MOLDINO
The Edge To Innovation

Indexable Square End Mill

ASM type

Super Excellent Mini ASM

All sizes have become center-through products.

MOLDINO Tool Engineering, Ltd.

New Product News | No.1203E-7 | 2020-10

Indexable end mill using advanced small-diameter inserts. Pocket design and 3D-shaped cutting edge enables high-efficient machining of even small diameter sizes.

Small dia.

Lineup of small diameter sizes from ϕ8 to ϕ32.

▶ **Can be used instead of solid end mills.**

Multi-function

JDMT-type inserts for shoulder cutting and EDMT-type inserts for low-depth, high-feed-rate machining can be used in the same holder.

▶ **Concentration of roughing tools**

By using a modular type holder, a carbide shank and special arbor suitable for the cutting depth and cutting shape can be selected.

▶ **Broad cutting range**

Easy cutting

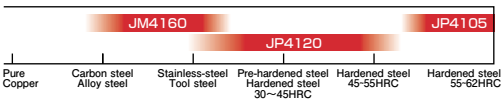
Uses low-resistance free-cutting-shape insert.

▶ **Compatible with low-powered small-sized machines equivalent to BT-30.**

Environment

▶ **Economical insert with 2-corner specifications**

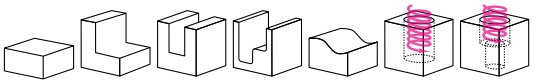
▶ **Special environmentally-friendly, high-hardness, corrosion-resistant surface treatment employed on holder.**



Applications

Roughing

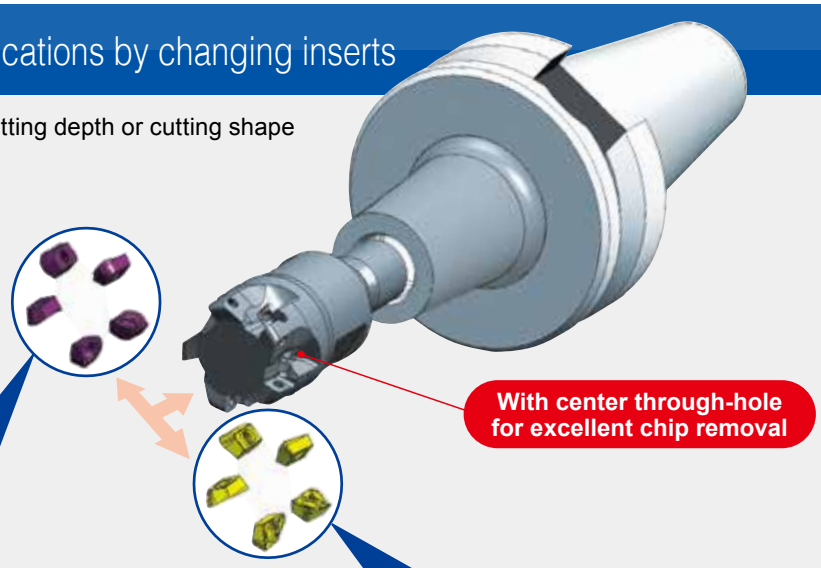
Semi Finishing



Features 01 2 types of applications by changing inserts

・High-efficient tooling system to match cutting depth or cutting shape

1. **Steel Shank type**
2. **Carbide Shank**
3. **Modular Arbor**



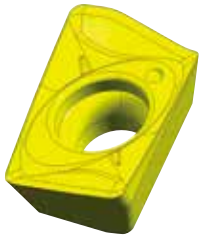
EDMT-type insert for machining efficiency

Utilizes r_ε2.0 cutting edge shape.

- Does not leave excess at edges.
- Low cutting resistance

Work material：S50C
Tools：ASMM0710R-2(ϕ10-2NT)
+ASC10-6.5-114-49
Cutting Conditions：v_c=160m/min
v_f=6,115mm/min
$a_p \times a_e$=0.25×5mm
Tool overhang 80mm

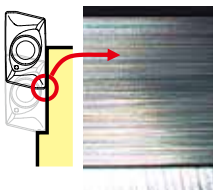
JDMT-type insert for high-grade machined surfaces



Utilizes Fine Wall (FW) shape.

- Decrease unevenness of machined surfaces
- Decrease burring

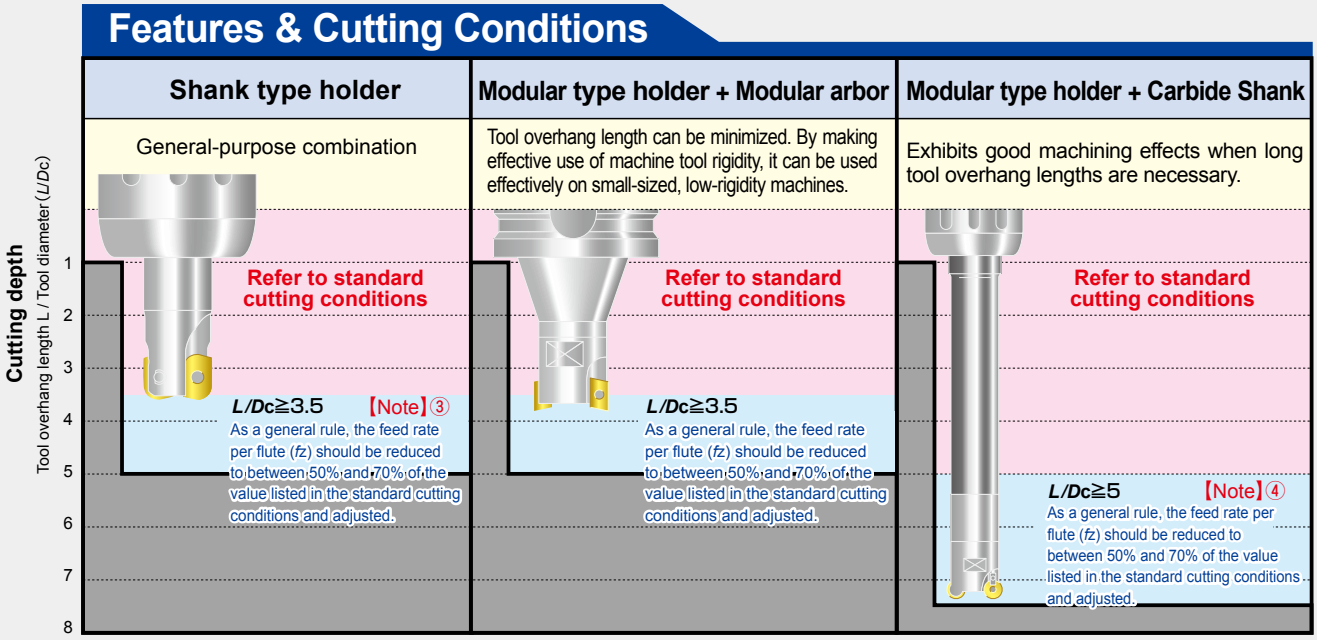
Work material：S50C
Tools：ASM0712S12R-2(ϕ12-3NT)
+ASC10-6.5-114-49
Cutting Conditions：v_c=200m/min
v_f=800mm/min
$a_p \times a_e$=5×0.5mm×2
Tool overhang 25mm



High-efficient tooling system and selecting a cutting conditions

・ASM enables high-efficient machining according to cutting shape by combined use with various tooling systems.

Features & Cutting Conditions



【Note】 ①This table shows general conditions for shoulder cutting. Adjustments should be made according to machine rigidity or tooling and the shape of the subject for cutting.
②When using ASM Ø20 to Ø32 inserts in a BT30 or BT40 arbor, the use of a combination of modular type holder and modular arbor is recommended. Furthermore, this is not suitable for cutting where $L/Dc \geq 2$.
③When using an ASM0710S08R-2 or ASM0712S10R-2 undercut type shank, as a general rule the feed rate per flute (fz) should be reduced to in addition, 50~70% of the value listed in the standard cutting conditions.
④Select the cutting condition of fz=0.3mm/t and less than ap=0.2mm when you use carbide shank ASC10-6.5-114-49/24 with $L/Dc \geqq 5$.

2 kinds of insert geometry

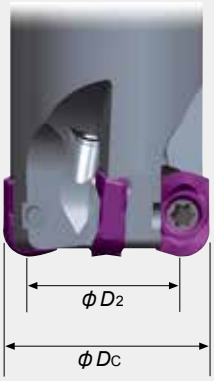
・2 kinds of inserts are available: Standard type inserts (T-type) and low-cutting force-type inserts.
・Low-resistance cutting force-type inserts reduce cutting force at the corners when pocketting by approximately 10%.

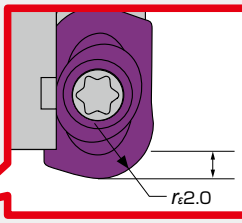
Standard type Insert
(EDMT070220R-T)

Low-resistance type Insert
(EDMT070220R)

Cutting programs

・Regular R shape is used for corner R. There is no need for an approximate R definition.





•Tool corner is R2.0
(Unique to high-feed-rate tools to leave no uncut areas.)
•Axial direction cutting depth ap should be set to 0.3 mm or less. (ap ≦ 0.3 mm)

【Note】
①Tool tip diameter $\phi D_2 = \phi Dc - 4$(mm)
②When performing pocket cutting, be careful of the cutting width (a_e) and generated variations due to remaining work to cut. (Recommended Cutting width $a_e = \phi D_2 \times 0.5 \sim 0.8$(mm))
③When cutting the corner area of a vertical wall, setting thetool pathcorner area to R will enable more stable cutting.

Technology

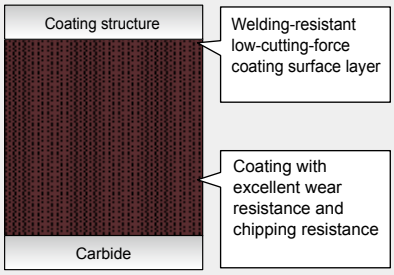
Features of AJ Coating series

- Employs an AlTi layer with a new composition created by increasing the Al content of conventional layers.
- Excellent wear resistance, chipping resistance, and heat resistance!

New technology!!

- The new layer with high Al content employs a new composition and optimizes the crystal structure to improve wear resistance and chipping resistance!
- Employs a low-friction-effect coating with excellent welding resistance as the top-most surface layer. This reduces welding to the work and decreases cutting force!

Layer structure **AJ Coating**



PVD Technology

Grade for machining pre-hardened or hardened materials JP4120

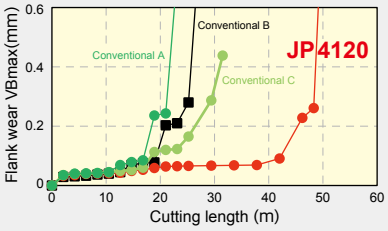
Features

- Employs a fine carbide substrate with an excellent balance between wear resistance and toughness and the new "AJ Coating" to provide improved wear resistance and chipping resistance.
- Highly versatile with excellent wear resistance and chipping resistance when machining steel materials with hardnesses of 30 to 50 HRC.

Strong fields

- Exhibits excellent cutting performance when machining pre-hardened or hardened steel with hardnesses of 30 to 50 HRC.
- Exhibits excellent wear resistance even on difficult-to-cut diecast tool steel or precipitation-hardened stainless steel, or for finishing.

Cutting performance



Work material：SKD61(40HRC)
Tool：ASRT5063R-4
Insert：WDNW140520
Cutting conditions：
v_c=90m/min f_z=0.8mm/t $a_p \times a_e$=1×44mm
Dry ※Single-flute cutting

PVD Technology

Grade for machining stainless-steel materials JP4160

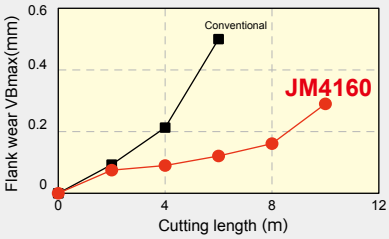
Features

- 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 to work material that occurs when machining stainless steel materials.

Strong fields

- Provides long tool life for general processing of stainless-steel materials

Cutting performance



Work material：SUS304
Tool：ASRS2032R-5
Insert：EPMT0603EN-8LF
Cutting conditions：
v_c=180m/min f_z=0.5mm/t $a_p \times a_e$=0.8×21mm
Wet ※Single-flute cutting

PVD Technology

Grade for machining high-hardness materials JP4105

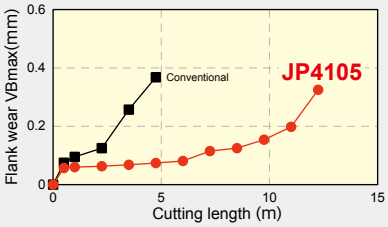
Features

- Employs an ultra-fine cemented carbide substrate and the new "AJ Coating" to improve wear resistance.
- Excellent wear resistance when machining high hardness materials of 50HRC or higher.

Strong fields

- Hardened steel (50 to 60 HRC): SKD11, SKD61, SKH, SUS420, etc.

Cutting performance



Work material：SKD11(61HRC) Tool：ASRS2032-5
Insert：EPNW0603TN-8
Cutting conditions：
v_c=80m/min f_z=0.2mm/t $a_p \times a_e$=0.5×21mm
Dry ※Single-flute cutting

Line Up

Shank type ASM□07○○S○○R-○

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

Fig-1
Standard type

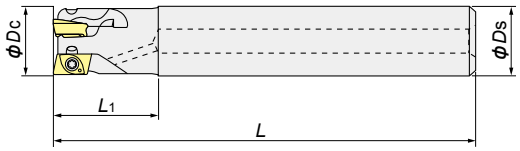
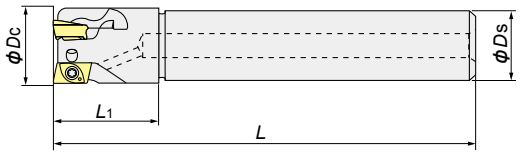


Fig-2
Undercut type

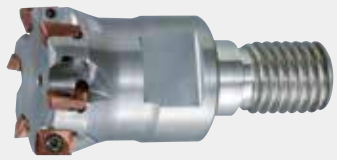


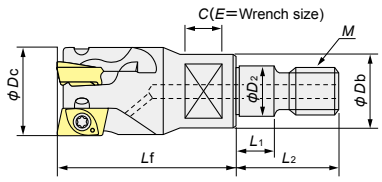
Maximum tightening torque **0.5Nm**
Spare screw included

Item Code	Stock	No.of Flute	Size (mm)				Shape	Inserts
			ΦDc	L	L1	ΦDs		
ASM0708S10R-1	●	1	8	75	16	10	Standard type (Fig-1)	JDMT0702○○R EDMT070220R(-T)
ASM0710S10R-2	●	2	10	80	20	10	Standard type (Fig-1)	
ASM0710S08R-2	●	2	10	80	20	8	Undercut type (Fig-2)	
ASM0711S10R-2	●	2	11	80	20	10	Undercut type (Fig-2)	
ASM0712S12R-3	●	3	12	80	20	12	Standard type (Fig-1)	
ASM0712S10R-3	●	3	12	80	20	10	Undercut type (Fig-2)	
ASM0714S12R-3	●	3	14	80	20	12	Undercut type (Fig-2)	
ASM0716S16R-4	●	4	16	90	25	16	Standard type (Fig-1)	
ASML0716S16R-4	●	4	16	115	50	16	Standard type (Fig-1)	
ASM0717S16R-4	●	4	17	115	20	16	Undercut type (Fig-2)	
ASM0720S20R-5	●	5	20	105	25	20	Standard type (Fig-1)	
ASML0720S20R-5	●	5	20	140	60	20	Standard type (Fig-1)	
ASM0721S20R-5	●	5	21	140	20	20	Undercut type (Fig-2)	

Modular type ASMM07○○R-○

Numeric figure in a circle ○.





Maximum tightening torque **0.5Nm**
Spare screw included

※Products for ϕ8,ϕ10,ϕ11 and ϕ12 will be changed from 20th Feb.2018 to center-through products successively.

Item Code	Stock	No.of Flute	Size (mm)								Inserts
			ΦDc	Lf	ΦD2	M	ΦDb	L1	L2	C	E	
ASMM0708R-1	●	1	8	20	6.5	M6	9.8	5.5	14.5	5	7	JDMT0702○○R EDMT070220R-(T)
ASMM0710R-2	●	2	10	20	6.5	M6	9.4	5.5	14.5	5	7	
ASMM0711R-2	●	2	11	20	6.5	M6	9.8	5.5	14.5	5	7	
ASMM0712R-3	●	3	12	20	6.5	M6	9.8	5.5	14.5	5	7	
ASMM0712R-2		2	12	20	6.5	M6	9.8	5.5	14.5	5	7	
ASMM0716R-4	●	4	16	25	8.5	M8	12.8	5.5	17	8	10	
ASMM0716R-3		3	16	25	8.5	M8	12.8	5.5	17	8	10	
ASMM0720R-5	●	5	20	30	10.5	M10	17.8	5.5	19	10	15	
ASMM0720R-4		4	20	30	10.5	M10	17.8	5.5	19	10	15	
ASMM0725R-6	●	6	25	30	12.5	M12	20.8	5.5	22	10	17	
ASMM0725R-5		5	25	30	12.5	M12	20.8	5.5	22	10	17	
ASMM0732R-8	●	8	32	30	17	M16	28.8	6	23	12	22	
ASMM0732R-5		5	32	30	17	M16	28.8	6	23	12	22	

【Note】 Do not apply lubricants such as grease, etc. to the "contact faces" and "modular screws" of the "modular mill", "special shanks" and "special arbor".

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

Line Up

Inserts

Fig-3 JDMT07020◌R
Insert with 5mm cutting edge for shoulder cutting
(a_{pmax}=5.0mm)

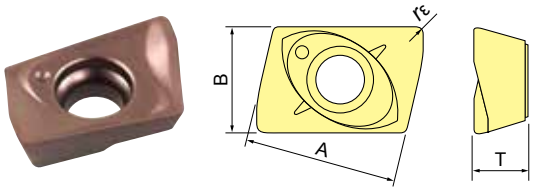
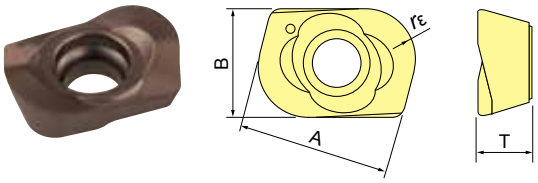


Fig-4 EDMT070220R(-T)
Insert with 2.0mm corner R for small-depth, high-feed-rate cutting
(a_{pmax}=0.3mm)



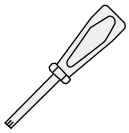
P	Carbon steels		■		⌐	
M	SUS, etc.		⌐	■	■	
K	FC・FCD				⌐	
N	Aiuminum Alloy		⌐		⌐	■
H	Hardened steels	■	⌐			

■ : General cutting, First recommended

⌐ : General cutting, Second recommended

Item Code	Tolerance Class	AJ Coated JP4105	AJ Coated JP4120	AJ Coated JM4160	TH Coated PTH30E	DLC Coated SD5010	Size (mm) A	B	rε	T	Shape
JDMT070202R	M	●	●	●	●	●	6.4	4.3	0.2	2.45	Fig-3
JDMT070204R		●	●	●	●	●	6.4	4.3	0.4	2.45	
JDMT070208R		●	●	●	●	●	6.4	4.3	0.8	2.45	
EDMT070220R-T		●	●	●			6.4	4.3	2	2.5	Fig-4 Standard type
EDMT070220R		●	●	●			6.4	4.3	2	2.5	Fig-4 Low-resistance type

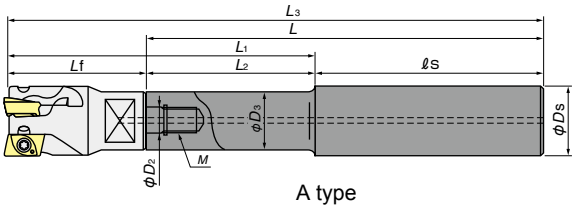
Parts

Parts	Clamp screw		Screw Driver	Screw anti-seizure agent
Shape / Cutter body		Fastening torque (N・m)		
ASM(L)07◌◌S◌◌R-◌ ASMM07◌◌R-◌	240-140	0.5	104-T6	P-37

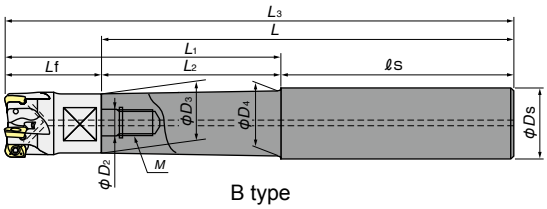
● : Stocked Items. No Mark:Manufactured upon request only.

The Shanks for Modular Mill

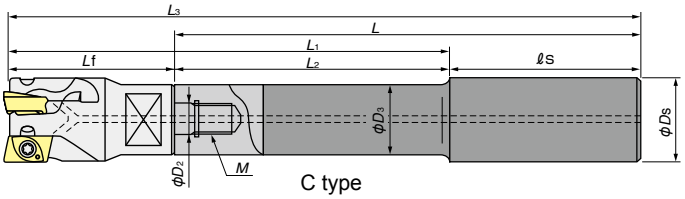
Carbide Shank



A type



B type



C type

Stated dimensions for L_3, Lf, and L_1 are with ASM attached.

Item Code	Stock	Size (mm)											Type	Cutter body	With/ without air hole
		ϕD_2	M	L_3	L	Lf	L_2	L_1	ℓs	ϕD_3	ϕDs	ϕD_4			
ASC10-6.5-74-24Z	●	6.5	M6	94	74	20	24	44	50	9.3	10	–	A	(φ8) ※4 φ10 (φ11) ※3 (φ12) ※3	○
ASC10-6.5-84-34Z	●			104	84		34	54	50						
ASC10-6.5-114-49Z	●			134	114		49	69	65						
ASC10-6.5-114-24Z	●						24	44	90						
ASC12-6.5-74-24Z	●	6.5	M6	94	74	20	24	44	50	11	12	11.5	B	(φ8) ※4 (φ10) ※4 (φ11) ※4 φ12	○
ASC12-6.5-94-44Z	●			114	94		44	64	50						
ASC12-6.5-129-64Z	●			149	129		64	84	65						
ASC12-6.5-129-24Z	●						24	44	105						
ASC16-8.5-95-30Z	●	8.5	M8	120	95	25	30	55	65	14.5	16	15.5	B	φ16	○
ASC16-8.5-120-55Z	●			145	120		55	80	65						
ASC16-8.5-140-75Z	●			165	140		75	100	65						
ASC16-8.5-160-95Z	●			185	160		95	120	65						
ASC16-8.5-160-30Z	●			185	160		30	55	130						
ASC20-10.5-120-50Z	●	10.5	M10	150	120	30	50	80	70	18.5	20	19.5	B	φ20	○
ASC20-10.5-170-90Z	●			200	170		90	120	80						
ASC20-10.5-220-120Z	●			250	220		120	150	100						
ASC20-10.5-270-150Z	●			300	270		150	180	120						
ASC20-10.5-220-50Z	●	10.5	M10	250	220	30	50	80	170	18.5	20	19.5	B	φ20	○
ASC20-10.5-270-50Z	●			300	270				220						
ASC25-12.5-145-65	●	12.5	M12	175	145	30	65	95	80	23	25	–	C	φ25	○
ASC25-12.5-215-115	●			245	215		115	145	100						
ASC25-12.5-265-145	●			295	265		145	175	120						
ASC25-12.5-315-195	●			345	315		195	225	120						
ASC25-12.5-265-65	●	12.5	M12	295	265	30	65	95	200	23	25	–	C	φ25	○
ASC25-12.5-315-65	●			345	315				250						
ASC32-17-160-80	●	17	M16	190	160	30	80	110	80	28	32	–	C	φ32	○
ASC32-17-210-110	●			240	210		110	140	100						
ASC32-17-260-140	●			290	260		140	170	120						
ASC32-17-310-190	●			340	310		190	220	120						
ASC32-17-360-240	●			390	360		240	270	120						
ASC32-17-260-80	●	17	M16	290	260	30	80	110	180	28	32	–	C	φ32	○
ASC32-17-310-80	●			340	310				230						
ASC32-17-360-80	●			390	360				280						

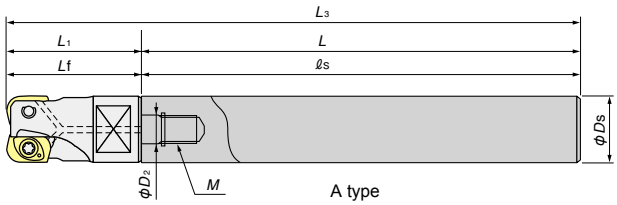
【Note】 ①Commercial milling chucks or shrink-fit holders can be used.
②Please note that the dimensions for $L3$, Lf, and $L1$ may be different when attached to other modular-type holders such as ASRM, ARM, AHUM, ARPFM, BCFM, ABPFM etc.
③For ※3, since the cutter diameter is larger than the shank diameter, there is no interference at the shank.
④For ※4, since the cutter diameter is smaller than the shank diameter, interference occurs at the shank.

● : Stocked Items.

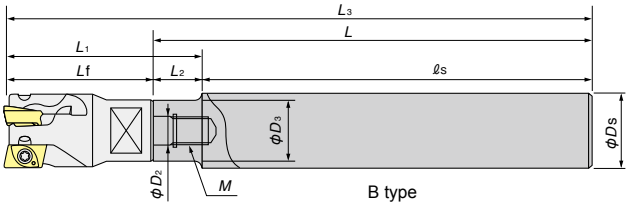
The Shanks for Modular Mill

Steel Shank

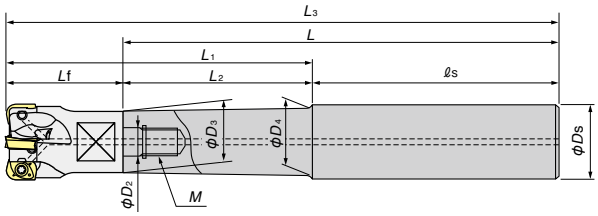
Stated dimensions for L_3, Lf, and L_1 are with ASM attached.



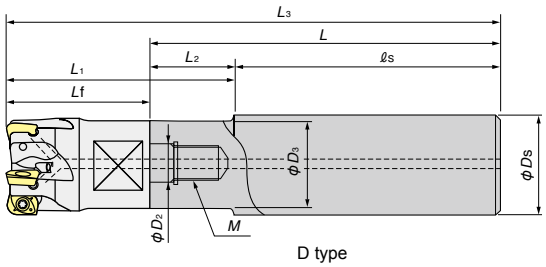
A type



B type



C type (Tapered neck)



D type

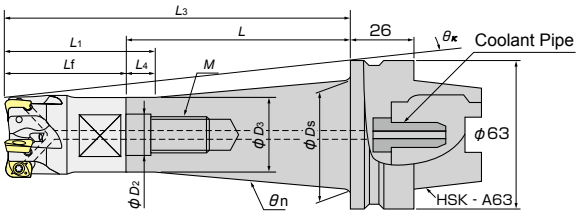
Item code	Stock	Size(mm)											Type	Cutter body	With/ without air hole
		φD2	M	L3	L	Lf	L2	L1	ℓs	φD3	φDs	φD4			
AS10-6.5-74-0	●	6.5	M6	94	74	20	–	20	74	–	10	–	A	φ10	–
AS12-6.5-84-4	●	6.5	M6	104	84	20	4	24	80	11	12	–	B	φ11 φ12	–
AS16-8.5-95-15	●	8.5	M8	120	95	25	15	40	80	14.5	16	15.5	C	φ16	○
AS20-10.5-100-20	●	10.5	M10	130	100	30	20	50	80	18	20	–	D	φ20	○
AS25-12.5-115-35	●	12.5	M12	145	115	30	35	65	80	23	25	–	D	φ25	○
AS32-17-110-30	●	17	M16	140	110	30	30	60	80	28	32	–	D	φ32	○

【Note】①Commercial milling chucks can be used.
②Please note that the dimensions for L_3, Lf, and L_1 may be different when attached to other modular-type holders such as ASRM, ARM, AHUM, ARPFM, BCFM, ABPFM, etc.

The Arbor for Modular Mill

HSK-A63

Stated dimensions for L_3, Lf, L_1 and $\theta\kappa$ are with ASM attached.



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

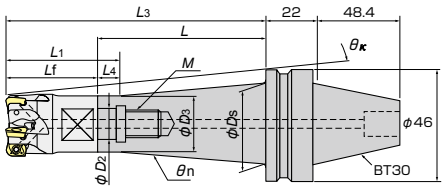
Item code	Stock	Size(mm)										Cutter body (θκ)	With/ without air hole
		φD2	M	L3	L	Lf	L4	L1	φD3	φDs	θn		
HSK-A63-10.5-30-18	●	10.5	M10	60	30	30	–	30	18	20.8	3°	φ20(21°)	○
HSK-A63-10.5-70-18	●			100	70		10	40		25	3°	φ20(13°)	
HSK-A63-10.5-120-18	●			150	120		10	40		30.2	3°	φ20(9°)	
HSK-A63-12.5-35-21	●	12.5	M12×1.75	65	35	30	–	30	21	24.3	3°	φ25(18°)	○
HSK-A63-12.5-65-21	●			95	65		10	40		27.5	3°	φ25(12°)	
HSK-A63-12.5-115-21	●			145	115		10	40		32.7	3°	φ25(8°)	
HSK-A63-17-40-28	●	17	M16×2	70	40	30	–	30	28	31.8	3°	φ32(16°)	○
HSK-A63-17-60-28	●			90	60		10	40		33.9	3°	φ32(13°)	
HSK-A63-17-110-28	●			140	110		10	40		39.2	3°	φ32(8°)	

【Note】Please note that the dimensions for L_3, Lf, L_1 and $\theta\kappa$ may be different when attached to other modular-type holders such as ASRM, ARM, ABPFM, ARPFM, BCFM, etc.

● : Stocked Items.

BT30

Stated dimensions for L_3, Lf, L_1 and $\theta\kappa$ are with ASM attached.



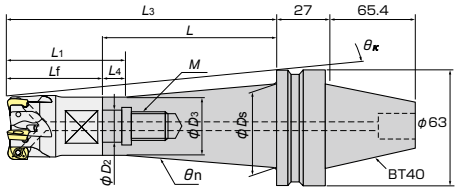
※For neck section, additional machining to user specifications is possible.

Item code	Stock	Size(mm)										Cutter body($\theta\kappa$)	With/ without air hole
		ϕD_2	M	L_3	L	Lf	L_4	L_1	ϕD_3	ϕDs	θn		
BT30-6.5-30-9.7		6.5	M6	50	30	20	5	25	9.7	25	17.0°	φ8(22°) φ10(21°) φ11(20°) φ12(20°)	–
BT30-6.5-55-9.7				75	55		10	30			9.6°	φ8(15°) φ10(14°) φ11(14°) φ12(14°)	
BT30-6.5-80-9.7				100	80		10	30			6.2°	φ8(11°) φ10(11°) φ11(11°) φ12(10°)	
BT30-8.5-25-15		8.5	M8	50	25	25	5	30	15	30	20.6°	φ16(18°)	○
BT30-8.5-50-15				75	50		10	35			10.6°	φ16(12°)	
BT30-8.5-75-15				100	75		10	35			6.6°	φ16(9°)	
BT30-10.5-20-18		10.5	M10	50	20	30	5	35	18	35	29.5°	φ20(16°)	○
BT30-10.5-45-18				75	45		10	40			13.7°	φ20(11°)	
BT30-10.5-70-18				100	70		10	40			8.1°	φ20(8°)	
BT30-12.5-15-21		12.5	M12	45	15	30	5	35	21	40	32.3°	φ25(14°)	○
BT30-12.5-40-21				70	40		10	40			17.6°	φ25(9°)	
BT30-12.5-65-21				95	65		10	40			9.8°	φ25(7°)	
BT30-17-10-28		17	M16	40	10	30	5	35	28	40	31°	φ32(11°)	○
BT30-17-35-28				65	35		10	40			13.5°	φ32(7°)	
BT30-17-60-28				90	60		10	40			6.8°	φ32(5°)	

【Note】Please note that the dimensions for L_3, Lf, L_1 and $\theta\kappa$ may be different when attached to other modular-type holders such as ASRM, ARM, AHUM, ARPFM, BCFM, ABPFM, etc.

BT40

Stated dimensions for L_3, Lf, L_1 and $\theta\kappa$ are with ASM attached.



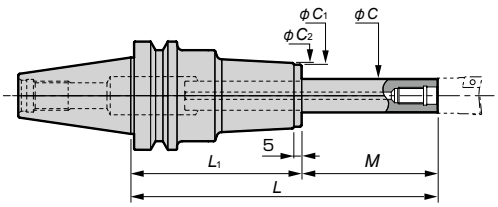
※For neck section, additional machining to user specifications is possible.

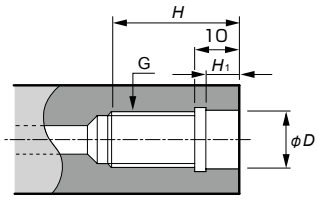
Item code	Stock	Size(mm)										Cutter body($\theta\kappa$)	With/ without air hole
		ϕD_2	M	L_3	L	Lf	L_4	L_1	ϕD_3	ϕDs	θn		
BT40-6.5-30-9.7		6.5	M6	50	30	20	5	25	9.7	25	17.0°	φ8(30°) φ10(29°) φ11(28°) φ12(28°)	–
BT40-6.5-55-9.7				75	55		10	30			9.6°	φ8(21°) φ10(20°) φ11(20°) φ12(20°)	
BT40-6.5-80-9.7				100	80		10	30			6.2°	φ8(16°) φ10(16°) φ11(15°) φ12(15°)	
BT40-8.5-25-15		8.5	M8	50	25	25	5	30	15	30	20.6°	φ16(26°)	○
BT40-8.5-50-15				75	50		10	35			10.6°	φ16(18°)	
BT40-8.5-75-15				100	75		10	35			6.6°	φ16(14°)	
BT40-10.5-20-18		10.5	M10	50	20	30	5	35	18	35	29.5°	φ20(24°)	○
BT40-10.5-45-18				75	45		10	40			13.7°	φ20(17°)	
BT40-10.5-70-18				100	70		10	40			8.1°	φ20(13°)	
BT40-12.5-15-21		12.5	M12	45	15	30	5	35	21	40	32.3°	φ25(24°)	○
BT40-12.5-40-21				70	40		10	40			17.6°	φ25(16°)	
BT40-12.5-65-21				95	65		10	40			9.8°	φ25(12°)	
BT40-17-10-28		17	M16	40	10	30	5	35	28	48	45°	φ32(22°)	○
BT40-17-35-28				65	35		10	40			21.8°	φ32(14°)	
BT40-17-60-28				90	60		10	40			11.3°	φ32(10°)	

【Note】Please note that the dimensions for L_3, Lf, L_1 and $\theta\kappa$ may be different when attached to other modular-type holders such as ASRM, ARM, ABPFM, ARPFM, BCFM, etc.

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) S
BT40	BT40-RSG8-105-M25		M8	8.5	18	6.5	15	105		80	30	32	1.4	0.6
	BT40-RSG8-135-M25							135	25	110			1.8	0.7
	BT40-RSG8-165-M25							165		140			2.1	0.8
	BT40-RSG8-130-M50							130		80			1.4	1.5
	BT40-RSG8-160-M50							160	50	110			1.8	1.7
	BT40-RSG8-190-M50							190		140			2.1	1.8
	BT40-RSG8-155-M75							155		80			1.5	3.1
	BT40-RSG8-185-M75							185	75	110			1.9	3.4
	BT40-RSG8-215-M75							215		140			2.2	3.5
	BT40-RSG8-170-M90							170		140			1.5	4.5
	BT40-RSG8-200-M90							200	90	110			1.9	4.8
	BT40-RSG8-230-M90							230		140			2.2	4.9
	BT40-RSG8-185-M105							185		80			1.6	6.2
	BT40-RSG8-215-M105							215	105	110			2.0	6.7
	BT40-RSG8-245-M105							245		140			2.3	6.8
	BT40-RSG10-125-M25		M10	10.5	22	6.5	19	125		100	36	38	1.8	0.4
	BT40-RSG10-155-M25							155	25	130			2.2	0.5
	BT40-RSG10-185-M25							185		160			2.4	0.7
	BT40-RSG10-150-M50							150		100			1.9	0.8
	BT40-RSG10-180-M50							180	50	130			2.3	1.0
	BT40-RSG10-210-M50							210		160			2.5	1.2
	BT40-RSG10-175-M75							175		100			2.0	1.6
	BT40-RSG10-205-M75							205	75	130			2.4	1.8
	BT40-RSG10-235-M75							235		160			2.6	2.0
	BT40-RSG10-200-M100							200		100			2.0	2.7
	BT40-RSG10-230-M100							230	100	130			2.4	3.0
	BT40-RSG10-260-M100							260		160			2.6	3.3
	BT40-RSG10-220-M120							220		100			2.1	4.0
	BT40-RSG10-250-M120							250	120	130			2.5	4.3
	BT40-RSG10-280-M120							280		160			2.7	4.6
	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		52	54	2.6	0.2
	BT40-RSG16-150-M50							150	50				2.8	0.3
	BT40-RSG16-175-M75							175	75	100			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-RSG8-120-M25		M8	8.5	18	6.5	15	120		95	30	32	4.0	0.6
	BT50-RSG8-150-M25							150	25	125			4.3	0.7
	BT50-RSG8-180-M25							180		155			4.8	0.7
	BT50-RSG8-145-M50							145		95			4.0	1.5
	BT50-RSG8-175-M50							175	50	125			4.3	1.7
	BT50-RSG8-205-M50							205		155			4.8	1.7
	BT50-RSG8-170-M75							170		95			4.1	3.1
	BT50-RSG8-200-M75							200	75	125			4.4	3.4
	BT50-RSG8-230-M75							230		155			4.9	3.4
	BT50-RSG8-185-M90							185		155			4.9	4.4
	BT50-RSG8-215-M90							215	90	125			4.4	4.8
	BT50-RSG8-245-M90							245		155			4.9	4.8
	BT50-RSG8-200-M105							200		95			4.2	6.2
	BT50-RSG8-230-M105							230	105	125			4.5	6.6
	BT50-RSG8-260-M105							260		155			5.0	6.6
	BT50-RSG10-140-M25		M10	10.5	22	6.5	19	140	25	115	36	38	4.3	0.4
	BT50-RSG10-170-M25							170		145			4.6	0.5

	Item Code	Stock	Size(mm) G	φD	H	H1	φC	L	M	L1	φC1	φC2	Weight (kg)	Rigidity value (μm) S
BT50	BT50-RSG10-200-M25		M10	10.5	22	6.5	19	200	25	175	36	38	5.6	0.5
	BT50-RSG10-165-M50							165		115			4.4	0.8
	BT50-RSG10-195-M50							195	50	145			4.7	0.9
	BT50-RSG10-225-M50							225		175			5.7	1.0
	BT50-RSG10-190-M75							190		115			4.5	1.6
	BT50-RSG10-220-M75							220	75	145			4.8	1.7
	BT50-RSG10-250-M75							250		175			5.8	1.8
	BT50-RSG10-215-M100							215		115			4.5	2.7
	BT50-RSG10-245-M100							245	100	145			4.8	2.9
	BT50-RSG10-275-M100							275		175			5.8	2.9
	BT50-RSG10-235-M120							235		115			4.6	3.9
	BT50-RSG10-265-M120							265	120	145			4.9	4.2
	BT50-RSG10-295-M120							295		175			5.9	4.2
	BT50-RSG10-255-M140							255		115			4.7	5.5
	BT50-RSG10-285-M140							285	140	145			5.0	5.8
	BT50-RSG10-315-M140							315		175			6.0	5.8
	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
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

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

	Item Code	Stock	G	φD	H	H1	φC	L	M	L1	φC1	φC2	Weight (kg)	Rigidity value (μm) S
A63	A63-RSG8-130-M50		M8	8.5	18	6.5	15	130	50	80	30	32	1.3	1.5
	A63-RSG8-160-M50							160		110			1.4	1.7
	A63-RSG8-190-M50							190		140			1.9	1.7
	A63-RSG8-155-M75							155	75	80			1.4	3.1
	A63-RSG8-185-M75							185		110			1.5	3.4
	A63-RSG8-215-M75							215		140			2.0	3.4
	A63-RSG8-170-M90							170	90	80			2.0	4.4
	A63-RSG8-200-M90							200		110			1.5	4.8
	A63-RSG8-230-M90							230		140			2.0	4.9
	A63-RSG8-185-M105							185	105	80			1.5	6.2
	A63-RSG8-215-M105							215		110			1.6	6.6
	A63-RSG8-245-M105							245		140			2.1	6.7
	A63-RSG10-125-M25		M10	10.5	22	6.5	19	125	25	100	36	38	1.6	0.4
	A63-RSG10-155-M25							155		130			1.9	0.5
	A63-RSG10-185-M25							185		160			2.3	0.6
	A63-RSG10-150-M50							150	50	100			1.7	0.8
	A63-RSG10-180-M50							180		130			2.0	1.0
	A63-RSG10-210-M50							210		160			2.4	1.2
	A63-RSG10-175-M75							175	75	100			1.8	1.6
	A63-RSG10-205-M75							205		130			2.1	1.8
	A63-RSG10-235-M75							235		160			2.5	2.0
	A63-RSG10-200-M100							200	100	100			1.8	2.7
	A63-RSG10-230-M100							230		130			2.1	2.9
	A63-RSG10-260-M100							260		160			2.5	3.2
	A63-RSG10-220-M120							220	120	100			1.9	4.0
	A63-RSG10-250-M120							250		130			2.2	4.2
	A63-RSG10-280-M120							280		160			2.6	4.5
	A63-RSG10-240-M140							240	140	100			2.0	5.6
	A63-RSG10-270-M140							270		130			2.3	5.9
	A63-RSG10-300-M140							300		160			2.7	6.2
	A63-RSG12-125-M25		M12	12.5	22	6	24	125	25	100	43	45	1.9	0.3
	A63-RSG12-155-M25							155		130			2.3	0.4
	A63-RSG12-185-M25							185		160			2.7	0.5
	A63-RSG12-150-M50							150	50	100			2.0	0.5
	A63-RSG12-180-M50							180		130			2.4	0.6
	A63-RSG12-210-M50							210		160			2.8	0.8
	A63-RSG12-175-M75							175	75	100			2.2	0.9
	A63-RSG12-205-M75							205		130			2.6	1.0
	A63-RSG12-235-M75							235		160			3.0	1.3
	A63-RSG12-200-M100							200	100	100			2.3	1.4
	A63-RSG12-230-M100							230		130			2.7	1.6
	A63-RSG12-260-M100							260		160			3.1	1.9
	A63-RSG12-225-M125							225	125	100			2.5	2.1
	A63-RSG12-255-M125							255		130			2.9	2.4
	A63-RSG12-285-M125							285		160			3.3	2.7
	A63-RSG12-250-M150							250	150	100			2.6	3.1
	A63-RSG12-280-M150							280		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-RSG8-120-M25		M8	8.5	18	6.5	15	120	25	95	30	32	2.6	0.6
	A100-RSG8-150-M25							150		125			2.9	0.8
	A100-RSG8-180-M25							180		155			3.4	0.8
	A100-RSG8-145-M50							145	50	95			2.6	1.5
	A100-RSG8-175-M50							175		125			2.9	1.7
	A100-RSG8-205-M50							205		155			3.4	1.7
	A100-RSG8-170-M75							170	75	95			2.7	3.1
	A100-RSG8-200-M75							200		125			3.0	3.4
	A100-RSG8-230-M75							230		155			3.5	3.4
	A100-RSG8-185-M90							185	90	95			2.7	4.5
	A100-RSG8-215-M90							215		125			3.0	4.9
	A100-RSG8-245-M90							245		155			3.5	4.8
	A100-RSG8-200-M105							200	105	95			2.8	6.3

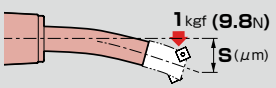
	Item Code	Stock	G	φD	H	H1	φC	L	M	L1	φC1	φC2	Weight (kg)	Rigidity value (μm) S
A100	A100-RSG8-230-M105		M8	8.5	18	6.5	15	230	105	125	30	32	3.1	6.7
	A100-RSG8-260-M105							260		155			3.6	6.6
	A100-RSG10-140-M25		M10	10.5	22	6.5	19	140	25	115	36	38	3.1	0.4
	A100-RSG10-170-M25							170		145			3.5	0.5
	A100-RSG10-200-M25							200		175			4.4	0.5
	A100-RSG10-165-M50							165	50	115			3.2	0.8
	A100-RSG10-195-M50							195		145			3.6	1.0
	A100-RSG10-225-M50							225		175			4.5	1.0
	A100-RSG10-190-M75							190	75	115			3.3	1.6
	A100-RSG10-220-M75							220		145			3.7	1.8
	A100-RSG10-250-M75							250		175			4.6	1.8
	A100-RSG10-215-M100							215	100	115			3.3	2.7
	A100-RSG10-245-M100							245		145			3.7	2.9
	A100-RSG10-275-M100							275		175			4.6	2.9
	A100-RSG10-235-M120							235	120	115			3.4	4.0
	A100-RSG10-265-M120							265		145			3.8	4.2
	A100-RSG10-295-M120							295		175			4.7	4.2
	A100-RSG10-255-M140							255	140	115			3.5	5.6
	A100-RSG10-285-M140							285		145			3.9	5.8
	A100-RSG10-315-M140							315		175			4.8	5.8
	A100-RSG12-140-M25		M12	12.5	22	6	24	140	25	115	43	45	3.4	0.3
	A100-RSG12-170-M25							170		145			3.7	0.4
	A100-RSG12-200-M25							200		175			4.7	0.4
	A100-RSG12-165-M50							165	50	115			3.5	0.5
	A100-RSG12-195-M50							195		145			3.8	0.6
	A100-RSG12-225-M50							225		175			4.8	0.6
	A100-RSG12-190-M75							190	75	115			3.7	0.8
	A100-RSG12-220-M75							220		145			4.0	1.0
	A100-RSG12-250-M75							250		175			5.0	1.0
	A100-RSG12-215-M100							215	100	115			3.8	1.4
	A100-RSG12-245-M100							245		145			4.1	1.6
	A100-RSG12-275-M100							275		175			5.1	1.6
	A100-RSG12-240-M125							240	125	115			4.0	2.1
	A100-RSG12-270-M125							270		145			4.3	2.4
	A100-RSG12-300-M125							300		175			5.3	2.4
	A100-RSG12-265-M150							265	150	115			4.1	3.0
	A100-RSG12-295-M150							295		145			4.4	3.4
	A100-RSG12-325-M150							325		175			5.4	3.4
	A100-RSG12-290-M175							290	175	115			4.3	4.3
	A100-RSG12-320-M175							320		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	25	115	52	54	4.0	0.2
	A100-RSG16-170-M25							170		145			4.5	0.2
	A100-RSG16-200-M25							200		175			5.7	0.2
	A100-RSG16-165-M50							165	50	115			4.2	0.3
	A100-RSG16-195-M50							195		145			4.7	0.4
	A100-RSG16-225-M50							225		175			5.9	0.4
	A100-RSG16-190-M75							190	75	115			4.5	0.5
	A100-RSG16-220-M75							220		145			5.0	0.6
	A100-RSG16-250-M75							250		175			6.1	0.6
	A100-RSG16-215-M100							215	100	115			4.7	0.8
	A100-RSG16-245-M100							245		145			5.2	0.9
	A100-RSG16-275-M100							275		175			6.3	0.9
	A100-RSG16-240-M125							240	125	115			4.9	1.1
	A100-RSG16-270-M125							270		145			5.4	1.3
	A100-RSG16-300-M125							300		175			6.5	1.3
	A100-RSG16-265-M150							265	150	115			5.1	1.6
	A100-RSG16-295-M150							295		145			5.6	1.8
	A100-RSG16-325-M150							325		175			6.7	1.8
	A100-RSG16-290-M175							290	175	115			5.3	2.2
	A100-RSG16-320-M175							320		145			5.8	2.4
	A100-RSG16-350-M175							350		175			7.0	2.5
	A100-RSG16-315-M200							315	200	115			5.5	3.0
	A100-RSG16-345-M200							345		145			6.0	3.2
	A100-RSG16-375-M200							375		175			7.2	3.3
	A100-RSG16-340-M225							340	225	115			5.7	3.9
	A100-RSG16-370-M225							370		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 accessory.
- Please check your Modular Mills for conformance to the dimensions.

S 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.



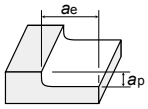
Recommended Cutting Conditions

Side Milling standard cutting conditions for EDMT-type inserts：Low cutting depth, high feed rate

※Red indicates primary recommended grade.

Work material	Recommended grade	Dc Tool dia.	φ8 / 1 Flute	φ10 / 2 Flutes	φ12 / 3 Flutes	φ14 / 3 Flutes	φ16 / 4 Flutes	φ20 / 5 Flutes	φ25 / 6 Flutes	φ32 / 8 Flutes
Carbon Steels Alloy Steels Die Tool Steels S-C SCM SKD SKT <30HRC	※ JP4120 (vc=100～180)	n(min-1)	4,780	3,820	3,180	2,730	2,390	1,910	1,530	1,190
		vc(m/min)	120	120	120	120	120	120	120	120
		vf(mm/min)	～2,870	～4,590	～5,730	～6,550	～7,640	～7,640	～7,340	～7,640
		fz(mm/t)	～0.6	～0.6	～0.6	～0.8	～0.8	～0.8	～0.8	～0.8
		ap(mm)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		ae(mm)	～3	～5	～7	～8	～10	～11	～17	～22
		Q(cm3/min)	3	7	12	16	23	25	37	50
Pre-Harden Steels Alloy Steels Die Tool Steels SCM SKD SKT 30～40HRC	JP4120 (vc=100～160)	n(min-1)	4,380	3,500	2,920	2,500	2,190	1,750	1,400	1,090
		vc(m/min)	110	110	110	110	110	110	110	110
		vf(mm/min)	～2,630	～4,200	～5,260	～6,010	～7,010	～7,010	～6,730	～7,010
		fz(mm/t)	～0.6	～0.6	～0.6	～0.8	～0.8	～0.8	～0.8	～0.8
		ap(mm)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		ae(mm)	～3	～5	～7	～8	～10	～11	～17	～22
		Q(cm3/min)	2	6	11	14	21	23	34	46
Pre-Harden Steels Alloy Steels Die Tool Steels SCM SKD SKT 40～50HRC	JP4120 (vc=80～120)	n(min-1)	3,580	2,870	2,390	2,050	1,790	1,430	1,150	900
		vc(m/min)	90	90	90	90	90	90	90	90
		vf(mm/min)	～1,430	～2,290	～2,870	～3,690	～4,300	～4,300	～4,130	～4,300
		fz(mm/t)	～0.4	～0.4	～0.4	～0.6	～0.6	～0.6	～0.6	～0.6
		ap(mm)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		ae(mm)	～3	～5	～7	～8	～10	～11	～17	～22
		Q(cm3/min)	1	3	6	9	13	14	21	28
Stainless Steels SUS	JM4160 JP4120 (vc=80～120)	n(min-1)	3,580	2,870	2,390	2,050	1,790	1,430	1,150	900
		vc(m/min)	90	90	90	90	90	90	90	90
		vf(mm/min)	～1,430	～2,290	～2,870	～3,690	～4,300	～4,300	～4,130	～4,300
		fz(mm/t)	～0.4	～0.4	～0.4	～0.6	～0.6	～0.6	～0.6	～0.6
		ap(mm)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		ae(mm)	～3	～5	～7	～8	～10	～11	～17	～22
		Q(cm3/min)	1	3	6	9	13	14	21	28
Cast Iron FC FCD	JP4120 (vc=120～220)	n(min-1)	5,970	4,780	3,980	3,410	2,990	2,390	1,910	1,490
		vc(m/min)	150	150	150	150	150	150	150	150
		vf(mm/min)	～3,580	～5,730	～7,170	～8,190	～9,550	～9,550	～9,170	～9,550
		fz(mm/t)	～0.6	～0.6	～0.6	～0.8	～0.8	～0.8	～0.8	～0.8
		ap(mm)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		ae(mm)	～3	～5	～7	～8	～10	～11	～17	～22
		Q(cm3/min)	3	9	15	20	29	32	47	63
Hardened Steels 50～60HRC	JP4105 JP4120 (vc=60～100)	n(min-1)	2,390	1,910	1,590	1,360	1,190	950	760	600
		vc(m/min)	60	60	60	60	60	60	60	60
		vf(mm/min)	～720	～1,150	～1,430	～1,630	～1,900	～1,900	～1,820	～1,900
		fz(mm/t)	～0.3	～0.3	～0.3	～0.4	～0.4	～0.4	～0.4	～0.4
		ap(mm)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		ae(mm)	～3	～5	～7	～8	～10	～11	～17	～22
		Q(cm3/min)	0.4	1	2	2	3	3	6	8

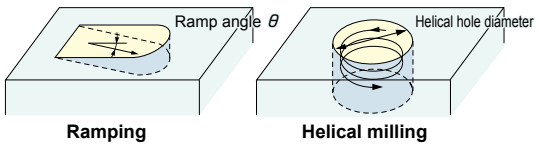
【Note】①Use the appropriate coolant for the work material and machining shape.
②These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
③For slotting or ramping, feed rate should be set to 70% as general criteria.
④Ensure to index the insert at the correct time to ensure safety of the tool-body.
⑤The evacuation of swarf can cause burns, cuts or damage to the eyes please ensue the correct safety cover is fitted around the machine, and necessary personal protection equipment is worn by the machine operator.
⑥Due to fire risks do not use neat cutting oil as a coolant.
⑦When using an ASM0710S08R-2 or ASM0712S10R-2 undercut type shank, as a general rule the feed rate per flute (f_z) should be reduced to 50~70% of the value listed in the standard cutting conditions.



Ramping with EDMT-type inserts

Since the cutting flute do not extend to the center, there are limitations on the ramp angle and hole diameter, but as shown below, cutting by direct milling without a pilot hole is possible for ramping and helical milling.

(mm)



Inserts	EDMT0702○○									
Dc Tool dia.	φ8	φ10	φ12	φ14	φ16	φ17	φ20	φ21	φ25	φ32
Recommended θ	Less than 0.5 °									
Hole Dia	10~15	13~19	17~23	21~27	25~31	27~33	33~39	35~41	43~49	57~63

【Note】①Use the appropriate coolant for the work material and machining shape.
②These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
③For hole diameters outside the ranges listed above, a pilot hole should be drilled before milling.

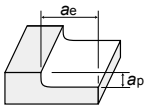
Side Milling standard cutting conditions for JDMT-type inserts

It is make standard that the depth cut *ap* and the cutting width *ae* be as shown in Tool Overhang (OH) and Cutting Region on the next page.
Work Hardness > Please use the conditions in the table as a guideline for the cut depth *ap* and width *ae* of 40HRC.

※Red indicates primary recommended grade.

Work material	Recommended grade	Cutting speed v_c (m/min) / Feed rate per flute f_z (mm/t)	Dc Tool dia.	φ8 / 1 Flute	φ10 / 2 flutes	φ12 / 3 Flutes	φ14 / 3 Flutes	φ16 / 4 Flutes	φ20 / 5 Flutes	φ25 / 6 Flutes	φ32 / 8 Flutes
Carbon Steels Alloy Steels S-C SCM <30HRC	※ JP4120 PTH30E	v_c=150～200	n(min^{-1})	7,170	5,730	4,780	4,090	3,580	2,870	2,290	1,790
			v_c(m/min)	180	180	180	180	180	180	180	180
		f_z=0.04～0.09	v_f(mm/min)	500	800	1,000	860	1,000	1,000	960	1,000
			f_z(mm/t)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Die Tool Steels SKD SKT <30HRC	JP4120 PTH30E	v_c=130～180	n(min^{-1})	5,970	4,780	3,980	3,410	2,990	2,390	1,910	1,490
			v_c(m/min)	150	150	150	150	150	150	150	150
		f_z=0.04～0.07	v_f(mm/min)	360	570	720	610	720	720	690	720
			f_z(mm/t)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Pre-Harden Steels Alloy Steels, Die Tool Steels SCM SKD SKT 30～40HRC	JP4120 PTH30E	v_c=100～150	n(min^{-1})	4,780	3,820	3,180	2,730	2,390	1,910	1,530	1,190
			v_c(m/min)	120	120	120	120	120	120	120	120
		f_z=0.04～0.07	v_f(mm/min)	290	460	570	490	570	570	550	570
			f_z(mm/t)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Pre-Harden Steels Alloy Steels Die Tool Steels SCM SKD SKT 40～50HRC	JP4120	v_c=80～120	n(min^{-1})	3,580	2,860	2,390	2,050	1,790	1,430	1,150	900
			v_c(m/min)	90	90	90	90	90	90	90	90
		f_z=0.04～0.07	v_f(mm/min)	220	340	430	370	430	430	410	430
			f_z(mm/t)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
			a_p(mm)	2	2	2	2	2	2	2	2
			a_e(mm)	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc
Stainless Steels SUS	JM4160 PTH30E JP4120	v_c=100～150	n(min^{-1})	4,780	3,820	3,180	2,730	2,390	1,910	1,530	1,190
			v_c(m/min)	120	120	120	120	120	120	120	120
		f_z=0.04～0.09	v_f(mm/min)	290	460	570	490	570	570	550	570
			f_z(mm/t)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Cast Iron FC FCD	JP4120 PTH30E	v_c=130～180	n(min^{-1})	5,970	4,780	3,980	3,410	2,990	2,390	1,910	1,490
			v_c(m/min)	150	150	150	150	150	150	150	150
		f_z=0.04～0.10	v_f(mm/min)	420	670	840	720	840	840	800	840
			f_z(mm/t)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Aluminum Alloy (wet condition)	SD5010 PTH30E JP4120	v_c=200～500	n(min^{-1})	11,940	9,550	7,960	6,820	5,970	4,780	3,820	2,990
			v_c(m/min)	300	300	300	300	300	300	300	300
		f_z=0.04～0.12	v_f(mm/min)	960	1,530	1,910	1,640	1,910	1,910	1,830	1,910
			f_z(mm/t)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Hardened Steels 50～60HRC	JP4105 JP4120	v_c=60～100	n(min^{-1})	2,390	1,910	1,590	1,360	1,190	950	760	600
			v_c(m/min)	60	60	60	60	60	60	60	60
		f_z=0.04～0.07	v_f(mm/min)	140	230	290	240	290	290	270	290
			f_z(mm/t)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
			a_p(mm)	2	2	2	2	2	2	2	2
			a_e(mm)	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc	0.05Dc

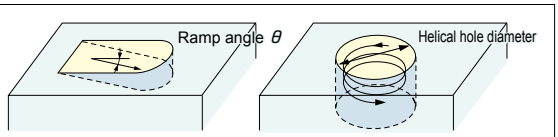
【Note】①Use the appropriate coolant for the work material and machining shape.
②These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
③For slotting or ramping, feed rate should be set to 70% as general criteria.
④Ensure to index the insert at the correct time to ensure safety of the tool-body.
⑤The evacuation of swarf can cause burns, cuts or damage to the eyes please ensue the correct safety cover is fitted around the machine, and necessary personal protection equipment is worn by the machine operator.
⑥Due to fire risks do not use neat cutting oil as a coolant.



Ramping with JDMT-type inserts

Since the cutting flute do not extend to the center, there are limitations on the ramp angle and hole diameter, but as shown below, cutting by direct milling without a pilot hole is possible for ramping and helical milling.

(mm)

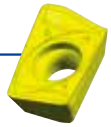


Inserts	JDMT0702○○									
Dc Tool dia.	φ8	φ10	φ12	φ14	φ16	φ17	φ20	φ21	φ25	φ32
Recommended θ	Less than 1 °									
Hole Dia	10～15	13～19	17～23	21～27	25～31	27～33	33～39	35～41	43～49	57～63

【Note】①Use the appropriate coolant for the work material and machining shape.
②These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
③For hole diameters outside the ranges listed above, a pilot hole should be drilled before milling.

Field data

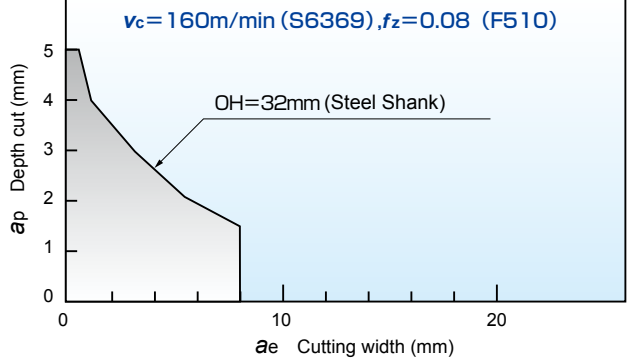
Relation between Tool Overhang（OH）and Limits of the cutting region



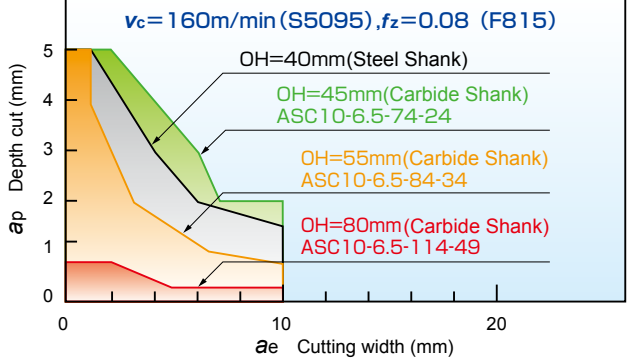
The cutting region curves shown below indicate criteria for selecting cutting conditions at each overhang (OH).
If chattering occurs near the limits of the cutting region, make adjustments by reducing the per-flute feed rate (*f*z).

Milling Conditions
Machine：BT30 5.5/3.7kw
Work material：Carbon Steels
Cutting Conditions：*v*c=160m/min, *f*z=0.08mm/t

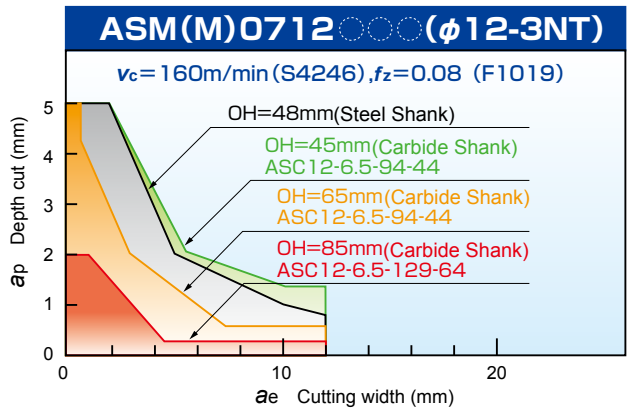
ASM0708S10R-1(φ8-1NT)



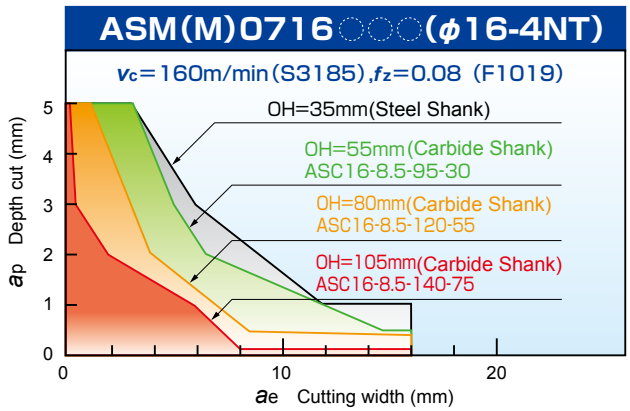
ASM(M)0710○○○(φ10-2NT)



ASM(M)0712○○○(φ12-3NT)



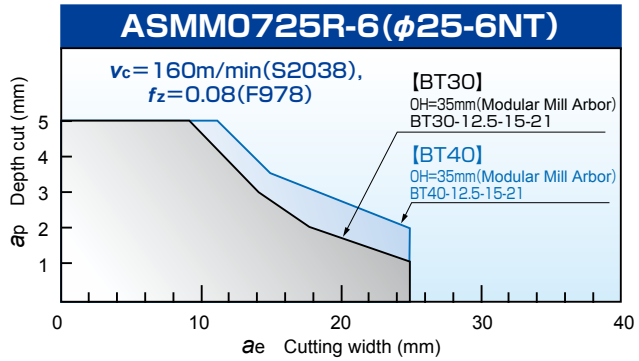
ASM(M)0716○○○(φ16-4NT)



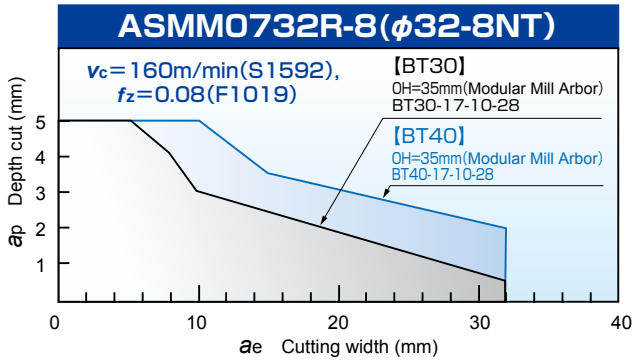
※As a general rule, the cutting amount for ASM0710S08R-2 undercut type shank should be set within 50% of the cutting region for ASM0710S10R-2, and the cutting amount for ASM0712S10R-2 should be set within the cutting region for ASM0710S10R-2.

Milling Conditions
Machine：BT40 11kw
Work material：Carbon Steels
Cutting Conditions：*v*c=160m/min, *f*z=0.08mm/t

ASMM0725R-6(φ25-6NT)



ASMM0732R-8(φ32-8NT)



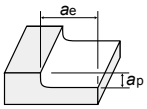
Cutting conditions for cutting aluminum alloy and copper

<Shoulder cutting> : *a*e=0.5*D*c <Recommended grade> :SD5010

Work material		φ8	φ10	φ12	φ14	φ16	φ17	φ20	φ21	φ25	φ32
Expanded aluminum alloy material A5052,A7075, etc. (Wet: Water-soluble agent)	*n* (min^{-1})	11,900	12,700	10,600	11,400	9,900	9,400	9,500	9,100	7,600	6,000
	*v*f (/min)	950	2,040	2,550	2,730	3,180	3,000	3,820	3,640	3,670	3,820
	*f*z (/t)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
	*v*c (m/min)	300	400	400	500	500	500	600	600	600	600
	*a*p (mm)	2	2	2	2	2	2	2	2	2	2
Cast aluminum alloy material AC4A,ADC12, etc. (Wet: Water-soluble agent)	*n* (min^{-1})	9,900	11,100	9,300	9,100	8,000	7,500	8,000	7,600	6,400	5,000
	*v*f (/min)	800	1,780	2,230	2,180	2,550	2,400	3,180	3,030	3,060	3,180
	*f*z (/t)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
	*v*c (m/min)	250	350	350	400	400	400	500	500	500	500
	*a*p (mm)	2	2	2	2	2	2	2	2	2	2
Pure copper C1100,C1020, etc. (Wet: Water-soluble agent)	*n* (min^{-1})	9,900	9,500	8,000	6,800	6,000	5,600	4,800	4,500	3,800	3,000
	*v*f (/min)	800	1,530	1,910	1,640	1,910	1,800	1,910	1,820	1,830	1,910
	*f*z (/t)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
	*v*c (m/min)	250	300	300	300	300	300	300	300	300	300
	*a*p (mm)	2	2	2	2	2	2	2	2	2	2

【Note】

❶Use the appropriate coolant for the work material and machining shape.
❷The cutting conditions shown in the above table are for reference and should be adjusted according to the actual machining circumstances.
❸When cutting grooves, reduce the feed rate by 30% (set it to 0.7 times the value shown above).
❹When L/D=4 or higher, reduce rotation speed and feed rate by 50% (set to 0.5× stated values) as general criteria. In addition, when machining copper, set cutting depth in axial direction to 1mm or less.
❺Use on a machine equipped with splashguards. During use, be sure to wear protective equipment such as safety glasses, and always perform work in a safe environment.
❻When using a machine that cannot provide the rotation speed shown above, set the highest rotation speed possible and calculate the feed rate using the *f*z value.
❼Be sure to use this tool at rotation speeds within the acceptable range for the milling chuck being used. If the acceptable rotation speed range is below the rotation speed shown above, set the highest acceptable rotation speed and calculate the feed rate using the *f*z value.



Field data

No.	Tool dia. *D*c(mm)	Cutter	Insert	Work material	Test conditions	Result Note
1	12	ASM0712S12R-3	JDMT070204R (Material equivalent to P30)	SUS304	*v*c=120m/min, *v*f=670mm/min *a*p×*a*e=1×8mm, Dry	1.5times tool life of insert tools from conventional.
2	20	ASMM0720R-5	EDMT070220R (Material equivalent to P10)	HPM-MAGIC	*v*c=90m/min, *v*f=4,300mm/min *a*p×*a*e=0.3×10mm, Dry	Good cutting performance and good tool life with O.H.80mm.
3	10	ASMM0710R-2	JDMT070208R (SD5010)	GRAPHITE	*v*c=1,000m/min, *v*f=10,000mm/min *a*p×*a*e=0.6×4.0mm, Dry	Good cutting performance with O.H.90mm. 2×the tool life of conventional products.

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The Edge To Innovation

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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