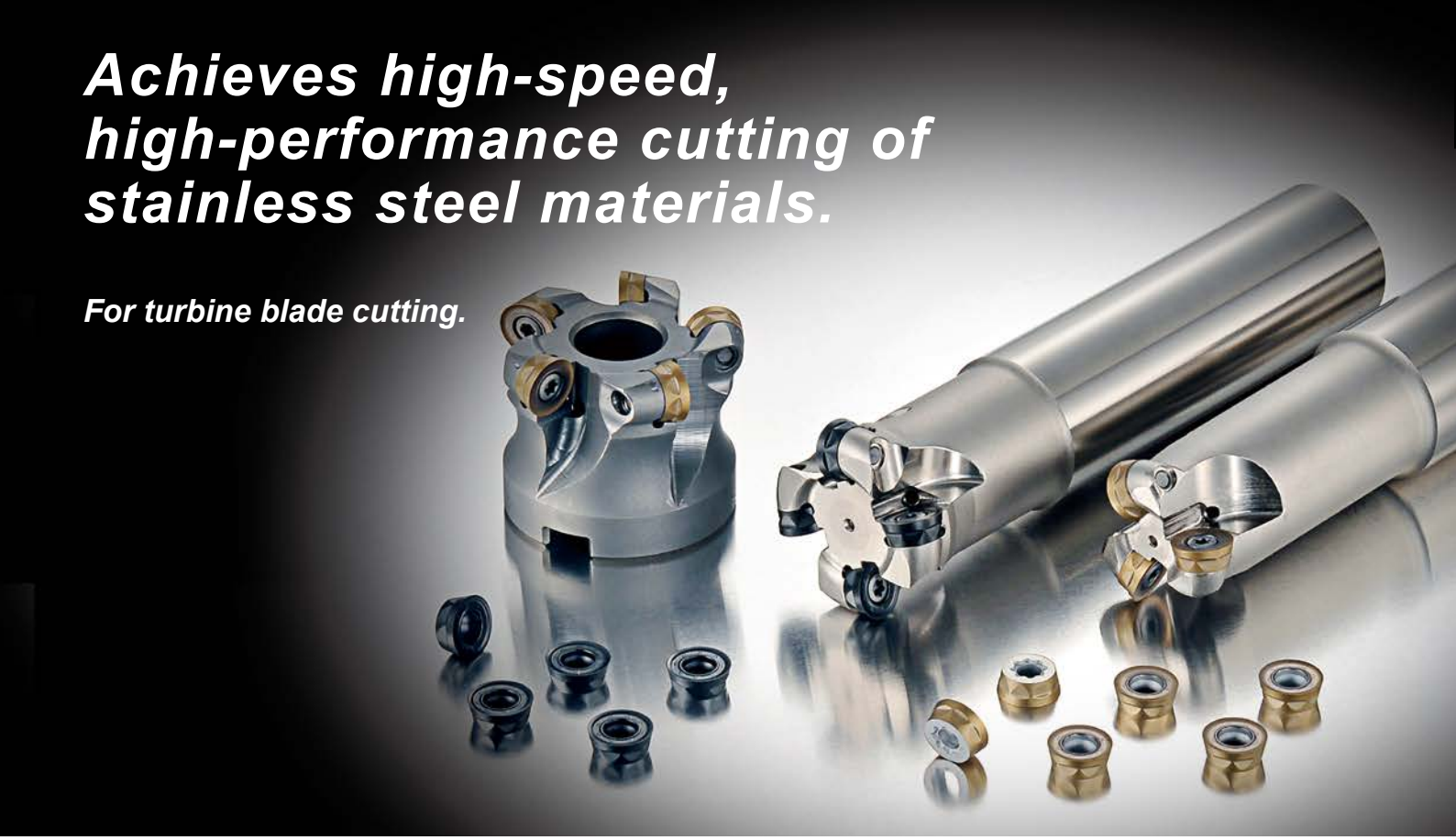
Radius Mill RV

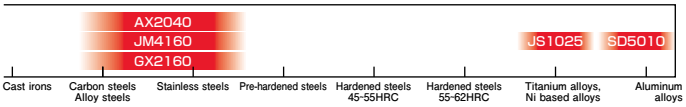
MOLDINO Tool Engineering, Ltd.

New Product News | No.1224E-10 | 2022-11

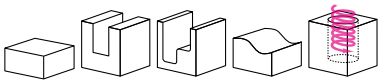
Achieves high-speed, high-performance cutting of stainless steel materials.

For turbine blade cutting.



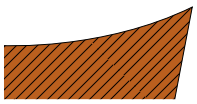
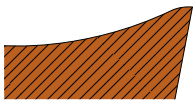
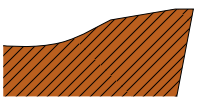


Applications



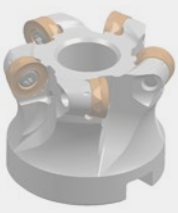
Features 01 Lineup of breakers and coating materials suitable for difficult to cut materials

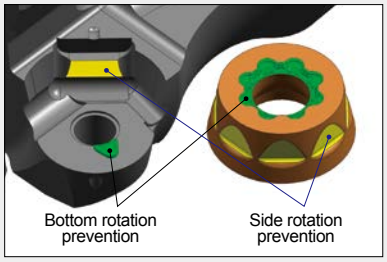
- 3 types of breakers are available for cutting stainless steels, titanium alloys, Ni based alloys, and aluminum alloys.

		Sharp-edge A8 Type	Easy cutting breaker B8 Type	Strong edge breaker C8 Type
Insert cross section				
Grade	JM4160	–	Stainless steels (Wet cutting)	
	AX2040 GX2160	–	Stainless steels (Dry cutting)	
	JS1025	Titanium alloys (finishing)	Titanium alloys, Ni based alloys	–
	SD5010	Aluminum alloys	–	–

Features 02 We developed an original rotation-prevention mechanism to achieve secure indexing of inserts.

- Secure insert indexing is achieved with rotation-prevention mechanism in 2 locations.
- Improved attaching operability enables reliable error prevention.





Features 03 Newly developed coating grade for stainless steel materials cutting

AX2040 Features

C4t 4th generation CVD Coating

Welding Resistance

Applies an aluminum nitride layer with crystalline structure for excellent welding resistance.

Heat Resistance

New layer with high Al content suppresses the progression of heat cracking that occurs in dry high-speed cutting.

Toughness

New layer with new structure having high chipping resistance achieves long life.

Crater Resistance

Applies an aluminum titanium nitride layer with columnar structure for excellent crater wear resistance in dry high-speed cutting.

JM4160 Features

- Employs a carbide substrate with "AJ Coating", high toughness and chipping resistance.

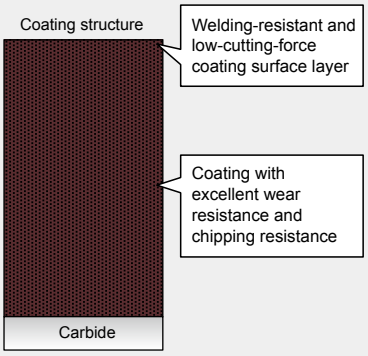
Features

- Employs a carbide substrate with high toughness and the new "AJ Coating" to improve wear resistance and chipping resistance when machining stainless steel materials.
- Employs AJ Coating with excellent welding resistance to reduce the welding of work material that occurs when machining stainless steel materials.

Function

- Improved adhesion and optimized coating structure improve the chipping resistance and results long tool life in the wet-cutting of stainless steel materials.

Layer structure **AJ Coating**



GX2160 Features

- Adopt smooth α alumina layer with excellent heat resistance and CVD coating with excellent wear resistance.

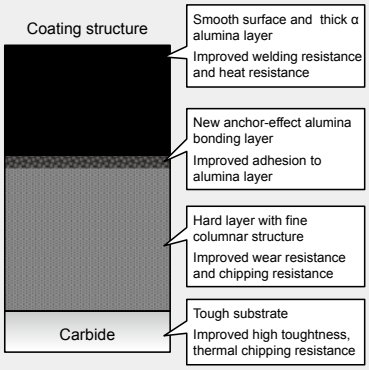
Features

- Increasing the fineness of the membrane's columnar structure improves wear resistance.

Function

- Adopt CVD Coating with excellent heat resistance improves wear resistance and provides long life when dry-cutting stainless steel materials.

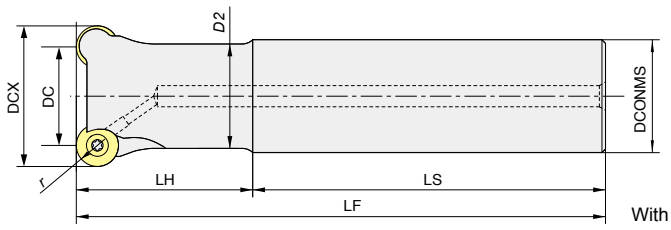
Layer structure **GX Coating**



Line Up

Straight shank type RV○S○○○R-○

Numeric figure in a circle ○ and alphabetical character comes in a square □.

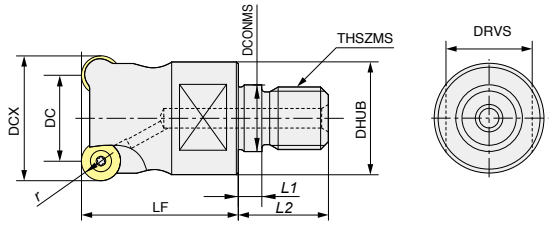


With coolant hole

	Item code	Stock	No.of flutes	Size(mm) r	DCX	DC	LF	DCONMS	LH	LS	D2	Inserts
Shank type	RV3S025R-3	●	3	5	25	15	140	25	60	80	21	RP□T10T3M0□N-□○
	RV3S032R-4	●	4	5	32	22	150	32	70	80	28	
	RV3S040R-5	●	5	5	40	30	150	32	70	80	30	
	RV4S032R-3	●	3	6	32	20	150	32	70	80	28	RP□T1204M0□N-□○
	RV4S040R-3	●	3	6	40	28	150	32	50	100	29.6	
	RV4S040R-4	●	4	6	40	28	150	32	50	100	29.6	

Modular Type RV○M○○○R-○

Numeric figure in a circle ○ and alphabetical character comes in a square □.



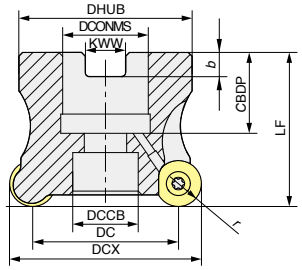
With coolant hole

	Item code	Stock	No.of flutes	Size(mm) r	DCX	DC	LF	DCONMS	THSZMS	DHUB	L1	L2	DRVS	Inserts
Modular type	RV3M025R-3	●	3	5	25	15	35	12.5	M12	20.8	5.5	22	17	RP□T10T3M0□N-□○
	RV3M032R-4	●	4	5	32	22	40	17	M16	28.8	6	23	22	
	※RV3M040R-5	●	5	5	40	30	40	17	M16	28.8	6	23	22	
	RV4M032R-3	●	3	6	32	20	40	17	M16	28.8	6	23	22	RP□T1204M0□N-□○
	※RV4M040R-3	●	3	6	40	28	40	17	M16	28.8	6	23	22	
	※RV4M040R-4	●	4	6	40	28	40	17	M16	28.8	6	23	22	

【Note】 When ※ and carbide shank are used together as a set, there is no interference.
Do not apply lubricants such as grease, etc. to the "contact faces" and "modular screws" of the "modular mill", "dedicated shanks" and "dedicated arbor".

Bore type RV○B○○○R-○/RV○B○○○RM-○

Numeric figure in a circle ○ and alphabetical character comes in a square □.



With coolant hole

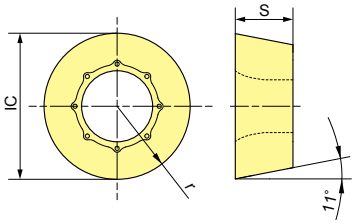
	Item code	Stock	No.of flutes	Size(mm) r	DCX	DC	DHUB	LF	DCONMS	DCCB	KWW	b	CBDP	Inserts
Internal diameter inch size	RV4B050R-5	●	5	6	50	38	45	40	22.225	17	8.4	5	19	RP□T1204M0□N-□○
	RV4B063R-6	●	6	6	63	51	58	40	22.225	17	8.4	5	19	
	RV4B080R-7	●	7	6	80	68	76	63	31.75	26	12.7	8	32	
Internal diameter mm size	RV3B040RM-5	●	5	5	40	30	35	40	16	13.2	8.4	5.6	19	RP□T10T3M0□N-□○
	RV3B042RM-5	●	5	5	42	32	35	40	16	13.2	8.4	5.6	19	
	RV4B040RM-4	●	4	6	40	28	35	40	16	13.2	8.4	5.6	19	RP□T1204M0□N-□○
	RV4B042RM-4	●	4	6	42	30	35	40	16	13.2	8.4	5.6	19	
	RV4B050RM-5	●	5	6	50	38	45	40	22	17	10.4	6.3	20	
	RV4B063RM-6	●	6	6	63	51	58	40	22	17	10.4	6.3	20	
	RV4B080RM-7	●	7	6	80	68	76	50	27	20	12.4	7	22	

【Note】 Arbor screw is not included.

● : Stocked Items. – Mark : Not manufactured.

Line Up

Inserts



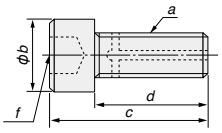
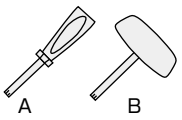
M	Stainless steels	■ (Dry)	■ (Wet)	■ (Dry)			■ General cutting
N	Aluminum alloys					■	
S	Titanium alloys				■		

Item code	Tolerance class	AX Coating	AJ Coating	GX Coating	JS Coating	SD Coating	Size(mm)		
		AX2040	JM4160	GX2160	JS1025	SD5010	*r*	IC	S
RPET10T3M0FN-A8	E	–	–	–	●	●	**5**	**10**	**3.97**
RPMT10T3M0EN-B8	M	●	●	●	–	–			
RPMT10T3M0EN-C8		●	●	●	–	–			
RPHT10T3M0EN-B8	H	●	●	●	●	–			
RPHT10T3M0EN-C8		●	●	●	–	–			
RPET1204M0FN-A8	E	–	–	–	●	●	**6**	**12**	**4.76**
RPMT1204M0EN-B8	M	●	●	●	–	–			
RPMT1204M0EN-C8		●	●	●	–	–			
RPHT1204M0EN-B8	H	●	●	●	●	–			
RPHT1204M0EN-C8		●	●	●	–	–			

【Note】 Please note that the AX Coating, GX Coating and JS Coating do not cause a reaction in conductive touch sensors.

Parts

Numeric figure in a circle ◌.

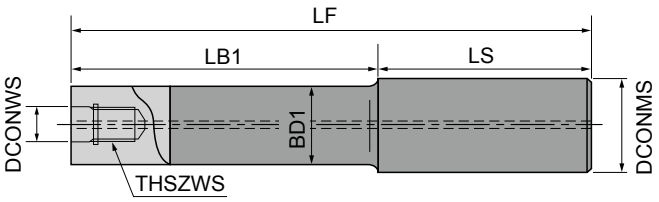
Parts		Clamp screw		Arbor screw※2						Screw driver / Wrench		Screw anti-seizure agent
Shape / Cutter body				 With air hole						 A B		
			Fastening torque (N·m)	Item code	*a*	*ϕb*	*c*	*d*	*f*		Shape	
Shank	RV3S0◌◌R-◌	265-141	2.0	–	–	–	–	–	–	104-T10	A	P-37
	RV4S0◌◌R-◌	262-142	2.9	–	–	–	–	–	–	104-T15	A	
Modular	RV3M0◌◌R-◌	265-141	2.0	–	–	–	–	–	–	104-T10	A	
	RV4M0◌◌R-◌	262-142	2.9	–	–	–	–	–	–	104-T15	A	
Bore inch size	RV4B050R-5 RV4B063R-6	262-142	2.9	100-178	M10×1.5	16	35	25	8	105-T15	B	
	RV4B080R-7	262-142	2.9	100-180※1	M16×2.0	24	51	35	14			
Bore mm size	RV3B0◌◌R-◌	265-141	2.0	100-183	M8×1.25	13	33	25	6	104-T10	A	
	RV4B040RM-4 RV4B042RM-4	262-142	2.9	100-183	M8×1.25	13	33	25	6	105-T15	B	
	RV4B050RM-5 RV4B063RM-6	262-142	2.9	100-178	M10×1.5	16	35	25	8			
	RV4B080RM-7	262-142	2.9	100-179※1	M12×1.75	18	42	30	10			

※1 Part size for arbor screw for Ø80 is different due to inlay size. ※2 When supplying air or cutting oil to each cutting flute, please use this arbor screw.

【Note】 The clamp screw is a consumable part. Since replacement life depends on the use environment, it is recommended that it be replaced at an early stage.
Includes one spare clamp screw.
Even with the screws included with the arbor, the arbor can be used as it is for center through.

The Shanks for Modular Mill

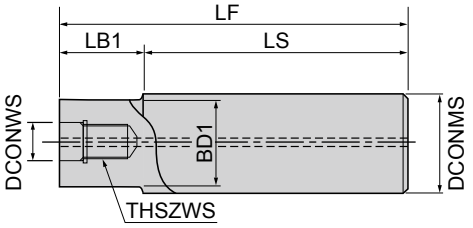
Carbide Shank



Item code	Stock	Size(mm)							Cutter body	With/ without air hole
		DCONWS	THSZWS	LF	LB1	LS	BD1	DCONMS		
ASC25-12.5-145-65	●	12.5	M12	145	65	80	23	25	φ25※1	○
ASC25-12.5-215-115	●			215	115	100				
ASC25-12.5-265-145	●			265	145	120				
ASC25-12.5-315-195	●			315	195	120				
ASC25-12.5-265-65	●	12.5	M12	265	65	200	23	25	φ25※1	○
ASC25-12.5-315-65	●			315		250				
ASC32-17-160-80	●	17	M16	160	80	80	28	32	φ32※1 〈φ40〉	○
ASC32-17-210-110	●			210	110	100				
ASC32-17-260-140	●			260	140	120				
ASC32-17-310-190	●			310	190	120				
ASC32-17-360-240	●			360	240	120				
ASC32-17-260-80	●	17	M16	260	80	180	28	32	φ32※1 〈φ40〉	○
ASC32-17-310-80	●			310		230				
ASC32-17-360-80	●			360		280				

【Note】①Commercial milling chucks or shrink-fit holders can be used.
②For the Ø40 size, it is recommended that the overhang be 200mm or less.
③For ※1, since the cutter diameter is smaller than the shank diameter, interference occurs at the shank.

Steel Shank



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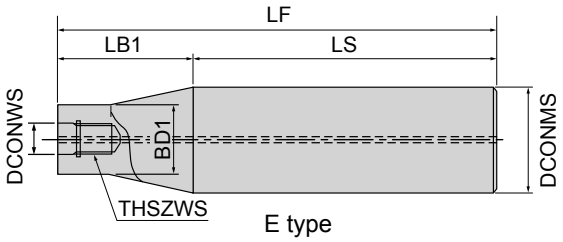


E type

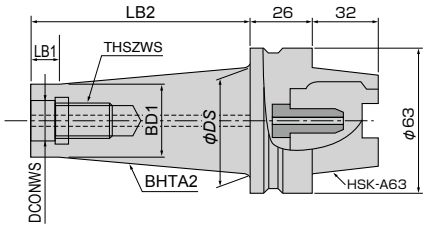
※For neck section or total length, additional machining to user specifications is possible.

Item code	Stock	Size(mm)							Type	Cutter body	With/ without air hole
		DCONWS	THSZWS	LF	LB1	LS	BD1	DCONMS			
AS25-12.5-115-35	●	12.5	M12	115	35	80	23	25	D	φ25※1	○
AS32-17-110-30	●	17	M16	110	30	80	28	32	D	φ32※1 φ40	○
AS42-17-360-90	●	17	M16	360	90	270	28	42	E	φ32※1 φ40※1	○

【Note】①Commercial milling chucks can be used.
②For ※1, since the cutter diameter is smaller than the shank diameter, interference occurs at the shank.

Modular Mill Arbor

HSK

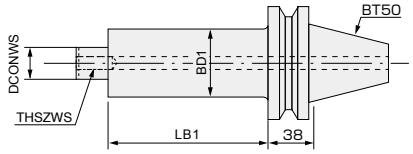


Item code	Stock	Size(mm)							With/ without air hole
		DCONWS	THSZWS	BD1	φDS	LB2	LB1	BHTA2	
HSK-A63-12.5-35-21	●	12.5	M12	21	24.3	35	-	3°	○
HSK-A63-12.5-65-21	●				27.5	65	10	3°	
HSK-A63-12.5-65-21S					48	65	10	12°	
HSK-A63-12.5-115-21	●				32.7	115	10	3°	
HSK-A63-17-40-28	●	17	M16	28	31.8	40	-	3°	
HSK-A63-17-60-28	●				33.9	60	10	3°	
HSK-A63-17-60-28S					48	60	10	9.5°	
HSK-A63-17-110-28	●				39.2	110	10	3°	

【Note】Coolant Pipe is attached.

Bore Type Arbor

Arbor



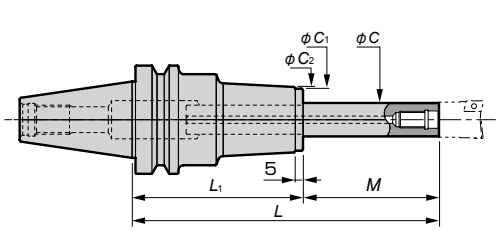
With air hole

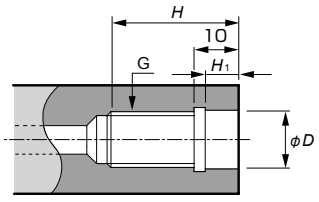
Item code	Stock	Size(mm)				Weight (kgf)	Arbor screw	Cutter body
		DCONWS	THSZWS	LB1	BD1			
BT50-22.225- 50-50	●	22.225	M10	50	47	4.3	100-174	RV4B050R-5
BT50-22.225-100-50	●			100		5.0		
BT50-22.225-150-50	●			150		5.7		
BT50-22.225-200-50	●			200		6.4		
BT50-22.225-250-50	●			250		7.1		
BT50-22.225- 50-63	●	22.225	M10	50	60	4.8	100-174	RV4B063R-6
BT50-22.225-100-63	●			100		5.9		
BT50-22.225-150-63	●			150		7.0		
BT50-22.225-200-63	●			200		8.1		
BT50-22.225-250-63	●			250		9.3		
BT50-22.225-350-63	●			350		11.5		
BT50-31.75- 80-80	●	31.75	M16	80	76	6.8	100-213	RV4B080R-7
BT50-31.75-130-80	●			130		8.5		
BT50-31.75-180-80	●			180		10.2		
BT50-31.75-260-80	●			260		12.9		
BT50-31.75-330-80	●			330		15.4		

【Note】The arbor screw for clamping a cutter is attached on an arbor, not to cutter bodies. In addition, since the included screw is for center-through use, when supplying air or cutting fluid to each individual flute, arbor screws (sold separately) are necessary.

● : Stocked Items. No Mark : Manufactured upon request only.

Red screw arbor





Dimensions for the Modular Mill mounting

■Caution

- Some of the indexable end mills cannot be attached to the RED screw arbor. Please check your indexable end mills for conformance to the dimensions, or please contact MOLDINO Tool Engineering, Ltd.
- Because cutting resistance is greater than the tool holder connection force associated with the machine spindle, please reduce the recommended cutting conditions by 50% for the RED screw arbors marked with ※. Otherwise, the tool holder shank may experience fretting corrosion or fall out of the machine spindle.

	Item code	Stock	Size(mm) G	φD	H	H1	φC	L	M	L1	φC1	φC2	Weight (kg)	Rigidity value (μm) δ
BT40	BT40-RSG12-125-M25		M12	12.5	22	6	24	125		100	43	45	2.0	0.3
	BT40-RSG12-155-M25							155	25	130			2.4	0.4
	BT40-RSG12-185-M25							185		160			2.7	0.5
	BT40-RSG12-150-M50							150		100			2.1	0.5
	BT40-RSG12-180-M50							180	50	130			2.5	0.7
	BT40-RSG12-210-M50							210		160			2.8	0.9
	BT40-RSG12-175-M75							175		100			2.3	0.9
	BT40-RSG12-205-M75							205	75	130			2.7	1.1
	BT40-RSG12-235-M75							235		160			3.0	1.3
	BT40-RSG12-200-M100							200		100			2.4	1.4
	BT40-RSG12-230-M100							230	100	130			2.8	1.6
	BT40-RSG12-260-M100							260		160			3.1	1.9
	BT40-RSG12-225-M125							225		100			2.6	2.1
	BT40-RSG12-255-M125							255	125	130			3.0	2.4
	BT40-RSG12-285-M125							285		160			3.3	2.8
	BT40-RSG16-125-M25		M16	17	25	6	29	125	25	100	52	54	2.6	0.2
	BT40-RSG16-150-M50							150	50				2.8	0.3
	BT40-RSG16-175-M75							175	75				3.0	0.5
	BT40-RSG16-200-M100							200	100				3.2	0.8
	BT40-RSG16-225-M125 ※							225	125				3.4	1.2
BT50	BT50-RSG12-140-M25		M12	12.5	22	6	24	140		115	43	45	4.6	0.2
	BT50-RSG12-170-M25							170	25	145			5.0	0.3
	BT50-RSG12-200-M25							200		175			5.8	0.4
	BT50-RSG12-165-M50							165		115			4.7	0.5
	BT50-RSG12-195-M50							195	50	145			5.1	0.6
	BT50-RSG12-225-M50							225		175			5.9	0.6
	BT50-RSG12-190-M75							190		115			4.9	0.8
	BT50-RSG12-220-M75							220	75	145			5.3	1.0
	BT50-RSG12-250-M75							250		175			6.1	1.0
	BT50-RSG12-215-M100							215		115			5.0	1.3
	BT50-RSG12-245-M100							245	100	145			5.4	1.5
	BT50-RSG12-275-M100							275		175			6.2	1.6
	BT50-RSG12-240-M125							240		115			5.2	2.1
	BT50-RSG12-270-M125							270	125	145			5.6	2.3
	BT50-RSG12-300-M125							300		175			6.4	2.4
	BT50-RSG12-265-M150							265		115			5.3	3.0
	BT50-RSG12-295-M150							295	150	145			5.7	3.3
	BT50-RSG12-325-M150							325		175			6.5	3.4
	BT50-RSG12-290-M175							290		115			5.5	4.2
	BT50-RSG12-320-M175							320	175	145			5.9	4.6
	BT50-RSG12-350-M175							350		175			6.7	4.6
	BT50-RSG16-140-M25		M16	17	25	6	29	140		115	52	54	4.8	0.2
	BT50-RSG16-170-M25							170	25	145			5.4	0.2
	BT50-RSG16-200-M25							200		175			6.6	0.2
	BT50-RSG16-165-M50							165		115			5.0	0.3
	BT50-RSG16-195-M50							195	50	145			5.6	0.4
	BT50-RSG16-225-M50							225		175			6.8	0.4
	BT50-RSG16-190-M75							190		115			5.3	0.5
	BT50-RSG16-220-M75							220	75	145			5.9	0.6
	BT50-RSG16-250-M75							250		175			7.0	0.6
	BT50-RSG16-215-M100							215		115			5.5	0.7
	BT50-RSG16-245-M100							245	100	145			6.1	0.9
	BT50-RSG16-275-M100							275		175			7.2	0.9
	BT50-RSG16-240-M125							240		115			5.7	1.1
	BT50-RSG16-270-M125							270	125	145			6.3	1.3
	BT50-RSG16-300-M125							300		175			7.4	1.3
	BT50-RSG16-265-M150							265		115			5.9	1.6
	BT50-RSG16-295-M150							295	150	145			6.5	1.8
	BT50-RSG16-325-M150							325		175			7.7	1.8
	BT50-RSG16-290-M175							290		115			6.1	2.2
	BT50-RSG16-320-M175							320	175	145			6.7	2.4
	BT50-RSG16-350-M175							350		175			7.9	2.5
	BT50-RSG16-315-M200							315		115			6.3	3.0
	BT50-RSG16-345-M200							345	200	145			6.9	3.2
	BT50-RSG16-375-M200							375		175			8.1	3.3
	BT50-RSG16-340-M225							340		115			6.5	3.9
	BT50-RSG16-370-M225							370	225	145			7.1	4.1
	BT50-RSG16-400-M225							400		175			8.3	4.2

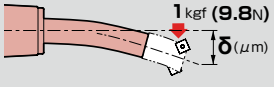
	Item code	Stock	Size(mm) G	φD	H	H1	φC	L	M	L1	φC1	φC2	Weight (kg)	Rigidity value (μm) δ
A63	A63-RSG8-105-M25		M8	8.5	18	6.5	15	105		80	30	32	1.3	0.6
	A63-RSG8-135-M25							135	25	110			1.4	0.7
	A63-RSG8-165-M25							165		140			1.9	0.8
	A63-RSG12-125-M25		M12	12.5	22	6	24	125		100	43	45	1.9	0.3
	A63-RSG12-155-M25							155	25	130			2.3	0.4
	A63-RSG12-185-M25							185		160			2.7	0.5
	A63-RSG12-150-M50							150		100			2.0	0.5
	A63-RSG12-180-M50							180	50	130			2.4	0.6
	A63-RSG12-210-M50							210		160			2.8	0.8
	A63-RSG12-175-M75							175		100			2.2	0.9
	A63-RSG12-205-M75							205	75	130			2.6	1.0
	A63-RSG12-235-M75							235		160			3.0	1.3
	A63-RSG12-200-M100							200		100			2.3	1.4
	A63-RSG12-230-M100							230	100	130			2.7	1.6
	A63-RSG12-260-M100							260		160			3.1	1.9
	A63-RSG12-225-M125							225		100			2.5	2.1
	A63-RSG12-255-M125							255	125	130			2.9	2.4
	A63-RSG12-285-M125							285		160			3.3	2.7
	A63-RSG12-250-M150							250		100			2.6	3.1
	A63-RSG12-280-M150							280	150	130			3.0	3.4
	A63-RSG12-310-M150							310		160			3.4	3.8
	A63-RSG16-140-M25		M16	17	25	6	29	140	25	115	52	54	2.8	0.2
	A63-RSG16-165-M50							165	50				3.2	0.4
	A63-RSG16-190-M75							190	75				3.6	0.6
	A63-RSG16-215-M100							215	100				2.8	0.9
	A63-RSG16-240-M125 ※							240	125				2.8	1.3
	A63-RSG16-265-M150 ※							265	150				3.2	1.9
	A63-RSG16-290-M175 ※							290	175				3.6	2.5
A100	A100-RSG12-140-M25		M12	12.5	22	6	24	140		115	43	45	3.4	0.3
	A100-RSG12-170-M25							170	25	145			3.7	0.4
	A100-RSG12-200-M25							200		175			4.7	0.4
	A100-RSG12-165-M50							165		115			3.5	0.5
	A100-RSG12-195-M50							195	50	145			3.8	0.6
	A100-RSG12-225-M50							225		175			4.8	0.6
	A100-RSG12-190-M75							190		115			3.7	0.8
	A100-RSG12-220-M75							220	75	145			4.0	1.0
	A100-RSG12-250-M75							250		175			5.0	1.0
	A100-RSG12-215-M100							215		115			3.8	1.4
	A100-RSG12-245-M100							245	100	145			4.1	1.6
	A100-RSG12-275-M100							275		175			5.1	1.6
	A100-RSG12-240-M125							240		115			4.0	2.1
	A100-RSG12-270-M125							270	125	145			4.3	2.4
	A100-RSG12-300-M125							300		175			5.3	2.4
	A100-RSG12-265-M150							265		115			4.1	3.0
	A100-RSG12-295-M150							295	150	145			4.4	3.4
	A100-RSG12-325-M150							325		175			5.4	3.4
	A100-RSG12-290-M175							290		115			4.3	4.3
	A100-RSG12-320-M175							320	175	145			4.6	4.6
	A100-RSG12-350-M175							350		175			5.6	4.6
	A100-RSG16-140-M25		M16	17	25	6	29	140		115	52	54	4.0	0.2
	A100-RSG16-170-M25							170	25	145			4.5	0.2
	A100-RSG16-200-M25							200		175			5.7	0.2
	A100-RSG16-165-M50							165		115			4.2	0.3
	A100-RSG16-195-M50							195	50	145			4.7	0.4
	A100-RSG16-225-M50							225		175			5.9	0.4
	A100-RSG16-190-M75							190		115			4.5	0.5
	A100-RSG16-220-M75							220	75	145			5.0	0.6
	A100-RSG16-250-M75							250		175			6.1	0.6
	A100-RSG16-215-M100							215		115			4.7	0.8
	A100-RSG16-245-M100							245	100	145			5.2	0.9
	A100-RSG16-275-M100							275		175			6.3	0.9
	A100-RSG16-240-M125							240		115			4.9	1.1
	A100-RSG16-270-M125							270	125	145			5.4	1.3
	A100-RSG16-300-M125							300		175			6.5	1.3
	A100-RSG16-265-M150							265		115			5.1	1.6
	A100-RSG16-295-M150							295	150	145			5.6	1.8
	A100-RSG16-325-M150							325		175			6.7	1.8
	A100-RSG16-290-M175							290		115			5.3	2.2
	A100-RSG16-320-M175							320	175	145			5.8	2.4
	A100-RSG16-350-M175							350		175			7.0	2.5
	A100-RSG16-315-M200							315		115			5.5	3.0
	A100-RSG16-345-M200							345	200	145			6.0	3.2
	A100-RSG16-375-M200							375		175			7.2	3.3
	A100-RSG16-340-M225							340		115			5.7	3.9
	A100-RSG16-370-M225							370	225	145			6.3	4.2
	A100-RSG16-400-M225							400		175			7.4	4.2

■ Standard accessories
- Coolant duct(HSK)

■ Caution
- The Modular Mill is not a standard accessory.
- Pull stud is not a standard accesorry.
- Please check your Modular Mills for conformance to the dimensions.

δ About the rigidity value

A rigidity value represents the amount of deflection for the entire holder and tool when a bending load of 1 kgf (9.8 N) is applied to the tip of the tool. The smaller the numerical value is, the higher the rigidity and the more accurate the machining.



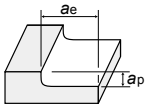
No Mark : Manufactured upon request only. Delivery time is about ten days after an order received.

Recommended Cutting Conditions

※Red indicates primary recommended grade.

Work material	Cutting method	Recommended grade	Breaker shape	Cutting speed Vc(m/min)	Depth of cut ap(mm)	Feed rate fz(mm/t)	Shank type(r5) Modular type(r5)						Bore type(r5)			
							φ25-3 flutes		φ32-4 flutes		φ40-5 flutes		φ40-5 flutes		φ42-5 flutes	
							Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min
Austenite type Ferrite type Stainless steels SUS304 SUS316 SUS430 etc	Dry cutting	AX2040 GX2160	-C8	180~220	2~	0.1~0.2	2,546	1,528	1,989	1,592	1,592	1,592	1,592	1,592	1,516	1,516
					1~2	0.2~0.3	Vc=200m/min、fz=0.2mm/t						Vc=200m/min、fz=0.2mm/t			
					~1	0.4~0.5										
	Wet cutting	JM4160	-B8	90~110	2~	0.1~0.2	1,273	764	995	796	796	796	796	796	758	758
					1~2	0.2~0.3	Vc=100m/min、fz=0.2mm/t						Vc=100m/min、fz=0.2mm/t			
					~1	0.4~0.5										
Martensite type Stainless steels SUS410 SUS420J2 etc	Dry cutting	AX2040 GX2160	-C8	200~240	2~	0.1~0.2	2,801	1,681	2,188	1,751	1,751	1,751	1,751	1,751	1,667	1,667
					1~2	0.2~0.3	Vc=220m/min、fz=0.2mm/t						Vc=220m/min、fz=0.2mm/t			
					~1	0.4~0.5										
	Wet cutting	JM4160	-B8	120~200	2~	0.1~0.2	2,037	1,222	1,592	1,273	1,273	1,273	1,273	1,273	1,213	1,213
					1~2	0.2~0.3	Vc=160m/min、fz=0.2mm/t						Vc=160m/min、fz=0.2mm/t			
					~1	0.4~0.5										
Precipitation-hardened type Stainless steels SUS630 SUS631 etc	Dry cutting	AX2040 GX2160	-C8	160~200	2~	0.1~0.2	2,292	1,375	1,790	1,432	1,432	1,432	1,432	1,432	1,364	1,364
					1~2	0.2~0.3	Vc=180m/min、fz=0.2mm/t						Vc=180m/min、fz=0.2mm/t			
					~1	0.4~0.5										
	Wet cutting	JM4160	-B8	100~180	2~	0.1~0.2	1,528	917	1,194	955	955	955	955	955	909	909
					1~2	0.2~0.3	Vc=120m/min、fz=0.2mm/t						Vc=120m/min、fz=0.2mm/t			
					~1	0.4~0.5										
Aluminum alloys A5052 etc	Dry cutting Wet cutting	SD5010	-A8	300~500	2~	0.1~0.2	3,820	2,292	2,984	2,387	2,387	2,387	2,387	2,387	2,274	2,274
					1~2	0.2~0.3	Vc=300m/min、fz=0.2mm/t						Vc=300m/min、fz=0.2mm/t			
					~1	0.4~0.5										
Titanium alloys Ti-6AL-4V etc	Wet cutting	JS1025	-B8 (Roughing) -A8 (Finishing)	30~50	~2	0.07~0.13	509	153	398	159	318	159	318	159	303	152
							Vc=40m/min、fz=0.1mm/t						Vc=40m/min、fz=0.1mm/t			
Ni based alloys	Wet cutting	JS1025	-B8	30~40	~2	0.06~0.1	446	107	348	111	279	111	279	111	265	106
							Vc=35m/min、fz=0.08mm/t						Vc=35m/min、fz=0.08mm/t			

【Note】 ①These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
②Please note that the AX Coating, GX Coating and JS Coating do not cause a reaction in conductive touch sensors.
③In order to avoid of insert breakage, please change insert earlier.
④Use the appropriate coolant for the work material and machining shape.



Adjustment of cutting conditions

- Feed rate and spindle revolution must be adjusted to correspond to tool overhang and machining conditions.
- Please consider the standard cutting conditions as 100% and adjust the machining conditions by referring to the right table.

		Overhang		
		＜3DCX	3DCX~5DCX	5DCX＜
Surfacing Shoulder cutting	Rotation speed	100%	70%	50%
	Feed rate	100%	70%	50%
Slotting	Rotation speed	100%	70%	50%
	Feed rate	70%	50%	35%
Ramping	Rotation speed	100%	70%	50%
	Feed rate	80%	55%	40%

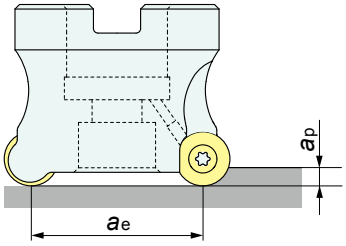
Work material	Cutting method	Shank type(r6)						Bore type(r6)									
		ϕ32-3 flutes		ϕ40-3 flutes		ϕ40-4 flutes		ϕ40-4 flutes		ϕ42-4 flutes		ϕ50-5 flutes		ϕ63-6 flutes		ϕ80-7 flutes	
		Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min	Revolution min^{-1}	Feed speed mm/min
Austenite type Ferrite type Stainless steels SUS304 SUS316 SUS430 etc	Dry cutting	1,989	1,492	1,592	1,194	1,592	1,592	1,592	1,592	1,516	1,516	1,273	1,592	1,011	1,516	796	1,393
		v_c=200m/min、f_z=0.25mm/t						v_c=200m/min、f_z=0.25mm/t									
	Wet cutting	995	746	796	597	796	796	796	796	758	758	637	796	505	758	398	696
		v_c=100m/min、f_z=0.25mm/t						v_c=100m/min、f_z=0.25mm/t									
Martensite type Stainless steels SUS410 SUS420J2 etc	Dry cutting	2,188	1,641	1,751	1,313	1,751	1,751	1,751	1,751	1,667	1,667	1,401	1,751	1,112	1,667	875	1,532
		v_c=220m/min、f_z=0.25mm/t						v_c=220m/min、f_z=0.25mm/t									
	Wet cutting	1,592	1,194	1,273	955	1,273	1,273	1,273	1,273	1,213	1,213	1,019	1,273	808	1,213	637	1,114
		v_c=160m/min、f_z=0.25mm/t						v_c=160m/min、f_z=0.25mm/t									
Precipitation-hardened type Stainless steels SUS630 SUS631 etc	Dry cutting	1,790	1,343	1,432	1,074	1,432	1,432	1,432	1,432	1,364	1,364	1,146	1,432	909	1,364	716	1,253
		v_c=180m/min、f_z=0.25mm/t						v_c=180m/min、f_z=0.25mm/t									
	Wet cutting	1,194	895	955	716	955	955	955	955	909	909	764	955	606	909	477	835
		v_c=120m/min、f_z=0.25mm/t						v_c=120m/min、f_z=0.25mm/t									
Aluminum alloys A5052 etc	Dry cutting Wet cutting	2,984	2,238	2,387	1,790	2,387	2,387	2,387	2,387	2,274	2,274	1,910	2,387	1,516	2,274	1,194	2,089
		v_c=300m/min、f_z=0.25mm/t						v_c=300m/min、f_z=0.25mm/t									
Titanium alloys Ti-6AL-4V etc	Wet cutting	398	119	318	95	318	127	318	127	303	121	255	127	202	121	159	111
		v_c=40m/min、f_z=0.1mm/t						v_c=40m/min、f_z=0.1mm/t									
Ni based alloys	Wet cutting	348	84	279	67	279	89	279	89	265	85	223	89	177	85	139	78
		v_c=35m/min、f_z=0.08mm/t						v_c=35m/min、f_z=0.08mm/t									

Attentions on Safety

①The steel chips may cause cuts, burns or damages to eyes. Be sure to install the safty cover around the tool and wear the safty glasses when carring out any works.
②Do not use non-water-soluble cutting oils.Such oils may result in fire.

Depth of cut

- a_p according to the size of the insert being used.
- It is recommended that a_e be set between 0.3DCX and 0.6DCX.

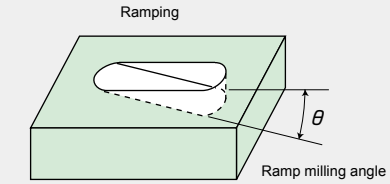


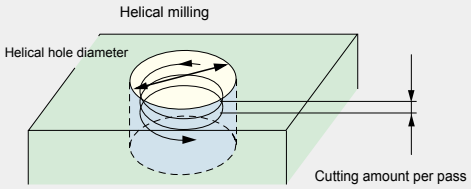
Inserts size	Recommended a_p	Maximum a_p	Recommended a_e
RP□T1204M0	1～3mm	6mm	0.3DCX～0.6DCX
RP□T10T3M0	1～2.5mm	5mm	

Cutting performance

Ramping, Helical Milling

There are restrictions to ramp angle (θ) and adjust (ap) because of designs of cutting edge.

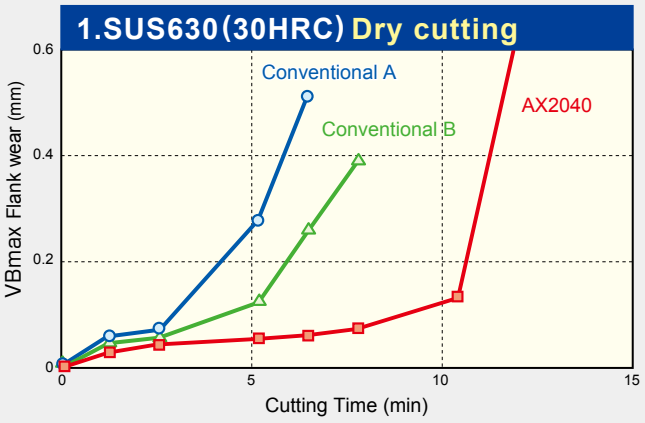


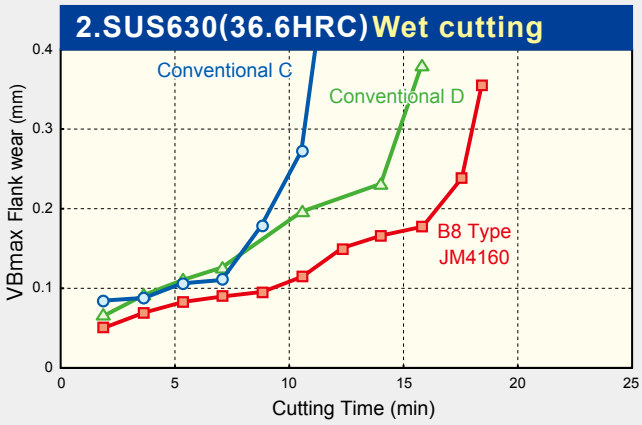


(mm)

Tool dia. DCX	ϕ25	ϕ32	ϕ40	ϕ42	ϕ40	ϕ42	ϕ50	ϕ63	ϕ80
Inserts Size	RP□T10T3M0				RP□T1204M0				
Recommended ramp angle θ	1～1.5 degrees(Use below 3 degrees is recommended.)								
Recommended cutting amount mm	1～2	1.5～2.5	1.5～2.5	1.5～2.5	2～3	2～3	2～3	3	3
Hole Dia.	40～48	54～62	70～78	74～82	68～78	72～82	88～98	114～125	128～158

【Note】Due to swarf evacuation wear safety glasses in the vicinity of the operation.
For helical milling, since chips will accumulate inside the hole, use an air blower or supply coolant to remove chips.





Cutting conditions

Work Material	SUS630 (30HRC)	V_c = 300 m/min(n=1910min^{-1}) f_z = 0.4mm/t(V_f=764mm/min) a_p×a_e = 2×34 mm Dry Single-tip cutting
Tool	RVB4050RM-5	
Insert	RPMT1204M0EN-C8	

Cutting conditions

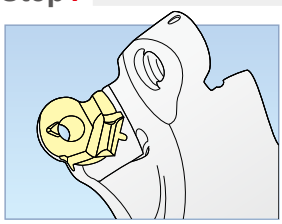
Work Material	SUS630 36.6HRC	V_c = 150 m/min(n=955min^{-1}) f_z = 0.3mm/t(286mm/min) a_p×a_e = 1×30 mm
Insert	RPMT1204M0EN-B8 JM4160	
Tool dia.	ϕ50mm	
Coolant	Water-soluble cutting fluid; Dilution ratio: 5 to 8%	
Overhang	60mm	

Field data

	User	Work material	Tools	Cutting conditions	Result
1	Company A	Plate SUS304	Body : RV4S040R-3 Insert : RPMT1204M0EN-B8 JM4160	Wet cutting v_c = 200m/min, f_z = 0.15mm/t, $a_p \times a_e$ = 1.5×25mm	50% higher efficiency than conventional tools. Tool life is also good.
2	Company B	Machine parts SUS304	Body : RV4S040R-3 Insert : RPMT1204M0EN-B8 JM4160	Wet cutting v_c = 200m/min, f_z = 0.2mm/t, $a_p \times a_e$ = 1.5×20mm	Good results with low wear amount.
3	Company C	Impeller SUS410	Body : RV4B080R-7 Insert : RPMT1204M0EN-B8 GX2160	Dry cutting v_c = 200m/min, f_z = 0.5mm/t, $a_p \times a_e$ = 2×60mm	Good; tool life is approximately 2 times that of conventional tools.
4	Company D	Blade Stainless steels SUS	Body : RV4B050R-5 Insert : RPMT1204M0EN-C8 GX2160	Dry cutting v_c = 330m/min, f_z = 0.24mm/t, $a_p \times a_e$ = 5×12mm	Good; tool life is approximately 2 times that of conventional tools.
5	Company E	Blade Stainless steels SUS	Body : RV4B050RM-5 Insert : RPMT1204M0EN-B8 JM4160	Wet cutting v_c = 200m/min, f_z = 0.5mm/t, $a_p \times a_e$ = 1×35mm	Good; tool life is approximately 1.5 to 2 times that of conventional tools.

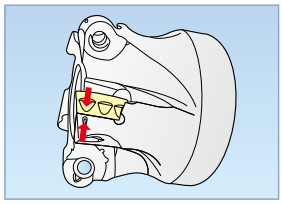
Cautions regarding attachment of inserts

Step1



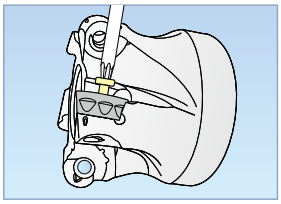
Check that there are no foreign materials in the area where the insert will be attached. (Use a blower, etc. to blow away any materials.)

Step2



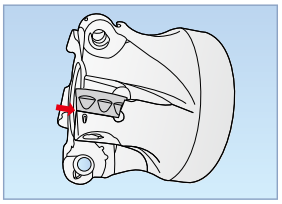
Align the body's mark with the insert's rotation-prevention section and set into place.

Step3



Insert and tighten screw.

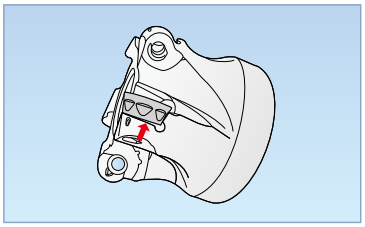
Step4



After attaching, check that there are no gaps between the insert and the seat surface.

Incorrect attachment example

The screw was strongly tightened with a gap between the insert and the seat surface, which could result in the insert breaking.
In addition, if it is used without eliminating the gap, not only will the insert break but it could also lead to damage to the cutter body.



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The diagrams and table data are examples of test results, and are not guaranteed values.
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⚠ Attentions on Safety

1. Attentions regarding handling

(1) When removing the tool from the case (package), be careful not to drop it on your foot or drop it onto the tips of your bare fingers.
(2) When actually setting the inserts, be careful not to touch the cutting flute directly with your bare hands.

2. Attentions regarding mounting

(1) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
(2) If abnormal chattering occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Attentions during use

(1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
(2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
(3) The inserts are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be installed and safety equipment such as safety glasses should be worn to create a safe environment for work.
・Do not use where there is a risk of fire or explosion.
・Do not use non-water-soluble cutting oils. Such oils may result in fire.
(4) Do not use the tool for any purpose other than that for which it is intended, and do not modify it.

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