MITSUBISHI MATERIALS

RS0112

MULTI-FUNCTION SHOULDER MILLING CUTTER





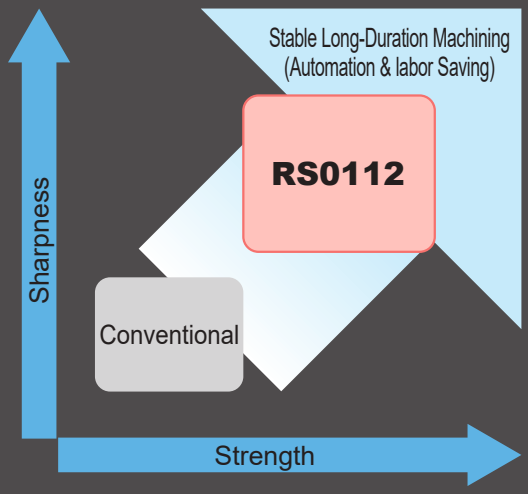
TOOL NEWS **B285A**

Multi-Function Shoulder Milling Cutter

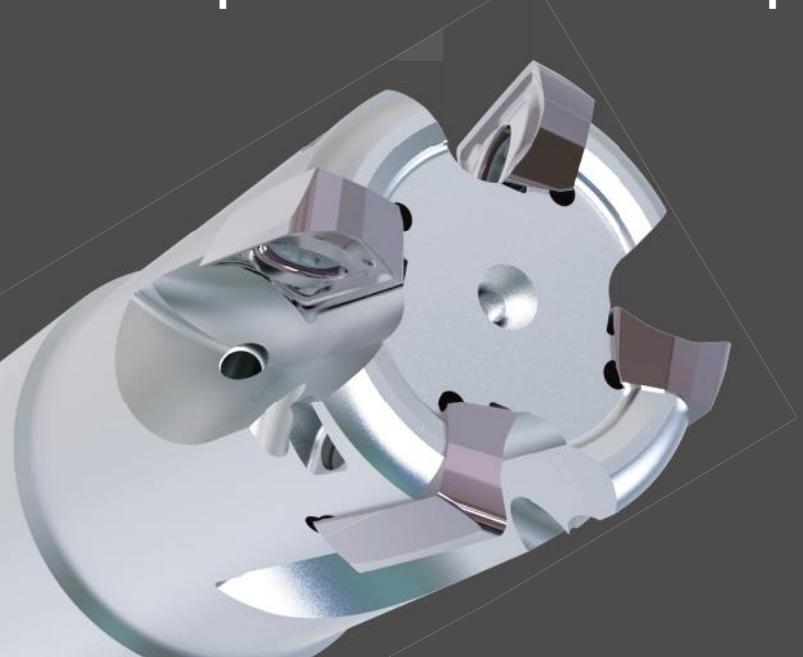
RS0112 NEW

By enabling uninterrupted machining, it reduces shop-floor workload and improves operational efficiency.

In today's machining environments, where automation and labor saving are increasingly advancing, higher productivity is strongly demanded.
Mitsubishi Materials' multi-functional shoulder milling cutter "RS0112" features a proprietary V-insert geometry that delivers an excellent balance of sharp cutting performance and high strength. This enables stable, long-duration machining, making RS0112 an ideal solution not only for high-efficiency machining but also for meeting the growing needs of automation and reduced manpower.
By strongly supporting uninterrupted machining, RS0112 contributes to reducing shop-floor workload while further improving operational efficiency.



High Sharpness Creates High-Precision Surface Finish
Improved Cutting Edge Strength Enables Stable Machining
Superior Surface Finish Improvements



New V-Insert Geometry



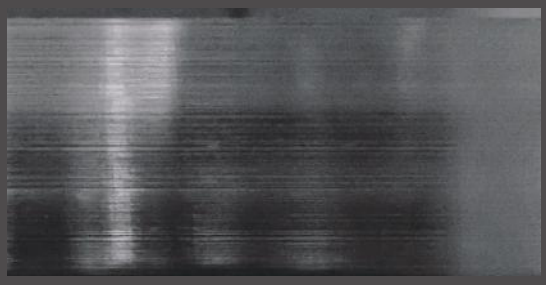
High-Quality Surface Finish

The surface finish achieved by the V-insert geometry also reduces the need for secondary operations.

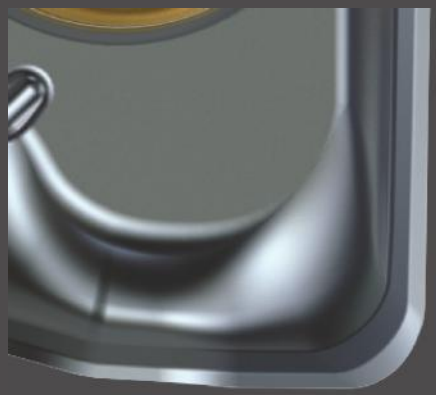
Bottom Surface: Ra=10 µin



Wall Surface Accuracy: Step Height=709 µin



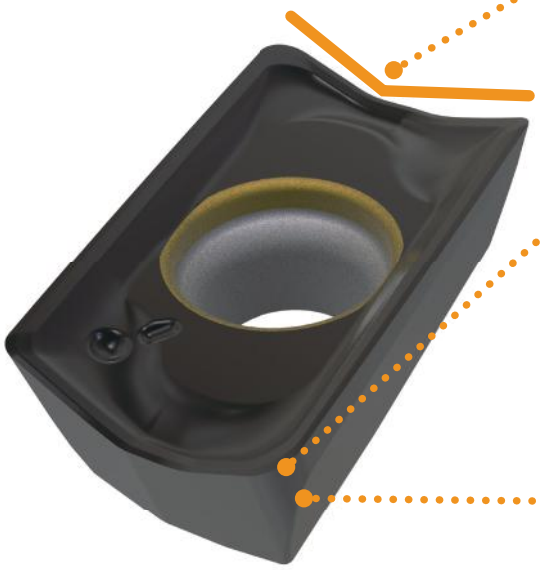
Insert Close-Up



See next page for details.

High Sharpness Creates High-Precision Surface Finish
Improved Cutting Edge Strength Enables Stable Machining

Insert Features

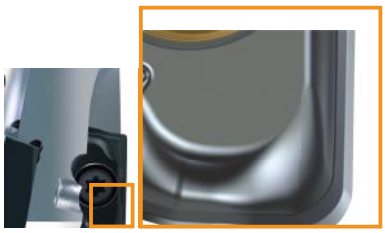


V-Insert Geometry

The wiper edge is designed with a positive geometry to reduce cutting resistance. A proprietary edge preparation process achieves both uniform and smooth honing. As a result, cutting sharpness is enhanced, producing an excellent surface finish.

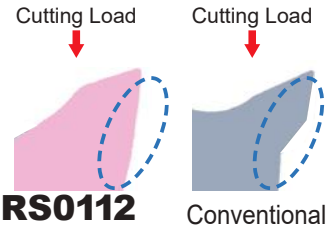
Improved Surface Finish Accuracy

By adopting a high-precision, large-radius cutting edge, high accuracy is achieved on both bottom and wall surfaces.



Improved Cutting Edge Strength

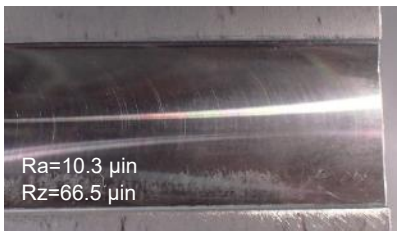
Optimized flank face and rake angle geometry improves resistance to chipping.



4140 Alloy Steel: Surface finish accuracy comparison

The low cutting-resistance design allows smooth chip evacuation, achieving a high-quality bottom surface and step-free wall surfaces.

Bottom Surface



RS0112



Wiper Edge

Enhanced surface quality by a high-precision large-radius edge



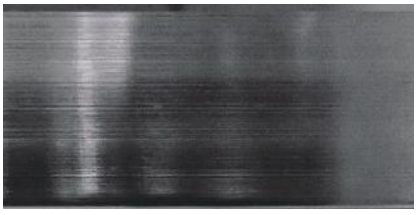
Conventional

<Cutting Conditions>

Material	: AISI 4140 Alloy Steel
Cutter Dia.	: DC=.984 in
Insert	: MP1220 M
Cutting Speed	: vc=820 SFM
Feed per Tooth	: fz=.004 IPT
Depth of Cut	: ap=.039 in
Width of Cut	: ae=.984 in
Cutting Mode	: Dry Cutting Single Insert

Wall Surface

Step Height: 709 µin



RS0112

Step Height: 2047 µin



Conventional



Wall Surface Step Height

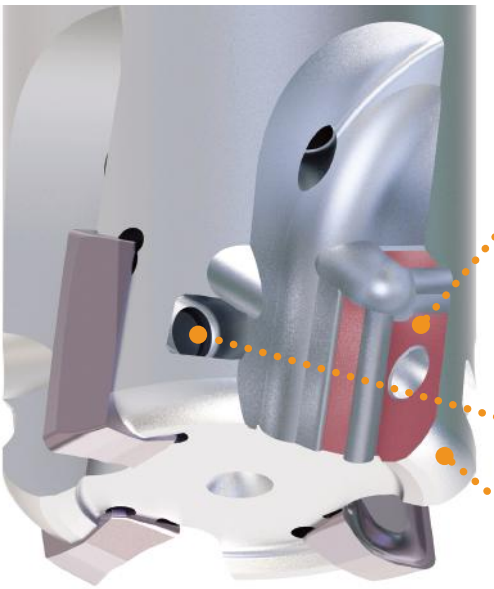
<Cutting Conditions>

Material	: AISI 4140 Alloy Steel
Cutter Dia.	: DC=.984 in
Insert	: MP1220 M
Cutting Speed	: vc=525 SFM
Feed per Tooth	: fz=.004 IPT
Depth of Cut	: ap=.256 in×3
Width of Cut	: ae=.118 in
Cutting Mode	: Dry Cutting Single Insert

Cutter Body Features

Unwavering Durability

RS0112 has been developed with a relentless focus on cutter body performance, delivering unwavering durability.



50% Increase Compared to Conventional Products

The clamping contact surface area has been increased by 50% compared to conventional products.



RS0112



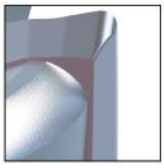
Conventional

40% Increase Compared to Conventional Products

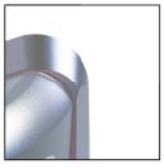
By adopting a fine-pitch thread, the tightening torque has been increased by 40% compared to conventional products, helping to prevent loosening.

Improved Abrasion Resistance and Usability

By increasing the clearance between the insert corner and the cutter body, damage to the cutter body is reduced in the event of insert breakage or during chip abrasion. In addition, even with a larger corner radius, no additional machining of the cutter body is required.



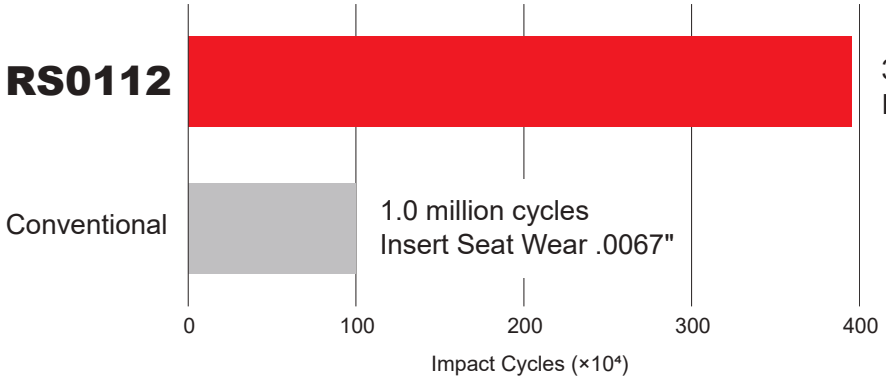
With RE .031" Installed



With RE .126" Installed

4140 Alloy Steel: Insert seat wear comparison

Even under four times the number of impact cycles compared to conventional products, insert seat wear is evenly distributed, resulting in improved durability of the cutter body.



<Cutting Conditions>
Material : AISI 4140 Alloy Steel
Cutter Dia. : DC=.984 in
Cutting Speed : vc=655 SFM
Feed per Tooth : fz=.006 IPT
Depth of Cut : ap=.157 in
Width of Cut : ae=.492 in
Cutting Mode : Dry Cutting
Single Insert

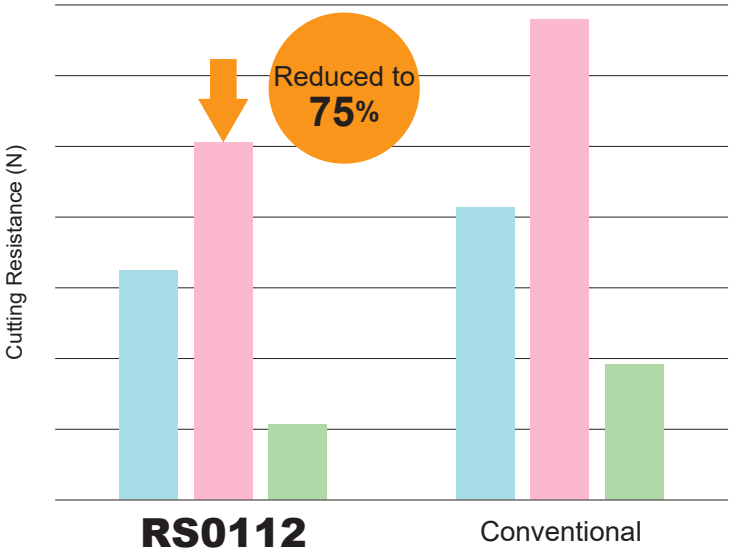
The impact cycle test is conducted to evaluate performance limits and does not guarantee actual product performance.

Balance between Cutting Resistance and Fracture Resistance

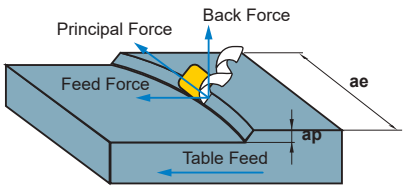
The cutter body is designed to pursue durability while reducing cutting resistance.

4140 Alloy Steel: Cutting resistance comparison

Compared to conventional products, all cutting resistance components—feed force, principal cutting force, and back force—are reduced, enabling stable machining with lower loads during operation.

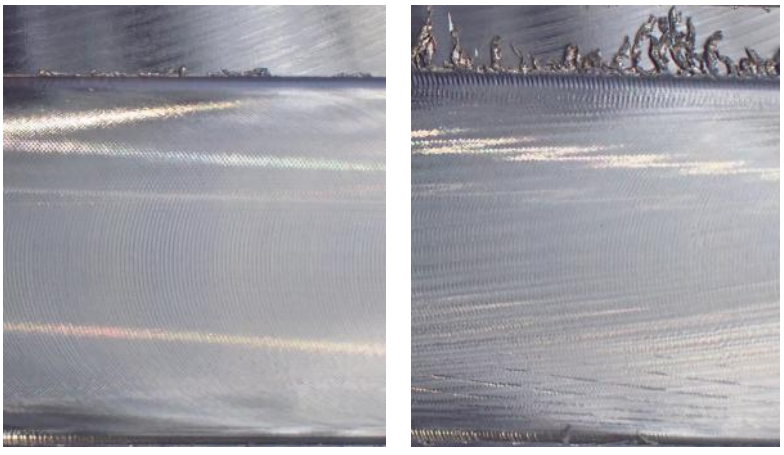


<Cutting Conditions>
Material : AISI 4140 Alloy Steel
Cutter Dia. : DC=.984 in
Insert : MP1230 M
Cutting Speed : vc=525 SFM
Feed per Tooth : fz=.004 IPT
Depth of Cut : ap=.079 in
Width of Cut : ae=.197 in
Cutting Mode : Dry Cutting
Single Insert



Surface Finish Comparison on Small Machine Tools (BT30)

Stable machining is achieved even on small machine tools due to low cutting forces.

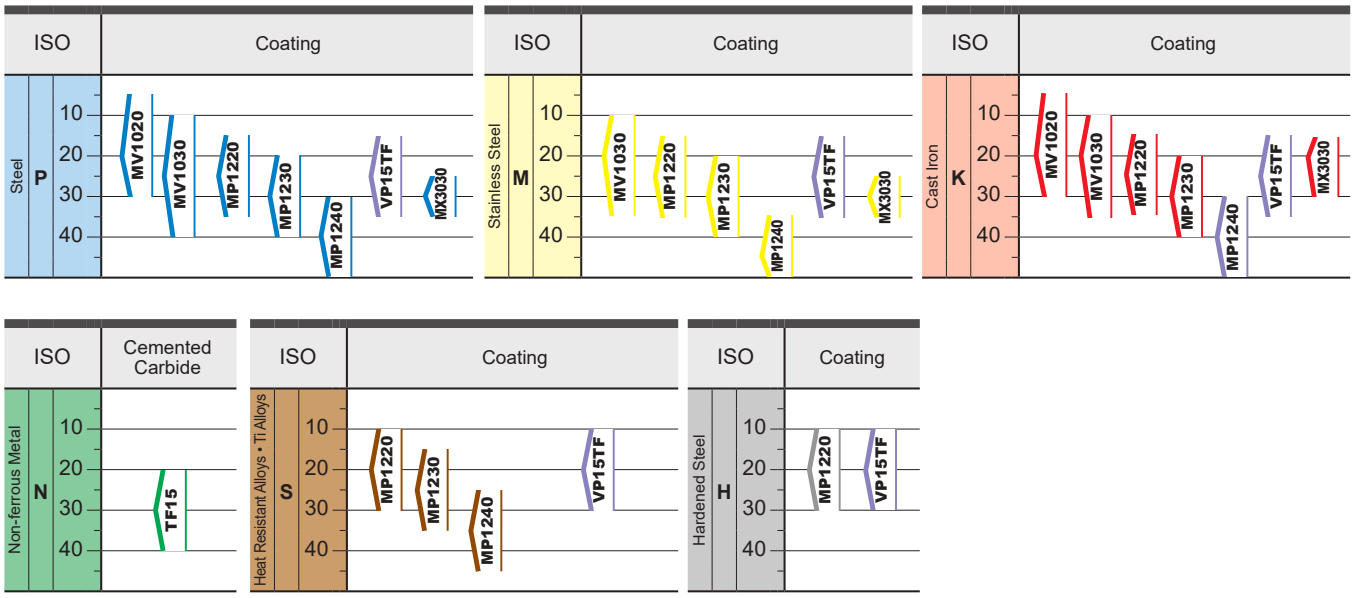


RS0112 Conventional

	RS0112	Conventional
Load Meter	**27%**	31%
Chatter	None	Occurs
Burr	Minor	Large

<Cutting Conditions>
Material : AISI 304
Cutter Dia : DC=.984 in, 3 flute
Insert : MP1230, M
Cutting Speed : vc=195 SFM
Feed per Tooth : fz=.003 IPT
Depth of Cut : ap=.039 in
Width of Cut : ae=.984 in
Cutting Mode : Wet Cutting,
All Flutes
Machine : Vertical MC (BT30)

RS0112 inserts are compatible with a wide range of workpiece materials.



PVD Coated Carbide Grade for Milling

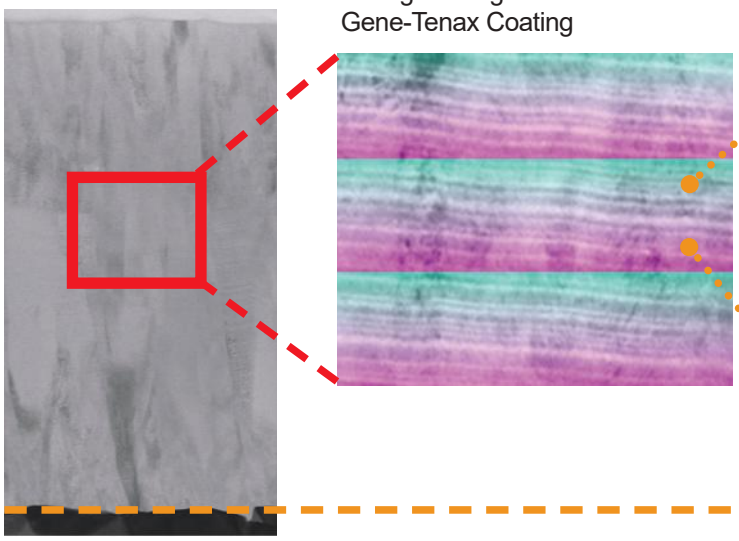
MP1200 Series NEW

MP1220
MP1230
MP1240

New Multilayer PVD Coating for Milling

Gene-Tenax Coating

By controlling the coating structure at the nano level, we have suppressed damage to the coating compared to conventional lamination. By successfully laminating multiple films, we have simultaneously strengthened wear and heat and welding resistance. Additionally the coating is now much less prone to cracking, and with the increased adhesive strength, the most stable grade for milling has been created.



Al-Rich Technology AlTiN-Based

Improved wear and heat resistance.

Original AlTiN Composite Functional Layer

Increasingly resistant to oxidation and welding.

Technology to improve adhesion strength

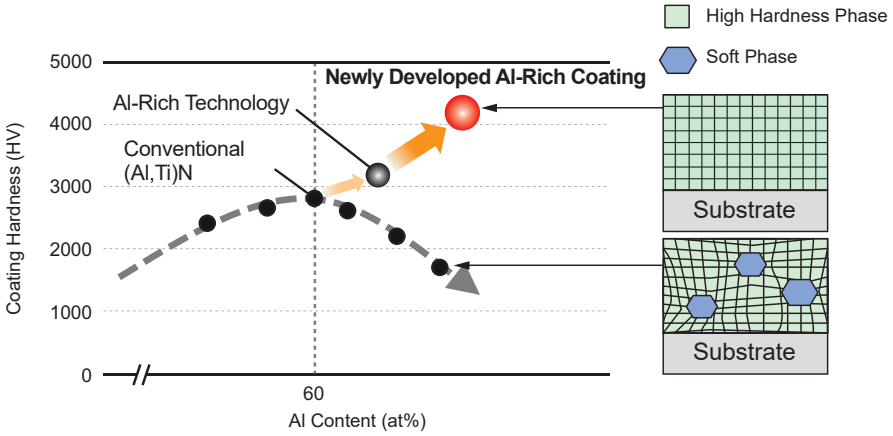
Coated Carbide Grade for Milling

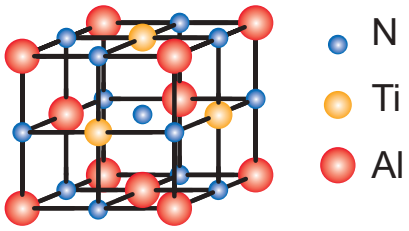
MV1020/MV1030

Newly Developed Al-Rich Coating

Advanced Wear and Thermal Shock Resistance

By adopting the newly developed Al-Rich coating technology, the (Al,Ti)N with a high Al content ratio displays a very high hardness. This greatly improves oxidation and wear 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.
MV1020 offers overwhelmingly superior performance in high-speed cutting, and MV1030 achieves stable performance during interrupted and stainless steel machining.



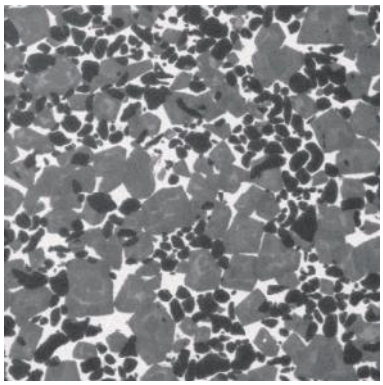


Crystal image of **MV1000** series

Cermet Grade for Milling

MX3030

MX3030 is a cermet grade with excellent fracture resistance, suitable for interrupted cutting and general machining applications.



MX3030

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

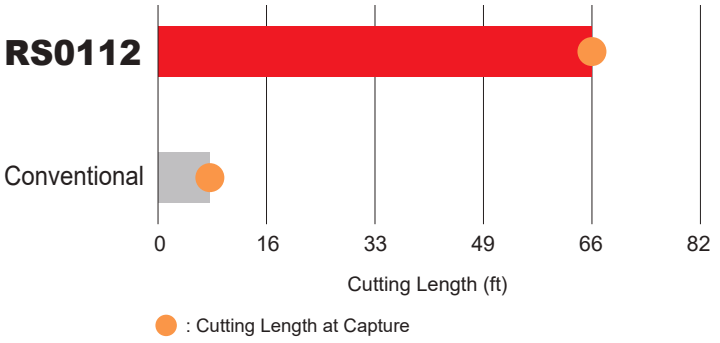
High hardness Ti compound particles are used in the metal → **High wear resistance properties**

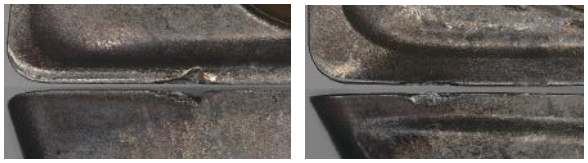
Cutting Performance

It delivers high performance across a wide range of workpiece materials.

304 Stainless Steel: Fracture resistance comparison (Dry cutting)

Low cutting resistance reduces edge chipping, delivering over eight times longer tool life than conventional products.





RS0112
Cutting Length 66 ft

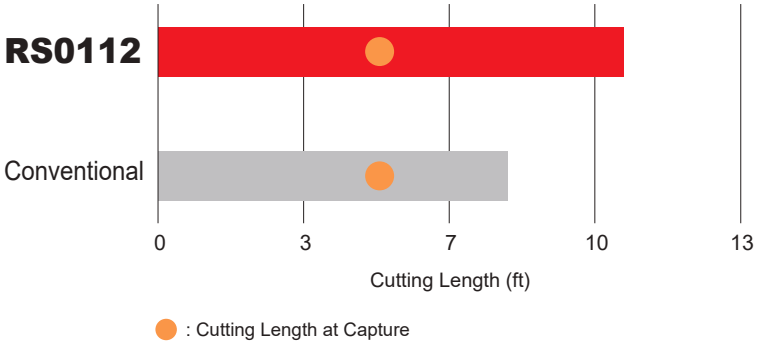
Conventional
Cutting Length 8 ft

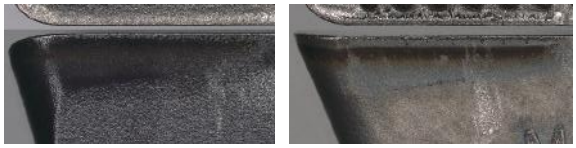
<Cutting Conditions>

Material	: AISI 304 Stainless Steel	Cutter Dia.	: DC=.984 in
Insert	: MV1030 M	Cutting Speed	: vc=560 SFM
Feed per Tooth	: fz=.006 IPT	Depth of Cut	: ap=.157 in
Width of Cut	: ae=.492 in (0.5DC)		
Cutting Mode	: Dry Cutting Single Insert		

304 Stainless steel: Fracture resistance comparison (Wet cutting)

Compared to conventional products, cutting edge thermal cracking is suppressed, achieving more than 1.25 times the tool life.





RS0112
5 ft

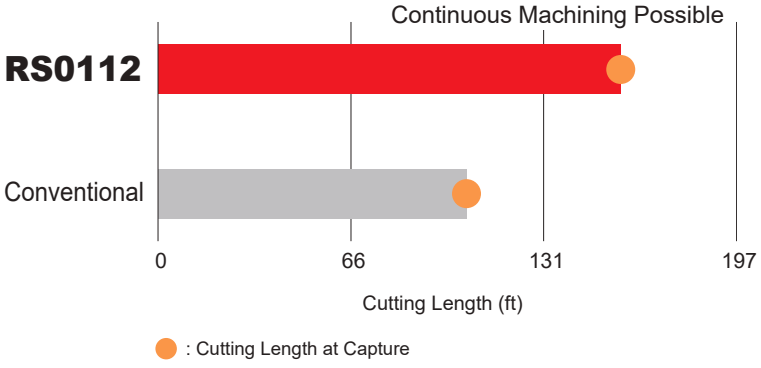
Conventional
5 ft

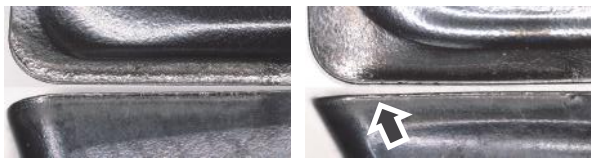
<Cutting Conditions>

Material	: AISI 304 Stainless Steel	Cutter Dia.	: DC=.984 in
Insert	: MV1030 M	Cutting Speed	: vc=395 SFM
Feed per Tooth	: fz=.006 IPT	Depth of Cut	: ap=.157 in
Width of Cut	: ae=.492 in (0.5DC)		
Cutting Mode	: Wet Cutting Single Insert		

A536 Ductile Cast Iron: Fracture resistance comparison

Compared to conventional products, the absence of micro chipping that affects tool life results in more than 1.5 times the tool life.





RS0112
Cutting Length 157 ft

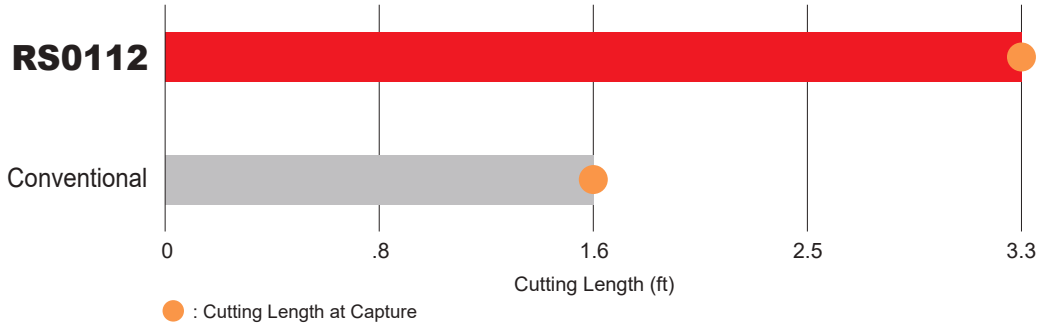
Conventional
Cutting Length 105 ft
Micro Chipping

<Cutting Conditions>

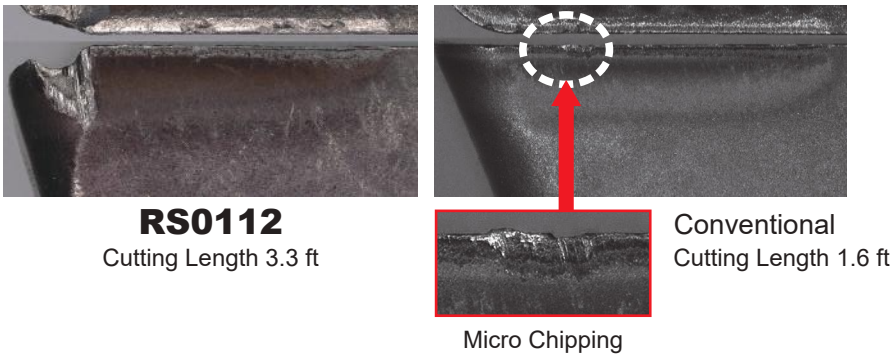
Material	: ASTM A536 Ductile Cast Iron	Cutter Dia.	: DC=.984 in
Insert	: MV1030 M	Cutting Speed	: vc=560 SFM
Feed per Tooth	: fz=.006 IPT	Depth of Cut	: ap=.157 in
Width of Cut	: ae=.492 in (0.5DC)		
Cutting Mode	: Dry Cutting Single Insert		

Ti6Al4V Titanium: Cutting length comparison

Even in titanium alloy machining, significant extension of tool life is achieved without chipping.



<Cutting Conditions>
Material : Ti6Al4V Titanium
Cutter Dia. : DC=.984 in
Insert : MP1230 M
Cutting Speed : vc=195 SFM
Feed per Tooth : fz=.005 IPT
Depth of Cut : ap=.157 in
Width of Cut : ae=.492 in (0.5DC)
Cutting Mode : Wet Cutting
Single Insert



RS0112
Cutting Length 3.3 ft

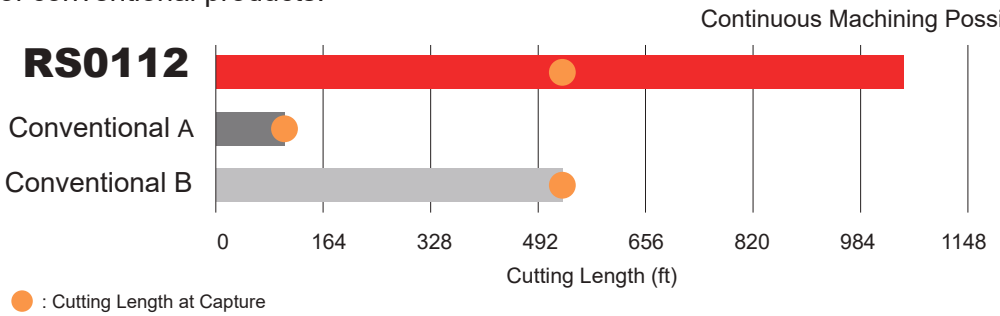
Conventional
Cutting Length 1.6 ft

Micro Chipping

V-insert geometry suppresses thermal cracking and prevents sudden failure.

4140 Alloy Steel: Fracture resistance comparison

By reducing cutting resistance, cutting edge load is lowered, resulting in more than double the tool life of conventional products.



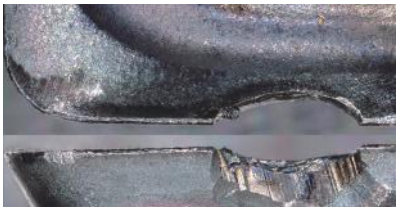
<Cutting Conditions>
Material : AISI 4140 Alloy Steel
Cutter Dia. : DC=.984 in
Insert : MV1030 M
Cutting Speed : vc=655 SFM
Feed per Tooth : fz=.006 IPT
Depth of Cut : ap=.157 in
Width of Cut : ae=.492 in (0.5DC)
Cutting Mode : Dry Cutting
Single Insert

528'



RS0112

105'



Conventional A

528'



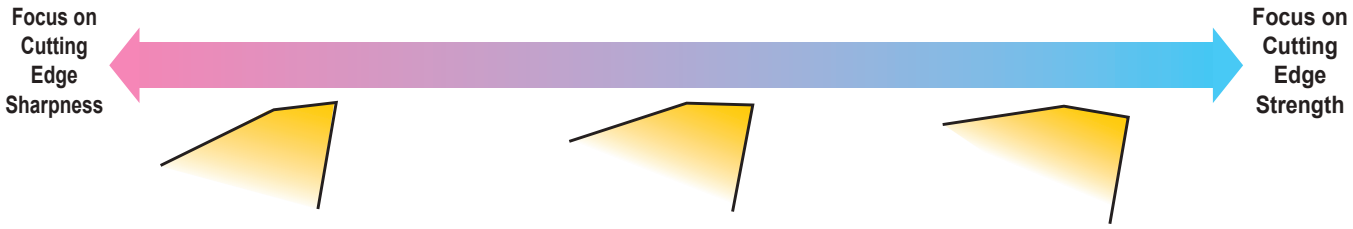


Micro Chipping

Conventional B

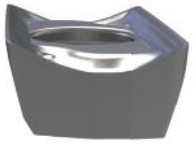
Chipbreaker System

Three chipbreaker geometries are available to suit different machining applications.



M Chipbreaker

General cutting
Stable cutting

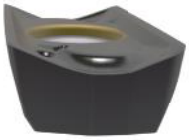




Aluminum Alloys
Recommended G-Class Insert

R Chipbreaker

Interrupted cutting
Unstable cutting



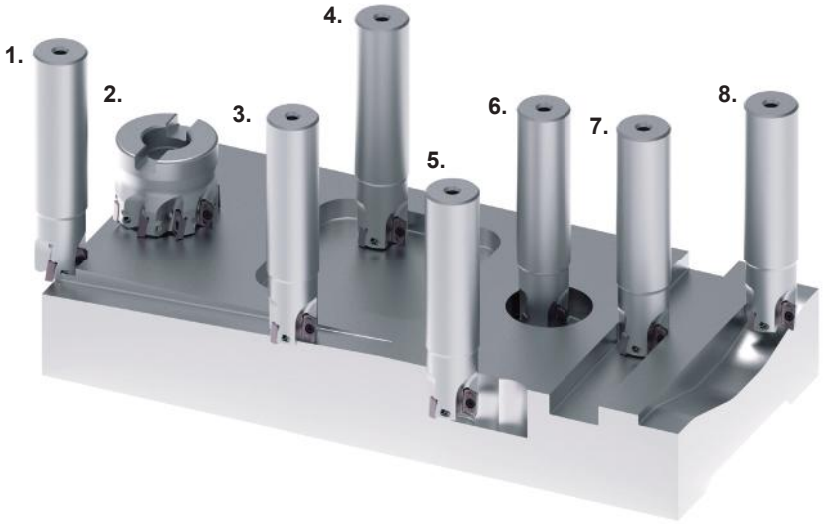
H Chipbreaker

Severe interrupted cutting
Unstable cutting



Recommended for Hardened Steel

Multi-Functional Machining for Automation and Labor Saving

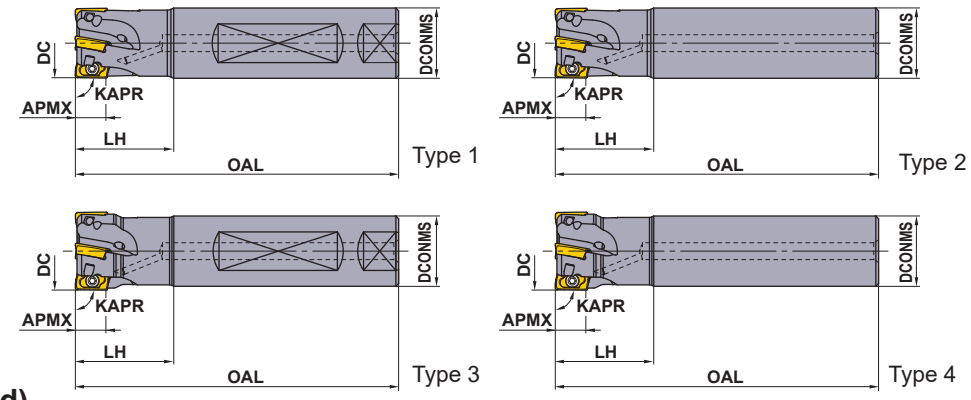


1. Shoulder Milling
2. Face Milling
3. Ramping
4. Pocket Milling
5. Plunging
6. Helical Milling
7. Slot Milling
8. 3-D Profiling

MULTI-FUNCTION MILLING

RS0112 NEW





Shank Type (Inch Standard)

Order Number	Stock R	CSP	Number of Teeth	Dimensions (in) DC	OAL	DCONMS	LH	WT (lbs)	APMX (in)	RMPX	RPMX (min^{-1})	Type
RS0112U0801F08SR	●	○	1	.500	3.375	.500	1.000	.147	.394	6.5°	10500	1
RS0112U0801S08SR	●	○	1	.500	3.375	.500	1.000	.149	.394	6.5°	10500	2
RS0112U1002F10SR	●	○	2	.625	3.625	.625	1.250	.241	.394	10.5°	20900	1
RS0112U1002S10SR	●	○	2	.625	3.625	.625	1.250	.250	.394	10.5°	20900	2
RS0112U1002S10LR	●	○	2	.625	6.000	.625	1.500	.438	.394	10.5°	20900	2
RS0112U1202F12SR	●	○	2	.750	4.375	.750	1.500	.436	.394	7.4°	18500	1
RS0112U1202S12SR	●	○	2	.750	4.375	.750	1.500	.451	.394	7.4°	18500	2
RS0112U1203F12SR	●	○	3	.750	4.375	.750	1.500	.426	.394	7.4°	18500	1
RS0112U1203S12SR	●	○	3	.750	4.375	.750	1.500	.441	.394	7.4°	18500	2
RS0112U1202S12LR	●	○	2	.750	6.000	.750	2.500	.619	.394	7.4°	18500	2
RS0112U1402F12SR	●	○	2	.875	4.375	.750	1.500	.465	.394	5.5°	17600	3
RS0112U1402S12SR	●	○	2	.875	4.375	.750	1.500	.482	.394	5.5°	17600	4
RS0112U1403F12SR	●	○	3	.875	4.375	.750	1.500	.452	.394	5.5°	17600	3
RS0112U1403S12SR	●	○	3	.875	4.375	.750	1.500	.468	.394	5.5°	17600	4
RS0112U1603F12SR	●	○	3	1.000	4.750	.750	1.500	.525	.394	4.4°	16400	3
RS0112U1603S12SR	●	○	3	1.000	4.750	.750	1.500	.541	.394	4.4°	16400	4
RS0112U1604F12SR	●	○	4	1.000	4.750	.750	1.500	.516	.394	4.4°	16400	3
RS0112U1604S12SR	●	○	4	1.000	4.750	.750	1.500	.518	.394	4.4°	16400	4
RS0112U1603F16SR	●	○	3	1.000	4.750	1.000	1.750	.888	.394	4.4°	16400	1
RS0112U1603S16SR	●	○	3	1.000	4.750	1.000	1.750	.908	.394	4.4°	16400	2
RS0112U1604F16SR	●	○	4	1.000	4.750	1.000	1.750	.879	.394	4.4°	16400	1
RS0112U1604S16SR	●	○	4	1.000	4.750	1.000	1.750	.899	.394	4.4°	16400	2
RS0112U1603S16LR	●	○	3	1.000	6.500	1.000	2.750	1.244	.394	4.4°	16400	2
RS0112U1604S16LR	●	○	4	1.000	6.500	1.000	2.750	1.234	.394	4.4°	16400	2
RS0112U1803F16SR	●	○	3	1.125	4.750	1.000	1.750	.922	.394	3.6°	14900	3
RS0112U1803S16SR	●	○	3	1.125	4.750	1.000	1.750	.942	.394	3.6°	14900	4
RS0112U1804F16SR	●	○	4	1.125	4.750	1.000	1.750	.916	.394	3.6°	14900	3
RS0112U1804S16SR	●	○	4	1.125	4.750	1.000	1.750	.936	.394	3.6°	14900	4
RS0112U2003F16SR	●	○	3	1.250	5.125	1.000	1.750	1.037	.394	3.1°	14400	3

● = NEW

* CSP : ○ = With coolant through, – = Without coolant through

Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.

Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.

● : USA Stock ★ : Stocked in Japan

Shank Type (Inch Standard)

Order Number	Stock R	CSP	Number of Teeth	Dimensions (in) DC	OAL	DCONMS	LH	WT (lbs)	APMX (in)	RMPX	RPMX (min^{-1})	Type
RS0112U2003S16SR	●	○	3	1.250	5.125	1.000	1.750	1.057	.394	3.1°	14400	4
RS0112U2004F16SR	●	○	4	1.250	5.125	1.000	1.750	1.026	.394	3.1°	14400	3
RS0112U2004S16SR	●	○	4	1.250	5.125	1.000	1.750	1.046	.394	3.1°	14400	4
RS0112U2005F16SR	●	○	5	1.250	5.125	1.000	1.750	1.021	.394	3.1°	14400	3
RS0112U2005S16SR	●	○	5	1.250	5.125	1.000	1.750	1.041	.394	3.1°	14400	4
RS0112U2003F20SR	●	○	3	1.250	5.125	1.250	2.000	1.529	.394	3.1°	14400	1
RS0112U2003S20SR	●	○	3	1.250	5.125	1.250	2.000	1.559	.394	3.1°	14400	2
RS0112U2004F20SR	●	○	4	1.250	5.125	1.250	2.000	1.518	.394	3.1°	14400	1
RS0112U2004S20SR	●	○	4	1.250	5.125	1.250	2.000	1.548	.394	3.1°	14400	2
RS0112U2005F20SR	●	○	5	1.250	5.125	1.250	2.000	1.512	.394	3.1°	14400	1
RS0112U2005S20SR	●	○	5	1.250	5.125	1.250	2.000	1.542	.394	3.1°	14400	2
RS0112U2003S20LR	●	○	3	1.250	7.500	1.250	3.500	2.286	.394	3.1°	14400	2
RS0112U2005S20LR	●	○	5	1.250	7.500	1.250	3.500	2.271	.394	3.1°	14400	2
RS0112U2404F20SR	●	○	4	1.500	5.125	1.250	2.000	1.620	.394	2.4°	12800	3
RS0112U2404S20SR	●	○	4	1.500	5.125	1.250	2.000	1.650	.394	2.4°	12800	4
RS0112U2406F20SR	●	○	6	1.500	5.125	1.250	2.000	1.611	.394	2.4°	12800	3
RS0112U2406S20SR	●	○	6	1.500	5.125	1.250	2.000	1.641	.394	2.4°	12800	4
RS0112U2403S20LR	●	○	3	1.500	8.500	1.250	2.000	2.745	.394	2.4°	12800	4
RS0112U2406S20LR	●	○	6	1.500	8.500	1.250	2.000	2.709	.394	2.4°	12800	4

● = NEW

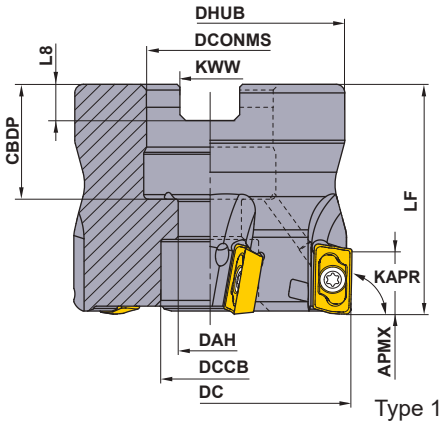
* CSP : ○ = With coolant through, – = Without coolant through

Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.

Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.

Multi-Function Shoulder Milling Cutter





Type 1

Arbor Type (DC = In size, DCONMS = In size)

Order Number	Stock R	CSP	Number of Teeth	Dimensions (in) DC	LF	DCONMS	CBDP	DAH	DCCB	KWW	L8	DHUB	WT (lbs)	APMX (in)	RMPX	RPMX (min^{-1})	Type
RS0112U1.5004AR	●	○	4	1.500	1.750	.750	.748	.413	.630	.313	.187	1.438	.471	.394	2.4°	12800	1
RS0112U1.5006AR	●	○	6	1.500	1.750	.750	.748	.413	.630	.313	.187	1.438	.463	.394	2.4°	12800	1
RS0112U2.0005AR	●	○	5	2.000	1.750	.750	.748	.413	.630	.313	.187	1.750	.918	.394	1.7°	11300	1
RS0112U2.0008AR	●	○	8	2.000	1.750	.750	.748	.413	.630	.313	.187	1.750	.896	.394	1.7°	11300	1
RS0112U2.5006AR	●	○	6	2.500	2.000	1.000	.945	.539	.787	.375	.219	2.375	1.785	.394	1.3°	10000	1
RS0112U2.5009AR	●	○	9	2.500	2.000	1.000	.945	.539	.787	.375	.219	2.375	1.788	.394	1.3°	10000	1
RS0112U3.0008AR	●	○	8	3.000	2.000	1.000	.945	.539	.787	.375	.219	2.750	2.689	.394	1.0°	8800	1
RS0112U3.0010AR	●	○	10	3.000	2.000	1.000	.945	.539	.787	.375	.219	2.750	2.686	.394	1.0°	8800	1

● = NEW

* CSP : ○ = With coolant through, – = Without coolant through

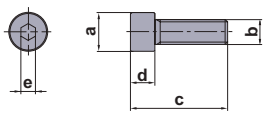
Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.

Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.

Note 3) A set bolt for the arbor is not included with the body.

SET BOLT (SOLD SEPARATELY)

DC	Set Bolt With Coolant Thru Order Number	Fig.	Reference Dimensions (in) a	b	c	d	e	Geometry
1.500	HSCU37513H	1	.562	3/8-24UNF	1.625	.375	.250	Fig.1
2.000	HSCU37513H	1	.562	3/8-24UNF	1.625	.375	.250	
2.500	HSCU50014H	1	.750	1/2-20UNF	1.875	.500	.375	
3.000	HSCU50014H	1	.750	1/2-20UNF	1.875	.500	.375	

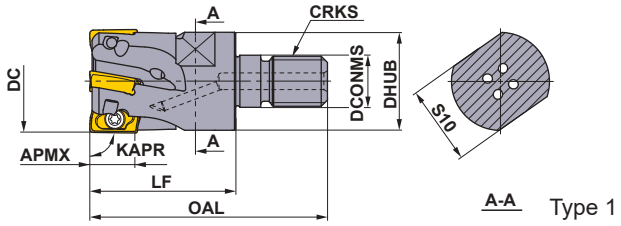


Note 1) Please purchase the appropriate set bolt after confirming the reference dimensions.
The items with an order number listed under the Set Bolt columns are also sold by Mitsubishi Materials.

Note 2) Internal coolant is necessary with the set bolt.

● : USA Stock ★ : Stocked in Japan





Type 1

Screw-in Type (Inch Standard)

Order Number	Stock R	CSP	Number of Teeth	Dimensions (in) DC	LF	OAL	DCONMS	S10	DHUB	CRKS	WT (lbf)	APMX (in)	RMPX	RPMX (min^{-1})	Type
RS0112U1002M0830R	●	○	2	.625	1.181	1.890	.335	.394	.571	M8	.062	.394	10.5°	20900	1
RS0112U1202M1030R	●	○	2	.750	1.181	1.929	.413	.551	.728	M10	.109	.394	7.4°	18500	1
RS0112U1203M1030R	●	○	3	.750	1.181	1.929	.413	.551	.728	M10	.101	.394	7.4°	18500	1
RS0112U1402M1030R	●	○	2	.875	1.181	1.929	.413	.551	.728	M10	.134	.394	5.5°	17600	1
RS0112U1403M1030R	●	○	3	.875	1.181	1.929	.413	.551	.728	M10	.126	.394	5.5°	17600	1
RS0112U1603M1235R	●	○	3	1.000	1.378	2.244	.492	.748	.925	M12	.224	.394	4.4°	16400	1
RS0112U1604M1235R	●	○	4	1.000	1.378	2.244	.492	.748	.925	M12	.221	.394	4.4°	16400	1
RS0112U1803M1235R	●	○	3	1.125	1.378	2.244	.492	.748	.925	M12	.262	.394	3.6°	15500	1
RS0112U1804M1235R	●	○	4	1.125	1.378	2.244	.492	.748	.925	M12	.262	.394	3.6°	15500	1
RS0112U2004M1640R	●	○	4	1.250	1.575	2.480	.669	.945	1.122	M16	.437	.394	3.1°	14400	1
RS0112U2005M1640R	●	○	5	1.250	1.575	2.480	.669	.945	1.122	M16	.432	.394	3.1°	14400	1
RS0112U2404M1640R	●	○	4	1.500	1.575	2.480	.669	.945	1.122	M16	.555	.394	2.4°	12800	1
RS0112U2406M1640R	●	○	6	1.500	1.575	2.480	.669	.945	1.122	M16	.540	.394	2.4°	12800	1

● = NEW

* CSP : ○ = With coolant through, – = Without coolant through
Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.
Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.
Note 3) For screw-in type arbors, refer to page 27 and 28.

SPARE PARTS

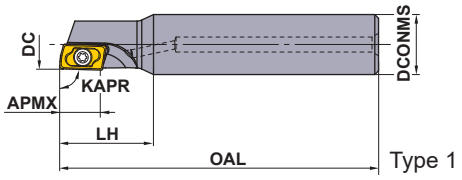
Tool Holder Type	*  Clamp Screw	 Wrench	 Anti-seize Lubricant
RS0112	TPS27F0	TIP08W	MK1KS

* Clamp Torque (lbf-in) : TPS27F0 = 12.4

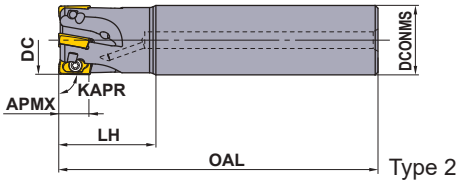
MULTI-FUNCTION MILLING

RS0112 NEW

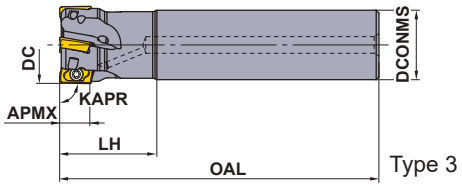




Type 1



Type 2



Type 3

Shank Type (DC = mm size, DCONMS = mm size)

Order Number	Stock R	CSP	Number of Teeth	Dimensions (mm) DC	OAL	DCONMS	LH	WT (kg)	APMX (mm)	RMPX	RPMX (min^{-1})	Type
RS0112-1201S16SR	★	○	1	12	85	16	25	0.1	10	6.2°	10500	1
RS0112-1401S16SR	★	○	1	14	85	16	25	0.1	10	7.9°	9000	1
RS0112-1602S16SR	★	○	2	16	85	16	25	0.1	10	10.4°	20900	2
RS0112-1802S16SR	★	○	2	18	85	16	25	0.1	10	8.2°	19600	3
RS0112-1802S16LR	★	○	2	18	120	16	25	0.2	10	8.2°	19600	3
RS0112-2002S16SR	★	○	2	20	85	16	25	0.1	10	6.7°	18500	3
RS0112-2003S16SR	★	○	3	20	85	16	25	0.1	10	6.7°	18500	3
RS0112-2002S20SR	★	○	2	20	100	20	30	0.2	10	6.7°	18500	2
RS0112-2002S20LR	★	○	2	20	150	20	60	0.3	10	6.7°	18500	2
RS0112-2003S20SR	★	○	3	20	100	20	30	0.2	10	6.7°	18500	2
RS0112-2003S20LR	★	○	3	20	150	20	60	0.3	10	6.7°	18500	2
RS0112-2202S20SR	★	○	2	22	115	20	30	0.2	10	5.6°	17600	3
RS0112-2202S20LR	★	○	2	22	150	20	30	0.3	10	5.6°	17600	3
RS0112-2203S20SR	★	○	3	22	115	20	30	0.2	10	5.6°	17600	3
RS0112-2203S20LR	★	○	3	22	150	20	30	0.3	10	5.6°	17600	3
RS0112-2503S20SR	★	○	3	25	115	20	35	0.3	10	4.5°	16400	3
RS0112-2504S20SR	★	○	4	25	115	20	35	0.3	10	4.5°	16400	3
RS0112-2502S25SR	★	○	2	25	115	25	35	0.4	10	4.5°	16400	2
RS0112-2503S25SR	★	○	3	25	115	25	35	0.4	10	4.5°	16400	2
RS0112-2503S25LR	★	○	3	25	170	25	70	0.6	10	4.5°	16400	2
RS0112-2504S25SR	★	○	4	25	115	25	35	0.4	10	4.5°	16400	2
RS0112-2504S25LR	★	○	4	25	170	25	70	0.6	10	4.5°	16400	2
RS0112-2803S25SR	★	○	3	28	115	25	35	0.4	10	3.7°	15500	3
RS0112-2803S25LR	★	○	3	28	170	25	35	0.6	10	3.7°	15500	3
RS0112-2804S25SR	★	○	4	28	115	25	35	0.4	10	3.7°	15500	3
RS0112-2804S25LR	★	○	4	28	170	25	35	0.6	10	3.7°	15500	3

● = NEW

* CSP : ○ = With coolant through, – = Without coolant through

Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.

Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.

● : USA Stock ★ : Stocked in Japan

Shank Type (DC = mm size, DCONMS = mm size)

Order Number	Stock R	CSP	Number of Teeth	Dimensions (mm) DC	OAL	DCONMS	LH	WT (kg)	APMX (mm)	RMPX	RPMX (min^{-1})	Type
RS0112-3003S25SR	★	○	3	30	125	25	35	0.4	10	3.4°	14900	3
RS0112-3004S25SR	★	○	4	30	125	25	35	0.4	10	3.4°	14900	3
RS0112-3203S32SR	★	○	3	32	125	32	45	0.7	10	3.1°	14400	2
RS0112-3203S32LR	★	○	3	32	190	32	90	1.1	10	3.1°	14400	2
RS0112-3204S32SR	★	○	4	32	125	32	45	0.7	10	3.1°	14400	2
RS0112-3205S32SR	★	○	5	32	125	32	45	0.7	10	3.1°	14400	2
RS0112-3205S32LR	★	○	5	32	190	32	90	1.0	10	3.1°	14400	2
RS0112-3503S32LR	★	○	3	35	190	32	45	1.1	10	2.7°	13700	3
RS0112-3505S32LR	★	○	5	35	190	32	45	1.1	10	2.7°	13700	3
RS0112-4004S32SR	★	○	4	40	125	32	45	0.7	10	2.2°	12800	3
RS0112-4006S32SR	★	○	6	40	125	32	45	0.7	10	2.2°	12800	3
RS0112-5005S32SR	★	○	5	50	125	32	45	0.9	10	1.7°	11300	3
RS0112-5007S32SR	★	○	7	50	125	32	45	0.8	10	1.7°	11300	3

● = NEW

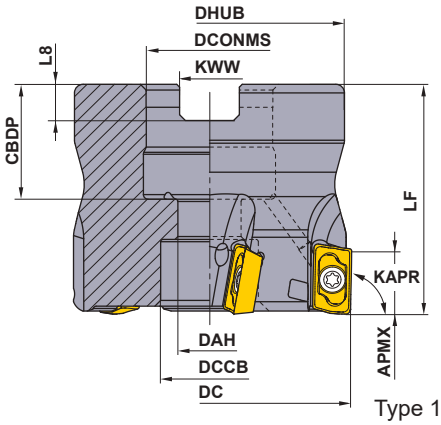
* CSP : ○ = With coolant through, – = Without coolant through

Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.

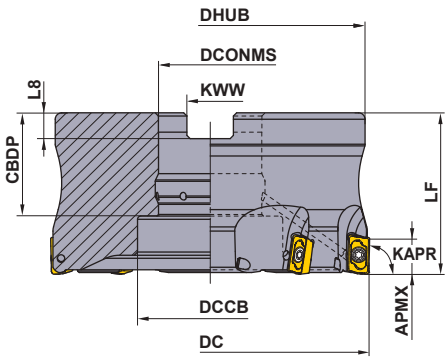
Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.

Multi-Function Shoulder Milling Cutter





Type 1



Type 2

Arbor Type (DC = mm size, DCONMS = In size)

Order Number	Stock R	CSP	Number of Teeth	Dimensions (mm) [in] DC	LF	DCONMS	CBDP	DAH	DCCB	KWW	L8	DHUB	WT (kg)	APMX (mm)	RMPX	RPMX (min^{-1})	Type
RS0112J08008AR	★	○	8	80	50	25.4 [1.0"]	26	13	20	9.5	6	70	1.3	10	1.0°	8800	1
RS0112J08010AR	★	○	10	80	50	25.4 [1.0"]	26	13	20	9.5	6	70	1.3	10	1.0°	8800	1
RS0112J10008BR	★	○	8	100	50	31.75 [1.25"]	37	—	45	12.7	8	96	2.1	10	0.8°	7800	2
RS0112J10012BR	★	○	12	100	50	31.75 [1.25"]	37	—	45	12.7	8	96	2.1	10	0.8°	7800	2

Arbor Type (DC = mm size, DCONMS = mm size)

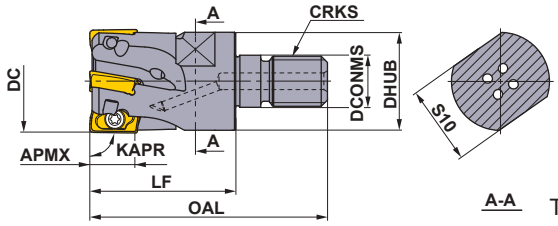
Order Number	Stock R	CSP	Number of Teeth	Dimensions (mm) DC	LF	DCONMS	CBDP	DAH	DCCB	KWW	L8	DHUB	WT (kg)	APMX (mm)	RMPX	RPMX (min^{-1})	Type
RS0112-03203AR	★	○	3	32	35	16	18	9	14	8.4	5.6	30	0.1	10	3.1°	11400	1
RS0112-03204AR	★	○	4	32	35	16	18	9	14	8.4	5.6	30	0.1	10	3.1°	11400	1
RS0112-03205AR	★	○	5	32	35	16	18	9	14	8.4	5.6	30	0.1	10	3.1°	11400	1
RS0112-04004AR	★	○	4	40	40	16	18	9	14	8.4	5.6	37	0.2	10	2.2°	12800	1
RS0112-04006AR	★	○	6	40	40	16	18	9	14	8.4	5.6	37	0.2	10	2.2°	12800	1
RS0112-05005AR	★	○	5	50	40	22	20	11	17	10.4	6.3	47	0.4	10	1.7°	11300	1
RS0112-05008AR	★	○	8	50	40	22	20	11	17	10.4	6.3	47	0.4	10	1.7°	11300	1
RS0112-06306AR	★	○	6	63	40	22	20	11	17	10.4	6.3	60	0.7	10	1.3°	10000	1
RS0112-06306XR	★	○	6	63	50	27	23	13	20	12.4	7	60	0.8	10	1.3°	10000	1
RS0112-06309AR	★	○	9	63	40	22	20	11	17	10.4	6.3	60	0.7	10	1.3°	10000	1
RS0112-06309XR	★	○	9	63	50	27	23	13	20	12.4	7	60	0.8	10	1.3°	10000	1
RS0112-08008AR	★	○	8	80	50	27	23	13	20	12.4	7	76	1.4	10	1.0°	8800	1
RS0112-08010AR	★	○	10	80	50	27	23	13	20	12.4	7	76	1.4	10	1.0°	8800	1
RS0112-10008BR	★	○	8	100	50	32	32	—	45	14.4	8	96	2.0	10	0.8°	7800	2
RS0112-10012BR	★	○	12	100	50	32	32	—	45	14.4	8	96	2.0	10	0.8°	7800	2

● = NEW

* CSP : ○ = With coolant through, – = Without coolant through
Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.
Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.
Note 3) A set bolt for the arbor is not included with the body.

● : USA Stock ★ : Stocked in Japan





Type 1

Screw-in Type (Mertic Standard)

Order Number	Stock	CSP	Number of Teeth	Dimensions (mm)							WT	APMX	RMPX	RPMX	Type
	R			DC	LF	OAL	DCONMS	S10	DHUB	CRKS	(kg)	(mm)		(min^{-1})	
RS0112-1602M0830R	★	○	2	16	30	48	8.5	10	14.5	M8	0.03	10	10.4°	20900	1
RS0112-1802M0830R	★	○	2	18	30	48	8.5	10	14.5	M8	0.03	10	8.2°	19600	1
RS0112-2002M1030R	★	○	2	20	30	49	10.5	14	18.5	M10	0.05	10	6.7°	18500	1
RS0112-2003M1030R	★	○	3	20	30	49	10.5	14	18.5	M10	0.05	10	6.7°	18500	1
RS0112-2202M1030R	★	○	2	22	30	49	10.5	14	18.5	M10	0.06	10	5.6°	17600	1
RS0112-2203M1030R	★	○	3	22	30	49	10.5	14	18.5	M10	0.05	10	5.6°	17600	1
RS0112-2503M1235R	★	○	3	25	35	57	12.5	19	23.5	M12	0.10	10	4.5°	16400	1
RS0112-2504M1235R	★	○	4	25	35	57	12.5	19	23.5	M12	0.10	10	4.5°	16400	1
RS0112-2803M1235R	★	○	3	28	35	57	12.5	19	23.5	M12	0.12	10	3.7°	15500	1
RS0112-2804M1235R	★	○	4	28	35	57	12.5	19	23.5	M12	0.12	10	3.7°	15500	1
RS0112-3203M1640R	★	○	3	32	40	63	17	24	28.5	M16	0.21	10	3.1°	14400	1
RS0112-3204M1640R	★	○	4	32	40	63	17	24	28.5	M16	0.20	10	3.1°	14400	1
RS0112-3205M1640R	★	○	5	32	40	63	17	24	28.5	M16	0.20	10	3.1°	14400	1
RS0112-3503M1640R	★	○	3	35	40	63	17	24	28.5	M16	0.23	10	2.7°	13700	1
RS0112-3505M1640R	★	○	5	35	40	63	17	24	28.5	M16	0.22	10	2.7°	13700	1
RS0112-4004M1640R	★	○	4	40	40	63	17	24	28.5	M16	0.27	10	2.2°	12800	1
RS0112-4006M1640R	★	○	6	40	40	63	17	24	28.5	M16	0.26	10	2.2°	12800	1

● = NEW

* CSP : ○ = With coolant through, – = Without coolant through
Note 1) The rotational speed maximum (RPMX) is set to ensure tool and insert stability.
Note 2) When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.
Note 3) For screw-in type arbors, refer to page 27 and 28.

Inserts

Material		
P	Steel	◆
M	Stainless Steel	◆
K	Cast Iron	◆
N	Non-ferrous Metals	◆
S	Heat Resistant Alloys, Titanium Alloys	◆
H	Hardened Steel	◆

Edge Preparation :
E : Round F : Sharp
S : Chamfer + Round
T : Chamfer

Application	Shape Chipbreaker	Order Number	Class	Edge Preparation	Coated MV1020	Coated MV1030	Coated NEW MP1220	Coated NEW MP1230	Coated NEW MP1240	Coated VP15TF	Coated MX3030	Carbide TF15	Carbide	BS	LE	RE	W1	INSL	S	AN	Geometry
Aluminum Alloys Cutting		RS0112G020FR-M	G	F								●		.071	.394	.008	.264	.492	.146	.512	
		RS0112G040FR-M	G	F								●		.063	.394	.016	.264	.492	.146	.512	
		RS0112G080FR-M	G	F								●		.047	.394	.031	.264	.488	.146	.512	
		RS0112G100FR-M	G	F								●		.039	.394	.039	.264	.488	.146	.512	
		RS0112G120FR-M	G	F								●		.031	.394	.047	.264	.484	.146	.512	
		RS0112G160FR-M	G	F								●		.024	.394	.063	.264	.484	.146	.512	
		RS0112G200FR-M	G	F								●		.047	.394	.079	.264	.484	.146	.512	
		RS0112G240FR-M	G	F								●		.028	.394	.094	.264	.480	.146	.512	
		RS0112G300FR-M	G	F								●		.016	.394	.118	.264	.480	.146	.512	
	M	RS0112G320FR-M	G	F								●		.008	.394	.126	.264	.476	.146	.512	
General Cutting		RS0112M020ER-M	M	E	●	●	●	●	●	★				.071	.394	.008	.264	.492	.146	.512	
		RS0112M040ER-M	M	E	●	●	●	●	●	★	●			.063	.394	.016	.264	.492	.146	.512	
		RS0112M080ER-M	M	E	●	●	●	●	●	★	●			.047	.394	.031	.264	.488	.146	.512	
		RS0112M100ER-M	M	E	●	●	●	●	●	★				.039	.394	.039	.264	.488	.146	.512	
		RS0112M120ER-M	M	E	●	●	●	●	●	★				.031	.394	.047	.264	.484	.146	.512	
		RS0112M160ER-M	M	E	●	●	●	●	●	★				.024	.394	.063	.264	.484	.146	.512	
		RS0112M200ER-M	M	E	●	●	●	●	●	★				.047	.394	.079	.264	.484	.146	.512	
		RS0112M240ER-M	M	E	●	●	●	●	●	★				.028	.394	.094	.264	.480	.146	.512	
		RS0112M300ER-M	M	E	●	●	●	●	●	★				.016	.394	.118	.264	.480	.146	.512	
	M	RS0112M320ER-M	M	E	●	●	●	●	●	★				.008	.394	.126	.264	.476	.146	.512	
Interrupted Cutting		RS0112M020ER-R	M	E	●	●	●	●	●	★				.071	.394	.008	.264	.492	.146	.512	
		RS0112M040ER-R	M	E	●	●	●	●	●	★				.063	.394	.016	.264	.492	.146	.512	
		RS0112M080ER-R	M	E	●	●	●	●	●	★				.047	.394	.031	.264	.488	.146	.512	
		RS0112M100ER-R	M	E	●	●	●	●	●	★				.039	.394	.039	.264	.488	.146	.512	
		RS0112M120ER-R	M	E	●	●	●	●	●	★				.031	.394	.047	.264	.484	.146	.512	
		RS0112M160ER-R	M	E	●	●	●	●	●	★				.024	.394	.063	.264	.484	.146	.512	
		RS0112M200ER-R	M	E	●	●	●	●	●	★				.047	.394	.079	.264	.484	.146	.512	
		RS0112M240ER-R	M	E	●	●	●	●	●	★				.028	.394	.094	.264	.480	.146	.512	
		RS0112M300ER-R	M	E	●	●	●	●	●	★				.016	.394	.118	.264	.480	.146	.512	
	R	RS0112M320ER-R	M	E	●	●	●	●	●	★				.008	.394	.126	.264	.476	.146	.512	
Heavy Interrupted Cutting		RS0112M080ER-H	M	E	●	●	●	●	●	★				.047	.394	.031	.264	.488	.146	.512	
	H																				

● = NEW

● : USA Stock ★ : Stocked in Japan

10 inserts in one case.

SPARE PARTS

Tool Holder Type	 *		
	Clamp Screw	Wrench	Anti-seize Lubricant
RS0112	TPS27F0	TIP08W	MK1KS

* Clamp Torque (lbf-in) : TPS27F0 = 12.4

SET BOLT (SOLD SEPARATELY)

Arbor Type	Set Bolt		Fig.	Reference Dimensions (mm)							Geometry
	With Coolant Thru	Without Coolant Thru		a	b	c	d	e	f	g	
	Order Number	Order Number									
RS0112-03203AR	HSC08025H	–	1	13	M8×1.25	33	8	5	–	–	
RS0112-03204AR	HSC08025H	–	1	13	M8×1.25	33	8	5	–	–	
RS0112-03205AR	HSC08025H	–	1	13	M8×1.25	33	8	5	–	–	
RS0112-04004AR	HSC08025H	–	1	13	M8×1.25	33	8	5	–	–	
RS0112-04006AR	HSC08025H	–	1	13	M8×1.25	33	8	5	–	–	
RS0112-05005AR	HSC10030H	–	1	16	M10×1.5	40	10	6	–	–	
RS0112-05008AR	HSC10030H	–	1	16	M10×1.5	40	10	6	–	–	
RS0112-06306AR	HSC10030H	–	1	16	M10×1.5	40	10	6	–	–	
RS0112-06309AR	HSC10030H	–	1	16	M10×1.5	40	10	6	–	–	
RS0112-06306XR	HSC12035H	HSC12035	1	18	M12×1.75	47	12	10	–	–	
RS0112-06309XR	HSC12035H	HSC12035	1	18	M12×1.75	47	12	10	–	–	
RS0112-08008AR	HSC12035H	HSC12035	1	18	M12×1.75	47	12	10	–	–	
RS0112-08010AR	HSC12035H	HSC12035	1	18	M12×1.75	47	12	10	–	–	
RS0112-10008BR	MBA16033H	–	2	40	M16×2.0	43	10	14	6	23	
RS0112-10012BR	MBA16033H	–	2	40	M16×2.0	43	10	14	6	23	
RS0112J08008AR	HSC12035H	HSC12035	1	18	M12×1.75	47	12	10	–	–	
RS0112J08010AR	HSC12035H	HSC12035	1	18	M12×1.75	47	12	10	–	–	
RS0112J10008BR	MBA16033H	–	2	40	M16×2.0	43	10	14	6	23	
RS0112J10012BR	MBA16033H	–	2	40	M16×2.0	43	10	14	6	23	

Fig.1

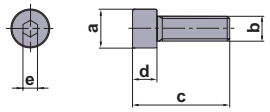
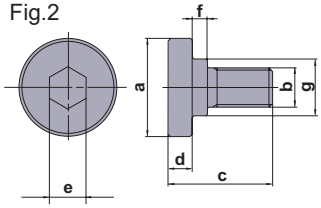


Fig.2



Note 1) Please purchase the appropriate set bolt after confirming the reference dimensions.
The items with an order number listed under the Set Bolt columns are also sold by Mitsubishi Materials.
Note 2) Internal coolant is necessary with the set bolt.

Recommended Cutting Conditions

Chipbreaker Selection Table

	Material	Properties	Cutting Conditions	Chipbreaker		Grade	
				1st Recommendation	2nd Recommendation	1st Recommendation	2nd Recommendation
P	Mild Steel	Hardness ≤180HB	● ●	M	R	MV1030	MP1220
			✣	R	M	MP1230	MP1240
	Carbon Steel Alloy Steel Alloy Tool Steel	Hardness 180—350HB ≤350HB (Annealing)	● ●	M	R	MV1030	MP1220
			✣	R	M	MP1230	MP1240
M	Austenitic Stainless Steel	—	● ●	M	R	MV1030	MP1230
			✣	R	M	MP1230	MP1240
	Ferritic and Martensitic Stainless Steel	—	● ●	M	R	MV1030	MP1220
			✣	R	M	MP1220	MP1230
	Precipitation Hardening Stainless Steel	Hardness < 450HB	● ●	M	R	MV1030	MP1230
			✣	R	M	MP1230	MP1240
K	Gray Cast Iron	Tensile Strength ≤350MPa	● ●	M	R	MP1220	VP15TF
			✣	R	H	MP1220	MP1230
	Ductile Cast Iron	Tensile Strength ≤800MPa	● ●	M	R	MV1030	MP1220
			✣	R	H	MP1220	MP1230
N	Aluminum Alloys	Content Si< 5%	● ● ✣	M	—	TF15	—
S	Titanium Alloys	—	● ●	M	R	MP1220	MP1230
			✣	M	R	MP1230	MP1240
	Heat Resistant Alloys	—	● ●	M	R	MP1220	MP1230
			✣	M	R	MP1230	MP1240
H	Hardened Steel	Hardness 40—55HRC	● ● ✣	H	—	MP1220	VP15TF

Cutting Conditions (Guide) :
● : Stable Cutting ◔ : General Cutting ✤ : Unstable Cutting

Dry Cutting
Cutting Speed

(in)

	Material	Properties	Cutting Conditions	Grade	ae			
					≤0.25DC	0.25—0.5DC	0.5—0.75DC	DC(Slot)
					vc (SFM)			
P	Mild Steel	Hardness ≤180HB	● ◔	MV1020	920 (720 — 1085)	885 (690 — 1050)	720 (560 — 855)	720 (560 — 855)
			● ◔	MV1030 MP1220 VP15TF	755 (590 — 885)	720 (560 — 855)	590 (460 — 690)	590 (460 — 690)
			● ◔	MX3030	525 (395 — 655)	490 (360 — 625)	395 (330 — 490)	—
			✤	MP1230 MP1240	655 (490 — 785)	625 (460 — 755)	490 (360 — 590)	490 (360 — 590)
	Carbon Steel Alloy Steel Alloy Tool Steel	Hardness 180—350HB ≤350HB (Annealing)	● ◔	MV1020	590 (460 — 690)	560 (425 — 655)	460 (360 — 525)	460 (360 — 525)
			● ◔	MV1030 MP1220 VP15TF	590 (460 — 690)	560 (425 — 655)	460 (360 — 525)	460 (360 — 525)
			● ◔	MX3030	460 (330 — 590)	425 (295 — 560)	330 (260 — 490)	—
			✤	MP1230 MP1240	490 (360 — 590)	460 (330 — 560)	360 (260 — 425)	360 (260 — 425)
M	Austenitic Stainless Steel	Hardness ≤200HB	● ◔	MV1030	590 (460 — 690)	560 (425 — 655)	460 (360 — 525)	460 (360 — 525)
			● ◔	MX3030	395 (260 — 460)	360 (260 — 425)	330 (260 — 395)	—
			✤	MP1230 MP1240 VP15TF	590 (460 — 690)	560 (425 — 655)	460 (360 — 525)	460 (360 — 525)
		Hardness > 200HB	● ◔	MV1030	490 (360 — 590)	460 (330 — 525)	360 (260 — 425)	360 (260 — 425)
			● ◔	MX3030	395 (260 — 460)	360 (260 — 425)	330 (260 — 395)	—
			● ◔ ✤	MP1230 MP1240 VP15TF	490 (360 — 590)	460 (330 — 525)	360 (260 — 425)	360 (260 — 425)
	Ferritic and Martensitic Stainless Steel	—	● ◔	MV1030	590 (460 — 690)	560 (425 — 655)	460 (360 — 525)	460 (360 — 525)
			● ◔ ✤	MP1220 MP1230 VP15TF	590 (460 — 690)	560 (425 — 655)	460 (360 — 525)	460 (360 — 525)
	Precipitation Hardening Stainless Steel	Hardness < 450HB	● ◔	MV1030	425 (330 — 525)	395 (260 — 460)	295 (195 — 360)	295 (195 — 360)
			● ◔ ✤	MP1230 MP1240 VP15TF	425 (330 — 525)	395 (260 — 460)	295 (195 — 360)	295 (195 — 360)
K	Gray Cast Iron	Tensile Strength ≤350MPa	● ◔	MX3030	395 (260 — 460)	360 (260 — 425)	330 (260 — 395)	—
			● ◔ ✤	MP1220 MP1230 VP15TF	655 (490 — 820)	625 (460 — 785)	525 (360 — 690)	525 (360 — 690)
	Ductile Cast Iron	Tensile Strength ≤800MPa	● ◔	MV1020	655 (460 — 820)	625 (425 — 785)	525 (395 — 690)	525 (395 — 690)
			● ◔	MV1030	490 (330 — 655)	460 (295 — 625)	395 (260 — 560)	395 (260 — 560)
			● ◔ ✤	MP1220 MP1230 VP15TF	425 (330 — 490)	395 (295 — 460)	330 (260 — 395)	330 (260 — 395)
N	Aluminum Alloys	Content Si< 5%	● ◔ ✤	TF15	1970 (655 — 3280)	1970 (655 — 3280)	1970 (655 — 3280)	1970 (655 — 3280)
H	Hardened Steel	Hardness 40—55HRC	● ◔ ✤	MP1220 VP15TF	295 (230 — 330)	280 (195 — 330)	230 (165 — 260)	230 (165 — 260)

Note 1) These cutting conditions should be referenced for standard shank types and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter conditions accordingly.
Note 2) Chatter and vibration are more likely under the following circumstances. Use a cut and feed per tooth that are at minimum recommended conditions or below.
•When tool overhang is long (using a long shank, screw-in type, etc.).
•Rigidity of machine, workpiece material or attachment of workpiece material is low
•Corner radius during pocket milling
Note 3) A type with fewer teeth is recommended when the depth of cut in the radius direction (ae) is 0.5 DC or more.
Note 4) Wet cutting is recommended, when focusing on the surface finish. (Tool life is shorter than for dry cutting.)
Note 5) When using under higher than recommended cutting conditions, or for long periods of time, the clamp screw may become fatigued and break during machining. Please change out the clamp screw periodically.
Note 6) Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.

Recommended Cutting Conditions

Wet Cutting
Cutting Speed

(in)

	Material	Properties	Cutting Conditions	Grade	ae ≤0.25DC	ae 0.25—0.5DC	ae 0.5—0.75DC	ae DC (Slot)
					vc (SFM)			
P	Mild Steel	Hardness ≤180HB	● ●	MV1020	690 (490 — 950)	655 (460 — 885)	490 (360 — 590)	490 (360 — 590)
			● ●	MV1030 MP1220 VP15TF	460 (330 — 625)	425 (295 — 590)	330 (230 — 395)	330 (230 — 395)
			● ● ✱	MP1230 MP1240	460 (330 — 625)	425 (295 — 590)	330 (230 — 395)	330 (230 — 395)
	Carbon Steel Alloy Steel Alloy Tool Steel	Hardness 180—350HB ≤350HB (Annealing)	● ●	MV1020	590 (460 — 690)	560 (395 — 655)	490 (360 — 590)	490 (360 — 590)
			● ●	MV1030 MP1220 VP15TF	395 (295 — 460)	360 (260 — 425)	330 (230 — 395)	330 (230 — 395)
			● ● ✱	MP1230 MP1240	395 (295 — 460)	360 (260 — 425)	330 (230 — 395)	330 (230 — 395)
M	Austenitic Stainless Steel	Hardness ≤200HB	● ●	MV1030	395 (330 — 490)	360 (295 — 460)	295 (230 — 395)	295 (230 — 395)
			● ● ✱	MP1230 MP1240	395 (330 — 490)	360 (295 — 460)	295 (230 — 395)	295 (230 — 395)
		Hardness >200HB	● ● ✱	MV1030 MP1230	330 (260 — 425)	295 (230 — 360)	230 (165 — 330)	230 (165 — 330)
	Ferritic and Martensitic Stainless Steel	—	● ●	MV1030	395 (330 — 490)	360 (295 — 460)	295 (230 — 395)	295 (230 — 395)
			● ● ✱	MP1220 MP1230 VP15TF	395 (330 — 490)	360 (295 — 460)	295 (230 — 395)	295 (230 — 395)
	Precipitation Hardening Stainless Steel	Hardness <450HB	● ●	MV1030	295 (230 — 395)	260 (195 — 360)	195 (130 — 295)	195 (130 — 295)
			● ● ✱	MP1230 MP1240	295 (230 — 395)	260 (195 — 360)	195 (130 — 295)	195 (130 — 295)
K	Gray Cast Iron	Tensile Strength ≤350MPa	● ● ✱	MP1220 MP1230 VP15TF	425 (330 — 490)	395 (295 — 460)	330 (260 — 395)	330 (260 — 395)
	Ductile Cast Iron	Tensile Strength ≤800MPa	● ●	MV1020	560 (425 — 690)	525 (395 — 655)	460 (360 — 560)	460 (360 — 560)
			● ●	MV1030	425 (260 — 590)	395 (230 — 560)	330 (195 — 490)	330 (195 — 490)
			● ● ✱	MP1220 MP1230 VP15TF	360 (260 — 460)	330 (230 — 425)	260 (195 — 395)	260 (195 — 395)
N	Aluminum Alloys	Content Si< 5%	● ● ✱	TF15	1970 (1310 — 3280)	1970 (1310 — 3280)	1970 (1310 — 3280)	1970 (1310 — 3280)
S	Titanium Alloys (Ti-6Al-4V,etc.)	—	● ●	MP1220 MP1230 VP15TF	165 (130 — 230)	165 (130 — 230)	165 (130 — 230)	165 (130 — 230)
			✱	MP1230 MP1240	130 (100 — 195)	130 (100 — 195)	130 (100 — 195)	130 (100 — 195)
	Heat Resistant Alloys	—	● ●	MP1220 MP1230 VP15TF	130 (100 — 195)	130 (100 — 195)	130 (100 — 195)	130 (100 — 195)
			✱	MP1230 MP1240	100 (65 — 130)	100 (65 — 130)	100 (65 — 130)	100 (65 — 130)
H	Hardened Steel	Hardness 40—55HRC	● ● ✱	MP1220 VP15TF	295 (230 — 330)	280 (195 — 330)	230 (165 — 260)	230 (165 — 260)

Note 1) These cutting conditions should be referenced for standard shank types and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter conditions accordingly.
Note 2) Chatter and vibration are more likely under the following circumstances. Use a cut and feed per tooth that are at minimum recommended conditions or below.
- •When tool overhang is long (using a long shank, screw-in type, etc.).
- •Rigidity of machine, workpiece material or attachment of workpiece material is low
- •Corner radius during pocket milling

Note 3) A type with fewer teeth is recommended when the depth of cut in the radius direction (ae) is 0.5 DC or more.
Note 4) Wet cutting is recommended, when focusing on the surface finish. (Tool life is shorter than for dry cutting.)
Note 5) When using under higher than recommended cutting conditions, or for long periods of time, the clamp screw may become fatigued and break during machining. Please change out the clamp screw periodically.
Note 6) Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.

Cutting Conditions (Guide) :
● : Stable Cutting ◔ : General Cutting ✲ : Unstable Cutting

Depth of Cut / Feed

(in)

	Material	Properties	ae	Cutting Conditions	DC						Cutting Mode
					.500"–.625", 12 mm-16 mm		.750"–1.000", 18 mm–25 mm		1.250"–3.000", 28 mm–100 mm		
					ap	fz (IPT)	ap	fz (IPT)	ap	fz (IPT)	
P	Mild Steel	Hardness ≤180HB	≤0.25DC	● ◔ ✲	≤.236	.0039 – .0059	≤.315	.0039 – .0079	≤.394	.0039 – .0098	Dry, Wet
			0.25 – 0.5DC	● ◔ ✲	≤.197	.0031 – .0047	≤.315	.0039 – .0059	≤.315	.0039 – .0079	Dry, Wet
			0.5 – 0.75DC	● ◔ ✲	≤.157	.0031 – .0047	≤.236	.0031 – .0047	≤.236	.0039 – .0059	Dry, Wet
			DC (Slot)	● ◔ ✲	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0031 – .0047	Dry, Wet
	Carbon Steel Alloy Steel Alloy Tool Steel	Hardness 180 – 280HB	≤0.25DC	● ◔ ✲	≤.236	.0039 – .0059	≤.315	.0039 – .0079	≤.394	.0039 – .0098	Dry, Wet
			0.25 – 0.5DC	● ◔ ✲	≤.197	.0031 – .0047	≤.315	.0039 – .0059	≤.315	.0039 – .0079	Dry, Wet
			0.5 – 0.75DC	● ◔ ✲	≤.157	.0031 – .0047	≤.236	.0031 – .0047	≤.236	.0039 – .0059	Dry, Wet
			DC (Slot)	● ◔ ✲	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0031 – .0047	Dry, Wet
	Carbon Steel Alloy Steel Alloy Tool Steel	Hardness 280 – 350HB ≤350HB (Annealing)	≤0.25DC	● ◔ ✲	≤.236	.0039 – .0059	≤.315	.0039 – .0059	≤.394	.0039 – .0079	Dry, Wet
			0.25 – 0.5DC	● ◔ ✲	≤.197	.0031 – .0047	≤.315	.0031 – .0047	≤.315	.0039 – .0059	Dry, Wet
			0.5 – 0.75DC	● ◔ ✲	≤.157	.0031 – .0047	≤.236	.0024 – .0039	≤.236	.0031 – .0047	Dry, Wet
			DC (Slot)	● ◔ ✲	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0024 – .0039	Dry, Wet
M	Austenitic Stainless Steel	–	≤0.25DC	○ ◔	≤.236	.0039 – .0059	≤.315	.0039 – .0079	≤.394	.0039 – .0079	Dry, Wet
				✲	≤.236	.0031 – .0047	≤.315	.0031 – .0059	≤.394	.0031 – .0059	Dry, Wet
			0.25 – 0.5DC	○ ◔	≤.197	.0031 – .0047	≤.315	.0031 – .0059	≤.315	.0031 – .0059	Dry, Wet
				✲	≤.197	.0024 – .0039	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Dry, Wet
			0.5 – 0.75DC	○ ◔	≤.157	.0024 – .0039	≤.236	.0031 – .0047	≤.236	.0031 – .0047	Dry, Wet
				✲	≤.157	.0024 – .0031	≤.236	.0024 – .0039	≤.236	.0024 – .0039	Dry, Wet
			DC (Slot)	○ ◔	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0024 – .0039	Dry, Wet
				✲	≤.079	.0024 – .0031	≤.157	.0024 – .0031	≤.157	.0024 – .0031	Dry, Wet
	Ferritic and Martensitic Stainless Steel	–	≤0.25DC	○ ◔	≤.236	.0039 – .0059	≤.315	.0039 – .0079	≤.394	.0039 – .0079	Dry, Wet
				✲	≤.236	.0031 – .0047	≤.315	.0031 – .0059	≤.394	.0031 – .0059	Dry, Wet
			0.25 – 0.5DC	○ ◔	≤.197	.0031 – .0047	≤.315	.0031 – .0059	≤.315	.0031 – .0059	Dry, Wet
				✲	≤.197	.0024 – .0039	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Dry, Wet
			0.5 – 0.75DC	○ ◔	≤.157	.0024 – .0039	≤.236	.0031 – .0047	≤.236	.0031 – .0047	Dry, Wet
				✲	≤.157	.0024 – .0031	≤.236	.0024 – .0039	≤.236	.0020 – .0039	Dry, Wet
			DC (Slot)	○ ◔	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0020 – .0039	Dry, Wet
				✲	≤.079	.0024 – .0031	≤.157	.0024 – .0031	≤.157	.0020 – .0031	Dry, Wet
	Precipitation Hardening Stainless Steel	Hardness < 450HB	≤0.25DC	○ ◔	≤.236	.0039 – .0059	≤.315	.0039 – .0059	≤.394	.0039 – .0059	Dry, Wet
				✲	≤.236	.0031 – .0047	≤.315	.0031 – .0047	≤.394	.0031 – .0047	Dry, Wet
			0.25 – 0.5DC	○ ◔	≤.197	.0031 – .0047	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Dry, Wet
				✲	≤.197	.0024 – .0039	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Dry, Wet
			0.5 – 0.75DC	○ ◔	≤.157	.0024 – .0039	≤.236	.0024 – .0039	≤.236	.0020 – .0039	Dry, Wet
				✲	≤.157	.0024 – .0031	≤.236	.0024 – .0031	≤.236	.0020 – .0031	Dry, Wet
			DC (Slot)	○ ◔	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0020 – .0039	Dry, Wet
				✲	≤.079	.0024 – .0031	≤.157	.0024 – .0031	≤.157	.0024 – .0031	Dry, Wet

Note 1) These cutting conditions should be referenced for standard shank types and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter conditions accordingly.
Note 2) Chatter and vibration are more likely under the following circumstances. Use a cut and feed per tooth that are at minimum recommended conditions or below.
•When tool overhang is long (using a long shank, screw-in type, etc.).
•Rigidity of machine, workpiece material or attachment of workpiece material is low
•Corner radius during pocket milling
Note 3) A type with fewer teeth is recommended when the depth of cut in the radius direction (ae) is 0.5 DC or more.
Note 4) Wet cutting is recommended, when focusing on the surface finish. (Tool life is shorter than for dry cutting.)
Note 5) When using under higher than recommended cutting conditions, or for long periods of time, the clamp screw may become fatigued and break during machining. Please change out the clamp screw periodically.
Note 6) Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.

Cutting Conditions (Guide) :
● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Depth of Cut / Feed

(in)

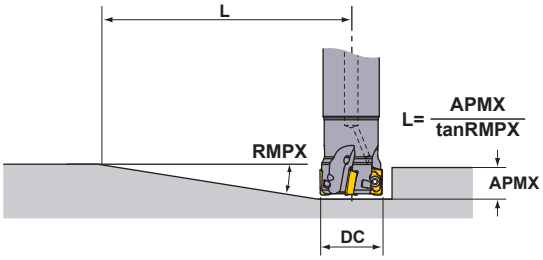
	Material	Properties	ae	Cutting Conditions	DC						Cutting Mode
					.500"–.625", 12 mm-16 mm		.750"–1.000", 18 mm–25 mm		1.250"–3.000", 28 mm–100 mm		
					ap	fz (IPT)	ap	fz (IPT)	ap	fz (IPT)	
K	Gray Cast Iron	Tensile Strength ≤350MPa	≤0.25DC	● ◐	≤.236	.0039 – .0059	≤.315	.0039 – .0079	≤.394	.0039 – .0098	Dry, Wet
				✤	≤.236	.0031 – .0047	≤.315	.0031 – .0059	≤.394	.0039 – .0079	Dry, Wet
			0.25 – 0.5DC	● ◐	≤.197	.0031 – .0047	≤.315	.0031 – .0059	≤.315	.0039 – .0079	Dry, Wet
				✤	≤.197	.0024 – .0039	≤.315	.0031 – .0047	≤.315	.0039 – .0059	Dry, Wet
			0.5 – 0.75DC	● ◐	≤.157	.0031 – .0047	≤.236	.0024 – .0039	≤.236	.0039 – .0059	Dry, Wet
				✤	≤.157	.0031 – .0047	≤.236	.0024 – .0039	≤.236	.0031 – .0047	Dry, Wet
			DC (Slot)	● ◐	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0031 – .0059	Dry, Wet
				✤	≤.079	.0024 – .0031	≤.157	.0024 – .0031	≤.157	.0024 – .0039	Dry, Wet
	Ductile Cast Iron	Tensile Strength ≤800MPa	≤0.25DC	● ◐	≤.236	.0039 – .0059	≤.315	.0039 – .0079	≤.394	.0039 – .0079	Dry, Wet
				✤	≤.236	.0031 – .0047	≤.315	.0039 – .0059	≤.394	.0039 – .0059	Dry, Wet
			0.25 – 0.5DC	● ◐	≤.197	.0031 – .0047	≤.315	.0039 – .0059	≤.315	.0039 – .0059	Dry, Wet
				✤	≤.197	.0024 – .0039	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Dry, Wet
			0.5 – 0.75DC	● ◐	≤.157	.0031 – .0047	≤.236	.0031 – .0047	≤.236	.0031 – .0047	Dry, Wet
				✤	≤.157	.0031 – .0047	≤.236	.0031 – .0047	≤.236	.0024 – .0039	Dry, Wet
			DC (Slot)	● ◐	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0024 – .0039	Dry, Wet
				✤	≤.079	.0024 – .0031	≤.157	.0024 – .0031	≤.157	.0024 – .0031	Dry, Wet
N	Aluminum Alloys	Content Si< 5%	≤0.25DC	● ◐	≤.236	.0039 – .0079	≤.315	.0039 – .0098	≤.394	.0039 – .0098	Dry, Wet
				✤	≤.236	.0039 – .0059	≤.315	.0039 – .0079	≤.394	.0039 – .0079	Dry, Wet
			0.25 – 0.5DC	● ◐	≤.197	.0039 – .0059	≤.315	.0039 – .0079	≤.315	.0039 – .0079	Dry, Wet
				✤	≤.197	.0031 – .0047	≤.315	.0039 – .0059	≤.315	.0039 – .0059	Dry, Wet
			0.5 – 0.75DC	● ◐	≤.157	.0031 – .0047	≤.236	.0024 – .0059	≤.236	.0031 – .0059	Dry, Wet
				✤	≤.157	.0024 – .0039	≤.236	.0024 – .0059	≤.236	.0031 – .0059	Dry, Wet
			DC (Slot)	● ◐	≤.079	.0024 – .0039	≤.157	.0024 – .0059	≤.157	.0031 – .0059	Dry, Wet
				✤	≤.079	.0024 – .0031	≤.157	.0024 – .0047	≤.157	.0031 – .0047	Dry, Wet
S	Titanium Alloys (Ti-6Al-4V,etc.)	—	≤0.25DC	● ◐ ✤	≤.236	.0031 – .0059	≤.315	.0031 – .0059	≤.394	.0031 – .0059	Wet
			0.25 – 0.5DC	● ◐ ✤	≤.197	.0031 – .0047	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Wet
			0.5 – 0.75DC	● ◐ ✤	≤.157	.0024 – .0039	≤.236	.0024 – .0039	≤.236	.0024 – .0039	Wet
			DC (Slot)	● ◐ ✤	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0024 – .0039	Wet
	Titanium Alloys (Ti-5Al-5V-5Mo-3Cr,etc.)	—	≤0.25DC	● ◐ ✤	≤.236	.0031 – .0047	≤.315	.0031 – .0047	≤.394	.0031 – .0047	Wet
			0.25 – 0.5DC	● ◐ ✤	≤.197	.0031 – .0047	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Wet
			0.5 – 0.75DC	● ◐ ✤	≤.157	.0024 – .0039	≤.236	.0024 – .0039	≤.236	.0024 – .0039	Wet
			DC (Slot)	● ◐ ✤	≤.079	.0024 – .0039	≤.157	.0024 – .0039	≤.157	.0024 – .0039	Wet
	Heat Resistant Alloys	—	≤0.25DC	● ◐ ✤	≤.236	.0031 – .0047	≤.315	.0031 – .0047	≤.394	.0031 – .0047	Wet
			0.25 – 0.5DC	● ◐ ✤	≤.197	.0031 – .0047	≤.315	.0031 – .0047	≤.315	.0031 – .0047	Wet
			0.5 – 0.75DC	● ◐ ✤	≤.157	.0024 – .0039	≤.236	.0024 – .0039	≤.236	.0024 – .0039	Wet
			DC (Slot)	● ◐ ✤	≤.079	.0024 – .0031	≤.157	.0024 – .0039	≤.157	.0024 – .0031	Wet
H	Hardened Steel	Hardness 40—55HRC	≤0.25DC	● ◐	≤.157	.0031 – .0059	≤.157	.0031 – .0059	≤.157	.0031 – .0059	Dry, Wet
				✤	≤.157	.0031 – .0047	≤.157	.0031 – .0047	≤.157	.0031 – .0047	Dry, Wet
			0.25 – 0.5DC	● ◐	≤.118	.0031 – .0047	≤.118	.0031 – .0047	≤.118	.0031 – .0047	Dry, Wet
				✤	≤.118	.0024 – .0039	≤.118	.0024 – .0039	≤.118	.0024 – .0039	Dry, Wet
			0.5 – 0.75DC	● ◐	≤.079	.0024 – .0039	≤.079	.0024 – .0039	≤.079	.0024 – .0039	Dry, Wet
				✤	≤.079	.0024 – .0039	≤.079	.0024 – .0039	≤.079	.0024 – .0039	Dry, Wet
			DC (Slot)	● ◐	≤.039	.0024 – .0039	≤.039	.0024 – .0039	≤.039	.0024 – .0039	Dry, Wet
				✤	≤.039	.0024 – .0031	≤.039	.0024 – .0031	≤.039	.0024 – .0031	Dry, Wet

Note 1) These cutting conditions should be referenced for standard shank types and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter conditions accordingly.
Note 2) Chatter and vibration are more likely under the following circumstances. Use a cut and feed per tooth that are at minimum recommended conditions or below.
- •When tool overhang is long (using a long shank, screw-in type, etc.).
- •Rigidity of machine, workpiece material or attachment of workpiece material is low
- •Corner radius during pocket milling

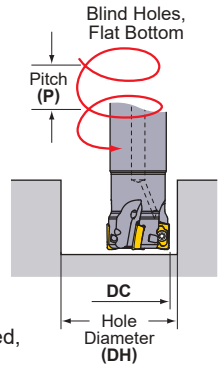
Note 3) A type with fewer teeth is recommended when the depth of cut in the radius direction (ae) is 0.5 DC or more.
Note 4) Wet cutting is recommended, when focusing on the surface finish. (Tool life is shorter than for dry cutting.)
Note 5) When using under higher than recommended cutting conditions, or for long periods of time, the clamp screw may become fatigued and break during machining. Please change out the clamp screw periodically.
Note 6) Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.

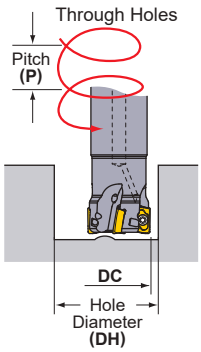
Ramping / Helical Milling

● **Ramping**



● **Helical Milling**





Refer to the table below for cutting conditions. For feed per tooth and cutting speed, follow the cutting conditions for slot milling.

(in)

DC	RE	Ramping		Helical Milling (Blind Hole, Flat Bottom)				Helical Milling (Through Hole)	
		RMPX	L *	DH max.	P max.	DH min.	P max.	DH min.	P max.
.500	.008	6.5°	3.5	.961	.157	.826	.079	.660	.039
	.016	6.5°	3.5	.945	.157	.827	.079	.660	.039
	.031	6.5°	3.5	.913	.118	.828	.079	.660	.039
	.039	6.5°	3.5	.898	.118	.829	.079	.660	.039
	.047	6.5°	3.5	.882	.118	.830	.079	.660	.039
	.063	6.5°	3.5	.850	.118	.805	.079	.660	.039
	.079	6.5°	3.5	.819	.079	.741	.079	.660	.039
	.094	6.5°	3.5	.787	.079	.743	.079	.660	.039
	.118	6.5°	3.5	.740	.079	.746	.079	.660	.039
	.126	6.5°	3.5	.724	.079	.747	.079	.660	.039
.625	.008	10.5°	2.1	1.211	.315	1.078	.236	.802	.079
	.016	10.5°	2.1	1.195	.315	1.079	.236	.802	.079
	.031	10.5°	2.1	1.163	.276	1.081	.236	.802	.079
	.039	10.5°	2.1	1.148	.276	1.082	.236	.802	.079
	.047	10.5°	2.1	1.132	.276	1.082	.236	.802	.079
	.063	10.5°	2.1	1.100	.276	1.059	.236	.802	.079
	.079	10.5°	2.1	1.069	.236	.988	.197	.802	.079
	.094	10.5°	2.1	1.037	.236	.990	.197	.802	.079
	.118	10.5°	2.1	.990	.197	.979	.197	.802	.079
	.126	10.5°	2.1	.974	.197	.979	.197	.802	.079
.750	.008	7.4°	3.0	1.461	.276	1.329	.236	1.017	.079
	.016	7.4°	3.0	1.445	.276	1.330	.236	1.017	.079
	.031	7.4°	3.0	1.413	.236	1.332	.236	1.017	.079
	.039	7.4°	3.0	1.398	.236	1.333	.236	1.017	.079
	.047	7.4°	3.0	1.382	.236	1.334	.236	1.017	.079
	.063	7.4°	3.0	1.350	.236	1.311	.197	1.017	.079
	.079	7.4°	3.0	1.319	.197	1.239	.197	1.017	.079
	.094	7.4°	3.0	1.287	.197	1.241	.197	1.017	.079
	.118	7.4°	3.0	1.240	.197	1.228	.157	1.017	.079
	.126	7.4°	3.0	1.224	.157	1.228	.157	1.017	.079

* L (= APMX / tan RMPX). Cutter travel distance until the depth of cut reaches APMX at the maximum ramping angle.
The maximum depth of cut APMX for RS0112 is .394 in.

Note 1) Reduce the table feed when performing ramping or helical machining.

Note 2) During ramping and helical machining, particularly drilling operations, long continuous chips may be generated and scattered. Ensure adequate safety precautions are taken.

(in)

DC	RE	Ramping		Helical Milling (Blind Hole, Flat Bottom)				Helical Milling (Through Hole)	
		RMPX	L *	DH max.	P max.	DH min.	P max.	DH min.	P max.
.875	.008	5.5°	4.1	1.711	.236	1.581	.197	1.250	.079
	.016	5.5°	4.1	1.695	.236	1.582	.197	1.250	.079
	.031	5.5°	4.1	1.663	.236	1.584	.197	1.250	.079
	.039	5.5°	4.1	1.648	.197	1.585	.197	1.250	.079
	.047	5.5°	4.1	1.632	.197	1.586	.197	1.250	.079
	.063	5.5°	4.1	1.600	.197	1.564	.197	1.250	.079
	.079	5.5°	4.1	1.569	.197	1.491	.157	1.250	.079
	.094	5.5°	4.1	1.537	.197	1.494	.157	1.250	.079
	.118	5.5°	4.1	1.490	.157	1.479	.157	1.250	.079
	.126	5.5°	4.1	1.474	.157	1.479	.157	1.250	.079
1.000	.008	4.4°	5.1	1.961	.197	1.833	.197	1.491	.118
	.016	4.4°	5.1	1.945	.197	1.834	.197	1.491	.118
	.031	4.4°	5.1	1.913	.197	1.837	.197	1.491	.118
	.039	4.4°	5.1	1.898	.197	1.838	.197	1.491	.118
	.047	4.4°	5.1	1.882	.197	1.839	.197	1.491	.118
	.063	4.4°	5.1	1.850	.197	1.817	.197	1.491	.118
	.079	4.4°	5.1	1.819	.197	1.745	.157	1.491	.118
	.094	4.4°	5.1	1.787	.157	1.747	.157	1.491	.118
	.118	4.4°	5.1	1.740	.157	1.730	.157	1.491	.118
	.126	4.4°	5.1	1.724	.157	1.730	.157	1.491	.118
1.125	.008	3.6°	6.3	2.211	.197	2.083	.157	1.741	.118
	.016	3.6°	6.3	2.195	.197	2.084	.157	1.741	.118
	.031	3.6°	6.3	2.163	.197	2.087	.157	1.741	.118
	.039	3.6°	6.3	2.148	.197	2.088	.157	1.741	.118
	.047	3.6°	6.3	2.132	.197	2.089	.157	1.741	.118
	.063	3.6°	6.3	2.100	.157	2.067	.157	1.741	.118
	.079	3.6°	6.3	2.069	.157	1.994	.157	1.741	.118
	.094	3.6°	6.3	2.037	.157	1.997	.157	1.741	.118
	.118	3.6°	6.3	1.990	.157	1.980	.157	1.741	.118
	.126	3.6°	6.3	1.974	.157	1.980	.157	1.741	.118
1.250	.008	3.1°	7.3	2.461	.197	2.332	.157	1.988	.118
	.016	3.1°	7.3	2.445	.197	2.330	.157	1.988	.118
	.031	3.1°	7.3	2.413	.197	2.332	.157	1.988	.118
	.039	3.1°	7.3	2.398	.157	2.338	.157	1.988	.118
	.047	3.1°	7.3	2.382	.157	2.339	.157	1.988	.118
	.063	3.1°	7.3	2.350	.157	2.317	.157	1.988	.118
	.079	3.1°	7.3	2.319	.157	2.244	.157	1.988	.118
	.094	3.1°	7.3	2.287	.157	2.247	.157	1.988	.118
	.118	3.1°	7.3	2.240	.157	2.230	.157	1.988	.118
	.126	3.1°	7.3	2.224	.157	2.230	.157	1.988	.118

* L (= APMX / tan RMPX). Cutter travel distance until the depth of cut reaches APMX at the maximum ramping angle.
The maximum depth of cut APMX for RS0112 is .394 in.

Note 1) Reduce the table feed when performing ramping or helical machining.

Note 2) During ramping and helical machining, particularly drilling operations, long continuous chips may be generated and scattered. Ensure adequate safety precautions are taken.

(in)

DC	RE	Ramping		Helical Milling (Blind Hole, Flat Bottom)				Helical Milling (Through Hole)	
		RMPX	L *	DH max.	P max.	DH min.	P max.	DH min.	P max.
1.500	.008	2.4°	9.4	2.961	.157	2.828	.157	2.488	.118
	.016	2.4°	9.4	2.945	.157	2.830	.157	2.488	.118
	.031	2.4°	9.4	2.913	.157	2.832	.157	2.488	.118
	.039	2.4°	9.4	2.898	.157	2.833	.157	2.488	.118
	.047	2.4°	9.4	2.882	.157	2.835	.157	2.488	.118
	.063	2.4°	9.4	2.850	.157	2.813	.157	2.488	.118
	.079	2.4°	9.4	2.819	.157	2.740	.157	2.488	.118
	.094	2.4°	9.4	2.787	.157	2.742	.157	2.488	.118
	.118	2.4°	9.4	2.740	.157	2.726	.157	2.488	.118
	.126	2.4°	9.4	2.724	.157	2.726	.157	2.488	.118
2.000	.008	1.7°	13.3	3.961	.157	3.828	.157	3.487	.118
	.016	1.7°	13.3	3.945	.157	3.829	.157	3.487	.118
	.031	1.7°	13.3	3.913	.157	3.832	.157	3.487	.118
	.039	1.7°	13.3	3.898	.157	3.833	.157	3.487	.118
	.047	1.7°	13.3	3.882	.157	3.834	.157	3.487	.118
	.063	1.7°	13.3	3.850	.157	3.812	.157	3.487	.118
	.079	1.7°	13.3	3.819	.157	3.740	.157	3.487	.118
	.094	1.7°	13.3	3.787	.157	3.742	.157	3.487	.118
	.118	1.7°	13.3	3.740	.157	3.726	.157	3.487	.118
	.126	1.7°	13.3	3.724	.157	3.726	.157	3.487	.118
2.500	.008	1.3°	17.4	4.961	.157	4.828	.157	4.487	.118
	.016	1.3°	17.4	4.945	.157	4.829	.157	4.487	.118
	.031	1.3°	17.4	4.913	.157	4.832	.157	4.487	.118
	.039	1.3°	17.4	4.898	.157	4.833	.157	4.487	.118
	.047	1.3°	17.4	4.882	.157	4.834	.157	4.487	.118
	.063	1.3°	17.4	4.850	.157	4.812	.157	4.487	.118
	.079	1.3°	17.4	4.819	.157	4.739	.157	4.487	.118
	.094	1.3°	17.4	4.787	.157	4.742	.157	4.487	.118
	.118	1.3°	17.4	4.740	.157	4.726	.157	4.487	.118
	.126	1.0°	17.4	4.724	.157	4.726	.157	4.487	.118
3.000	.008	1.0°	22.6	5.961	.157	5.828	.118	5.487	.118
	.016	1.0°	22.6	5.945	.157	5.829	.118	5.487	.118
	.031	1.0°	22.6	5.913	.157	5.832	.118	5.487	.118
	.039	1.0°	22.6	5.898	.157	5.833	.118	5.487	.118
	.047	1.0°	22.6	5.882	.157	5.834	.118	5.487	.118
	.063	1.0°	22.6	5.850	.118	5.812	.118	5.487	.118
	.079	1.0°	22.6	5.819	.118	5.739	.118	5.487	.118
	.094	1.0°	22.6	5.787	.118	5.742	.118	5.487	.118
	.118	1.0°	22.6	5.740	.118	5.726	.118	5.487	.118
	.126	1.0°	22.6	5.724	.118	5.726	.118	5.487	.118

* L (= APMX / tan RMPX). Cutter travel distance until the depth of cut reaches APMX at the maximum ramping angle.
The maximum depth of cut APMX for RS0112 is .394 in.

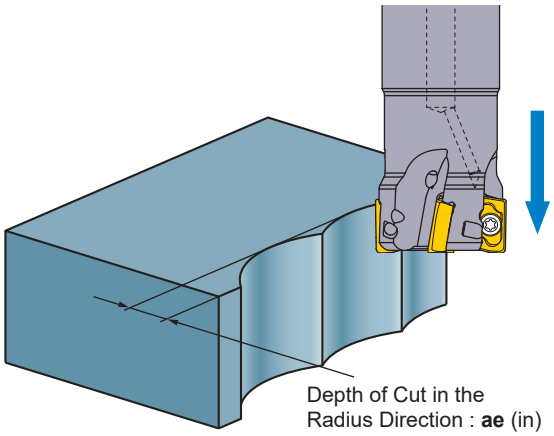
Note 1) Reduce the table feed when performing ramping or helical machining.

Note 2) During ramping and helical machining, particularly drilling operations, long continuous chips may be generated and scattered. Ensure adequate safety precautions are taken.

For Plunging and Drilling

See the tables to the right for cutting conditions. Follow the cutting conditions for slot milling regarding feed per tooth and cutting speed.

● Plunging

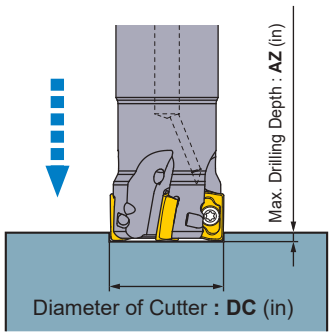


(in)

DC	ae max.
.500	.165
.625	.216
.750	.232
.875	.236
1.000	.240
1.125	.240
1.500	.240
2.500	.240
3.000	.240

Note1) No step feed necessary.

● Drilling



(in)

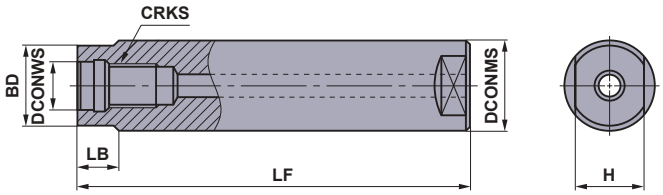
DC	AZ max.
.500	.012
.625	.012
.750	.012
.875	.012
1.000	.012
1.125	.012
1.500	.012
2.500	.012
3.000	.012

Note 1) Exercise due caution as chips scatter easily.
Note 2) Use compressed air to eliminate chips (or coolant for when machining aluminum alloy).

SCREW-IN HOLDERS

STRAIGHT SHANK TYPE





Steel Shank Type

With Coolant Through

(in)

CRKS	Order Number	Stock	DCONMS	LF	DCONWS	BD	LB	H	WT (lbs)
M8	**SCU10M08S100S**	●	.625	3.937	.335	.571	.394	.394	.2
M8	**SCU10M08S200L**	●	.625	7.874	.335	.571	.394	.394	.7
M10	**SCU12M10S120S**	●	.750	4.724	.413	.728	.394	.551	.4
M10	**SCU12M10S220L**	●	.750	8.661	.413	.728	.394	.551	.9
M12	**SCU16M12S125S**	●	1.000	4.921	.492	.925	.394	.748	.9
M12	**SCU16M12S245L**	●	1.000	9.646	.492	.925	.394	.748	2.0
M16	**SCU20M16S140S**	●	1.250	5.512	.669	1.122	.591	.945	1.8
M16	**SCU20M16S280L**	●	1.250	11.024	.669	1.122	.591	.945	3.5

Metric Standard

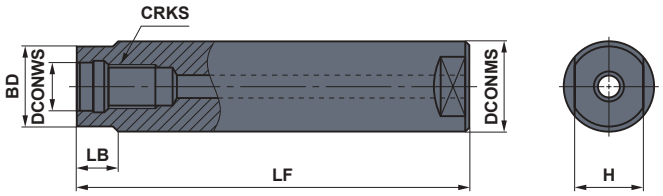
With Coolant Through

(mm)

CRKS	Order Number	Stock	DCONMS	LF	DCONWS	BD	LB	H	WT (kg)
M8	**SC16M08S100S**	★	16	100	8.5	14.5	10	10	0.1
M8	**SC16M08S200L**	★	16	200	8.5	14.5	10	10	0.3
M10	**SC20M10S120S**	★	20	120	10.5	18.5	10	14	0.3
M10	**SC20M10S220L**	★	20	220	10.5	18.5	10	14	0.5
M12	**SC25M12S125S**	★	25	125	12.5	23.5	10	19	0.4
M12	**SC25M12S245L**	★	25	245	12.5	23.5	10	19	0.8
M16	**SC32M16S140S**	★	32	140	17.0	28.5	15	24	0.8
M16	**SC32M16S280L**	★	32	280	17.0	28.5	15	24	1.6

● : USA Stock ★ : Stocked in Japan





Carbide Shank Type

With Coolant Through (in)

CRKS	Order Number	Stock	DCONMS	LF	DCONWS	BD	LB	H	WT (lbs)
M8	**SCU10M08S100SW**	●	.625	3.937	.335	.571	.394	.394	.4
M8	**SCU10M08S200LW**	●	.625	7.874	.335	.571	.394	.394	1.1
M10	**SCU12M10S120SW**	●	.750	4.724	.413	.728	.394	.551	.9
M10	**SCU12M10S220LW**	●	.750	8.661	.413	.728	.394	.551	1.8
M12	**SCU16M12S125SW**	●	1.000	4.921	.492	.925	.394	.748	1.8
M12	**SCU16M12S245LW**	●	1.000	9.646	.492	.925	.394	.748	3.5
M16	**SCU20M16S140SW**	●	1.250	5.512	.669	1.122	.591	.945	3.1
M16	**SCU20M16S280LW**	●	1.250	11.024	.669	1.122	.591	.945	6.4

Metric Standard

With Coolant Through (mm)

CRKS	Order Number	Stock	DCONMS	LF	DCONWS	BD	LB	H	WT (kg)
M8	**SC16M08S100SW**	★	16	100	8.5	14.5	10	10	0.2
M8	**SC16M08S200LW**	★	16	200	8.5	14.5	10	10	0.5
M10	**SC20M10S120SW**	★	20	120	10.5	18.5	10	14	0.5
M10	**SC20M10S220LW**	★	20	220	10.5	18.5	10	14	0.9
M12	**SC25M12S125SW**	★	25	125	12.5	23.5	10	19	0.8
M12	**SC25M12S245LW**	★	25	245	12.5	23.5	10	19	1.5
M16	**SC32M16S140SW**	★	32	140	17.0	28.5	15	24	1.4
M16	**SC32M16S280LW**	★	32	280	17.0	28.5	15	24	2.8

How to Install the Screw-in Head

①Thoroughly clean the clamp section of the head and the arbor with an air blower or brush before installation.
②Tighten the head at the recommended torque and ensure that there is no gap between the head and arbor.

(in)

Screw Size	Recommended Torque (lbf-ft)	Wrench Size
M8	17.0	.394
M10	33.9	.551
M12	59.0	.748
M16	66.4	.945



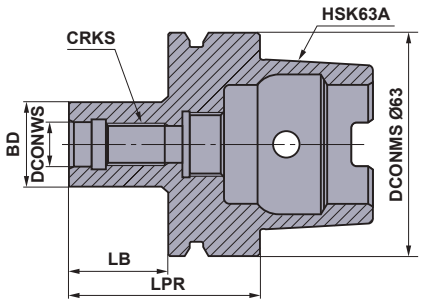
●Cutting tools become extremely hot during cutting. Never touch them with bare hands after operation as this may produce risk of injuries or burns.
●Do not handle the cutting tools with bare hands as this may cause injuries.

● : USA Stock ★ : Stocked in Japan

SCREW-IN HOLDERS

HSK63A Shank Arbor





Metric Standard

With Coolant Through

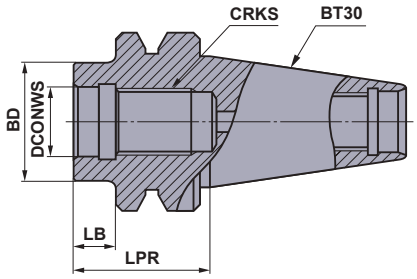
(mm)

CRKS	Order Number	Stock	DCONWS	BD	LPR	LB	WT (kg)
M8	**SC16M08S22-HSK63A**	★	8.5	14.5	48	22	0.7
M10	**SC20M10S24-HSK63A**	★	10.5	18.5	50	24	0.7
M12	**SC25M12S27-HSK63A**	★	12.5	23.5	53	27	0.7
M16	**SC32M16S28-HSK63A**	★	17.0	28.5	54	28	0.8

Note 1) The HSK63A shank type has a built-in coolant pipe for installation.

BT30 Shank Arbor





Metric Standard

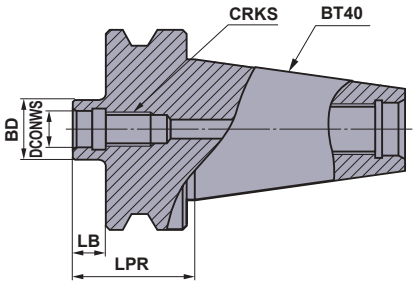
With Coolant Through

(mm)

CRKS	Order Number	Stock	DCONWS	BD	LPR	LB	WT (kg)
M8	**SC16M08S10-BT30**	★	8.5	14.5	32	10	0.4
M10	**SC20M10S10-BT30**	★	10.5	18.5	32	10	0.4
M12	**SC25M12S10-BT30**	★	12.5	23.5	32	10	0.4
M16	**SC32M16S10-BT30**	★	17.0	28.5	32	10	0.4

BT40 Shank Arbor





Metric Standard

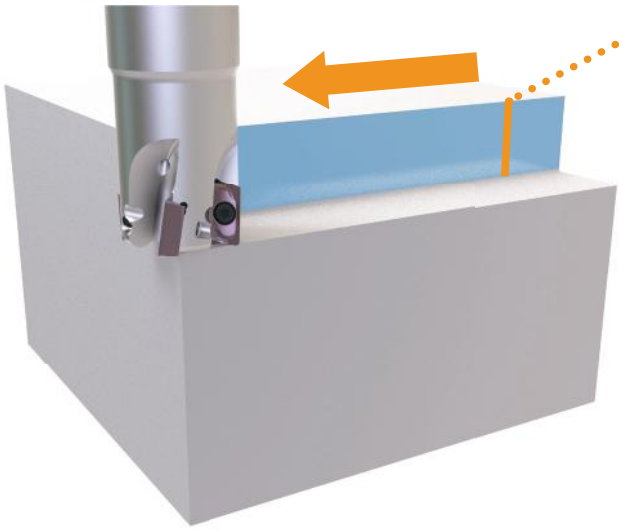
With Coolant Through

(mm)

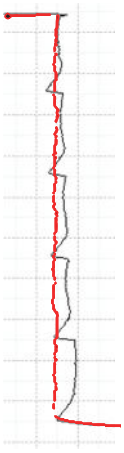
CRKS	Order Number	Stock	DCONWS	BD	LPR	LB	WT (kg)
M8	**SC16M08S10-BT40**	★	8.5	14.5	37	10	1
M10	**SC20M10S10-BT40**	★	10.5	18.5	37	10	1
M12	**SC25M12S10-BT40**	★	12.5	23.5	37	10	1
M16	**SC32M16S10-BT40**	★	17.0	28.5	37	10	1

Application Example 1:
Machine Part Machining Example – A36 Mild Steel Shoulder Milling

Compared to conventional products, the step height was reduced to one-tenth, and continuous machining was achieved without insert adhesion or flaking.



Measured Step Height



RS0112
Conventional

<Cutting Conditions>
Material : ASTM A36 Mild Steel
Component : Machine parts
Cutter Dia. : DC=.984 in, 4 flutes
MP1220, M chipbreaker
Cutting Speed : vc=310–385 SFM
Feed per Tooth : fz=.0028–.0031 IPT
Depth of Cut : ap=.197 in x4
Width of Cut : ae=.008 in
(Finishing allowance)
Cutting Mode : Dry Cutting

Application Example 2:
Machined Mechanical Component – 1045 Carbon Steel Shoulder Milling

Tool life was doubled compared to conventional products, with clearly superior results also achieved in surface finish quality.

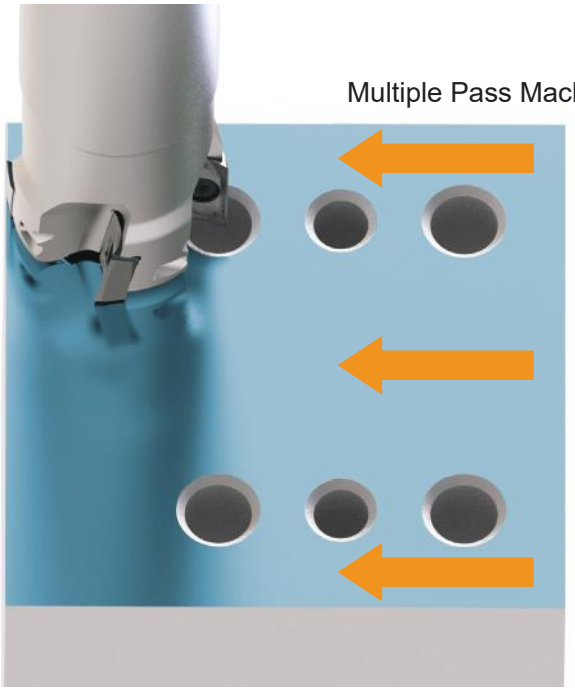


<Cutting Conditions>
Material : AISI 1045 Carbon Steel
Cutter Dia. : DC=.984 in, 5 flutes
MP1230, M chipbreaker
Cutting Speed : vc=615 SFM
Feed per Tooth : fz=.0049 IPT
Depth of Cut : ap=.197 in
Width of Cut : ae=.197 in
Cutting Mode : Mist machining

● : USA Stock ★ : Stocked in Japan

Application Example 3:
Mechanical Part Machining Example – A36 Mild Steel Face Milling

Even when the depth of cut (ap) was doubled compared to conventional products, no fracture occurred. As a result, productivity doubled and tool life increased by 2.5 times. In addition, machining noise was reduced, and cutter pass marks on the finished surface were eliminated.



Multiple Pass Machining

<Cutting Conditions>

Material	: ASTM A36 Mild Steel
Component	: Machine parts
Cutter Dia.	: DC=1.575 in, 4 flutes M chipbreaker, MP1230
Cutting Speed	: vc=330 SFM
Feed per Tooth	: fz=.0075 IPT
Depth of Cut	: ap=Rough machining .016 in ×multiple passes →.031 in×multiple passes Finish .008 in
Width of Cut	: ae=.748–1.575 in (Finishing allowance)
Cutting Mode	: Wet Cutting

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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.

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Tools specifications subject to change without notice.

B285A-US-2026.11