

Indexable Ball Nose End Mill
for Finishing

Indexable Corner Radius End Mill
for Finishing

SRF
SUF

New Grade
Expansion

High accuracy indexable end mill

Optimum tool for finish machining

High accuracy insert positioning and high rigidity clamping.
Significant reduction in tool costs for finishing.

New **EP6120** grade for improved tool life when machining
carbon and alloy steels.



Indexable Ball Nose End Mill for Finishing

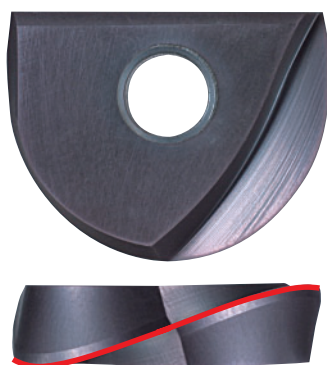
SRF

Applications	Finishing of moulds, Copying curved surfaces
Cutting edge radii	R5 , R6 , R8 , R10 , R12.5 , R15 , R16

Features

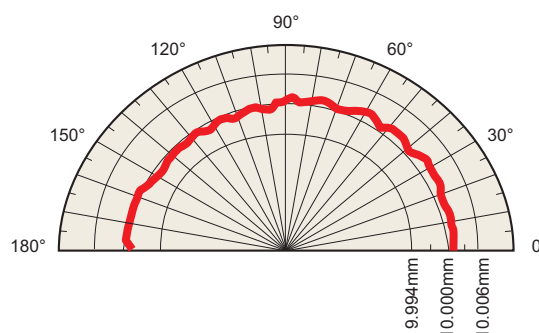
S-shaped end profile

The S-shaped end profile allows for an edge sharpness similar to solid ball nose end mills.



Accurate radial tolerance

Radius tolerance of $\pm 6\mu\text{m}$ for high accuracy finish machining comparable to solid ball nose end mills.



Insert grades

		NEW EP6120	MP8010	VP15TF
P	Mild Steel	◎		
	Carbon Steel, Alloy Steel	◎		○
	Pre-Hardened Steel	◎		○
	Alloy Steel, Tool Steel	◎		○
K	Gray Cast Iron		◎	
	Ductile Cast Iron		◎	
N	Copper, Copper Alloys	◎		
H	Hardened Steel		◎	

For carbon steel and alloy steel, the new coated grade **EP6120** with excellent wear resistance is recommended.

For cast iron **MP8010** is recommended to cover a wide range of applications, including high speed cutting.

MP8010 delivers superior performance in hardened steel exceeding 55HRC.

Wide selection

Holders are available in 3 styles, steel, carbide and screw-in, to suit different applications. The screw-in type also allows interchanging of different heads.



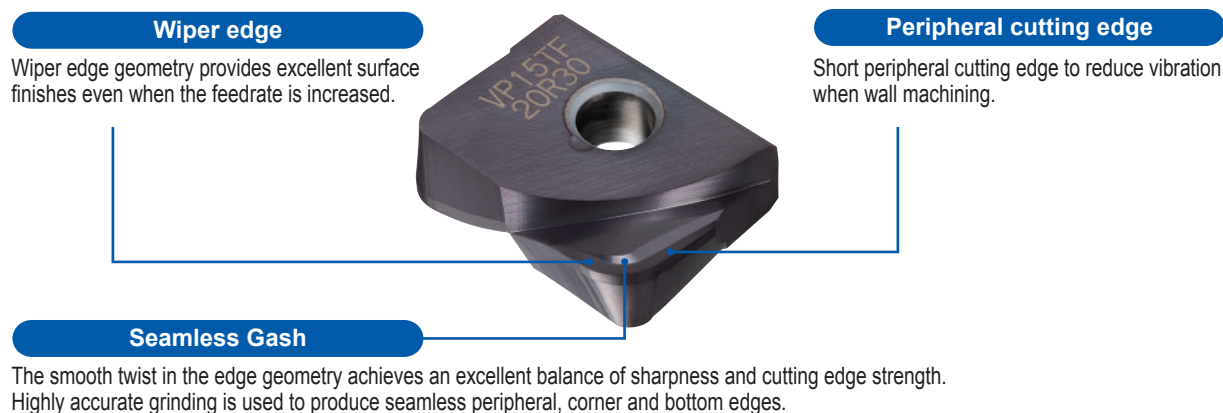
Indexable Corner Radius End Mill for Finishing

SUF

Applications	Finishing of moulds
Corner R	R0.5 , R1 , R2 , R3

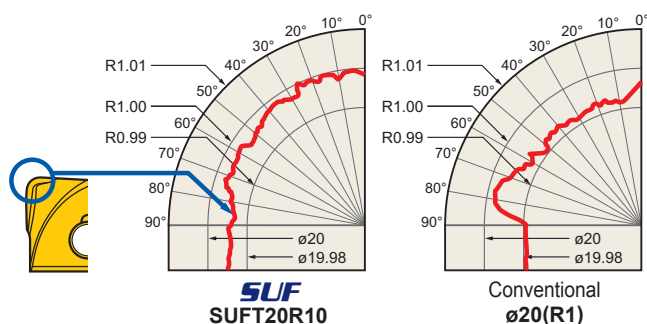
Features

Insert



Accurate tolerance

Corner R : $\pm 0.010\text{mm}$ Cutting edge diameter tolerance : $0 \text{ --} -0.020\text{mm}$



Insert grades

MIRACLE coated **VP15TF** has a good balance of wear and chipping resistance.
MP8010 demonstrates outstanding cutting performance when machining hardened steel and cast iron.

Carbon steels Alloy steels	Pre-hardened steels	Hardened steels 45HRC 65HRC	Cast iron
VP15TF		MP8010	

Compatibility

SUF inserts can also be used in a wide range of SRF tool bodies.



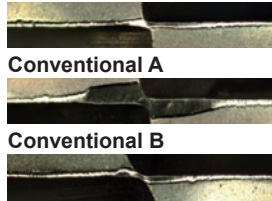
SRF Cutting Performance

EP6120 provides a long tool life with excellent wear resistance.

NEW

Steel cutting

EP6120



<Cutting conditions>

Work material : JIS-S55C
Insert : SRFT20
Protrusion length : 70mm
Revolution : 5500min⁻¹
Cutting speed : 150m/min

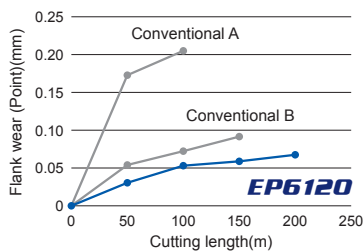


Table feed : 2200mm/min
Feed per tooth : 0.2mm/tooth
Axial depth of cut : 1mm
Pick feed : 0.5mm
Down cut, Air blow

NEW

Prehardened steel cutting

EP6120



<Cutting conditions>

Work material : NAK80
Insert : SRFT20
Protrusion length : 70mm
Revolution : 3650min⁻¹
Cutting speed : 100m/min

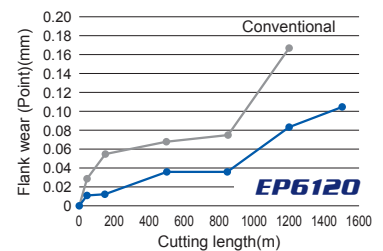
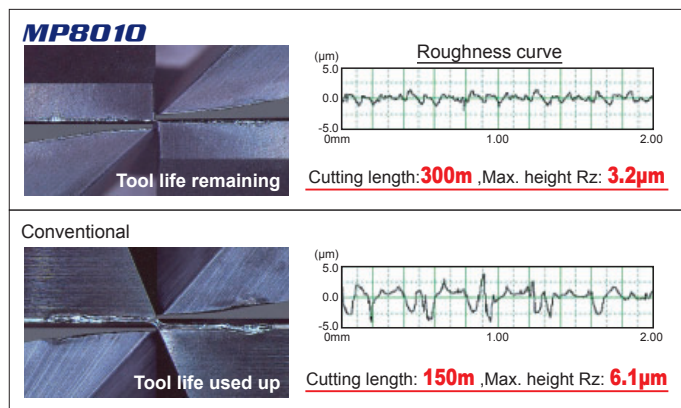


Table feed : 1460mm/min
Feed per tooth : 0.2mm/tooth
Axial depth of cut : 1mm
Pick feed : 0.5mm
Down cut, Air blow

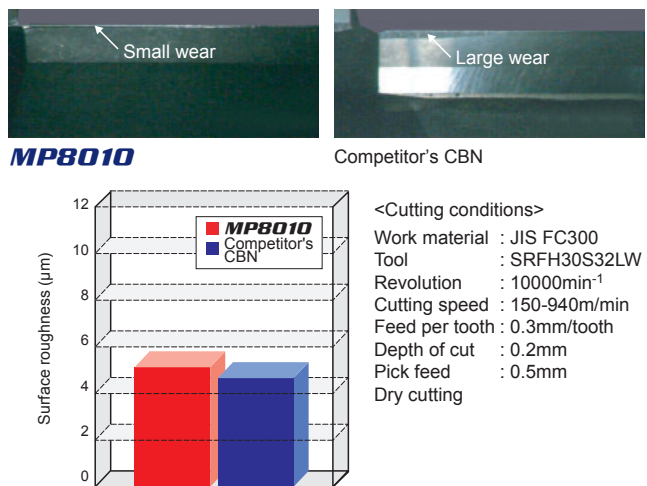
MP8010 gave double tool life and improved surface finishes when compared to a conventional tool.



<Cutting conditions>

Work material : JIS SKD11(60HRC)
Tool : SRFH20S25M
Revolution : 5220min⁻¹
Cutting speed : 80m/min
Feed per tooth : 0.2mm/tooth
Depth of cut : 0.2mm
Pick feed : 0.2mm
Dry cutting

MP8010 equaled the performance of CBN during high speed of cutting cast iron.



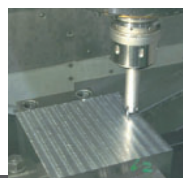
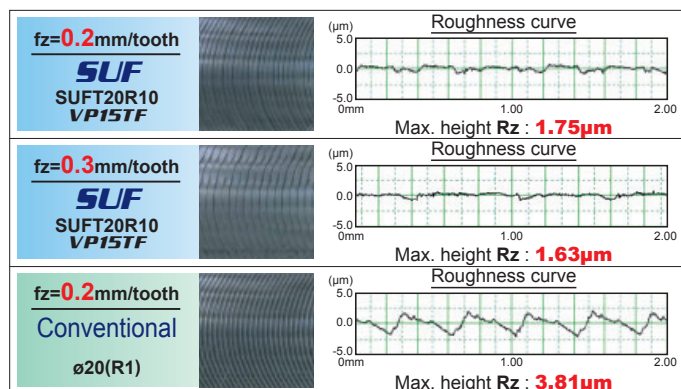
<Cutting conditions>

Work material : JIS FC300
Tool : SRFH30S32LW
Revolution : 10000min⁻¹
Cutting speed : 150-940m/min
Feed per tooth : 0.3mm/tooth
Depth of cut : 0.2mm
Pick feed : 0.5mm
Dry cutting

SUF Cutting Performance

Accurate and efficient face milling

SUF achieves excellent surface finishes even if the feed per tooth is increased.

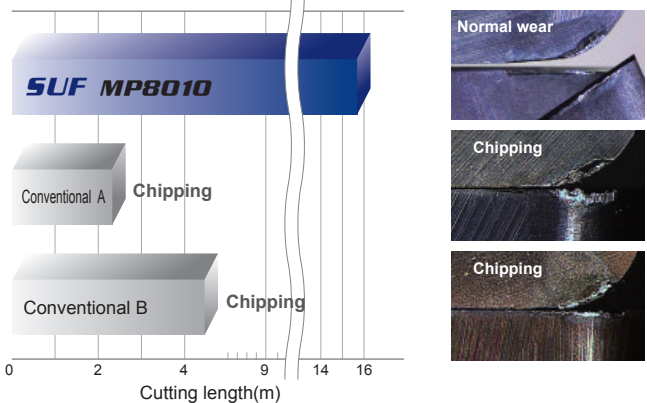


<Cutting conditions>

Work material : JIS S55C
Tool : SRFH20S25M
Revolution : 3180min⁻¹
Cutting speed : 200m/min
Feed per tooth : 0.2, 0.3mm/tooth
Depth of cut : 0.3mm
Pick feed : 14mm
Dry cutting

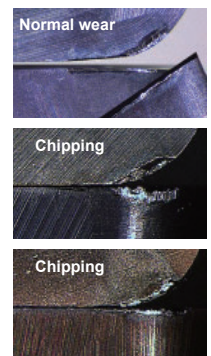
Hardened steel milling

MP8010 grade achieved three times tool life compared to a conventional grade.



<Cutting conditions>

Work material : JIS SKD11 (59HRC)
Tool : SRFH20S20L80
Insert : SUFT20R10
Revolution : 1270min⁻¹
Cutting speed : 80m/min
Feed per tooth : 0.2mm/tooth
Depth of cut : 0.2mm
Pick feed : 5mm
Dry cutting



Indexable Ball Nose End Mill for Finishing

BALL NOSE END MILL



SRF, SRB

Light Alloy	Cast Iron	Carbon Steel - Alloy Steel	Stainless Steel	Hardened Steel



- S-shaped cutting edge provides sharpness similar to that of solid ball nose end mills.
- Highly accurate corner radius tolerance allows for high precision finishing.
- Carbide shank type available.

Fig.1

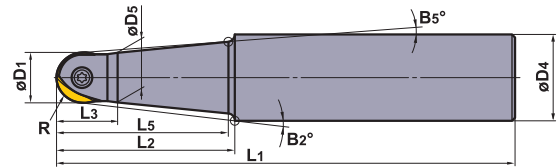


Fig.2

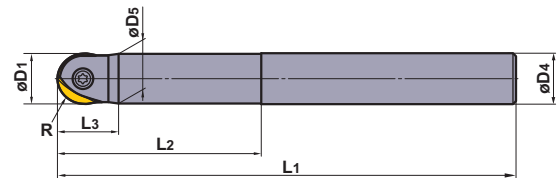
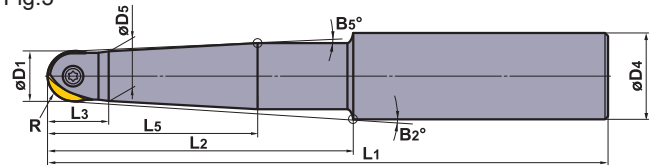


Fig.3



STEEL SHANK TYPE

Right hand tool holder only.

Type	Order Number	Stock	Number of Teeth	Dimensions (mm)								Type (Fig.)				
				R	D1	D4	L1	D5	L2	L3	B2°		B5°	Clamp Screw	Wrench	Insert
Standard	SRFH10S12M	●	1	5	10	12	110	9.5	40	13	1°38'	1°30'	1	RS3008T	①TKY08D	SRFT10 SRBT10
	12S16M	●	1	6	12	16	120	11.5	50	15	2°36'	1°30'	1	RS3510T	①TKY10D	SRFT12 SRBT12
	16S20M	●	1	8	16	20	130	15.5	50	20	2°44'	1°30'	1	RS4015T	②TKY15T	SRFT16 SRBT16
	20S25M	●	1	10	20	25	150	19.5	70	24	2°23'	1°30'	1	RS5020T	②TKY20T	SRFT20 SRBT20
	25S32M	●	1	12.5	25	32	180	24.5	80	30	2°58'	1°30'	1	RS6025T	②TKY25T	SRFT25 SRBT25
	30S32M	●	1	15	30	32	200	29.5	100	35	—	—	2	RS8030T	②TKY30T	SRFT30 SRBT30
	32S32M	●	1	16	32	32	200	31.5	100	35	—	—	2	RS8030T	②TKY30T	SRFT32 SRBT32
Semi-long	SRFH10S12L	●	1	5	10	12	150	9.5	60	13	1°30'	1°30'	1	RS3008T	①TKY08D	SRFT10 SRBT10
	12S16L	●	1	6	12	16	160	11.5	70	15	1°47'	1°30'	1	RS3510T	①TKY10D	SRFT12 SRBT12
	16S20L	●	1	8	16	20	160	15.5	70	20	1°51'	1°30'	1	RS4015T	②TKY15T	SRFT16 SRBT16
	20S25L	●	1	10	20	25	180	19.5	80	24	2°03'	1°30'	1	RS5020T	②TKY20T	SRFT20 SRBT20
	20S20L80	●	1	10	20	20	180	19.5	80	24	—	—	2	RS5020T	②TKY20T	SRFT20 SRBT20
	25S32L	●	1	12.5	25	32	200	24.5	100	30	2°17'	1°30'	1	RS6025T	②TKY25T	SRFT25 SRBT25
	25S25L100	●	1	12.5	25	25	200	24.5	100	30	—	—	2	RS6025T	②TKY25T	SRFT25 SRBT25
30S32L	●	1	15	30	32	230	29.5	130	35	—	—	2	RS8030T	②TKY30T	SRFT25 SRBT25	
Long	SRFH20S25E	●	1	10	20	25	220	19.5	120	24	1°30'	1°30'	3	RS5020T	②TKY20T	SRFT20 SRBT20
	20S20E120	●	1	10	20	20	220	19.5	120	24	—	—	2	RS5020T	②TKY20T	SRFT20 SRBT20
	25S32E	●	1	12.5	25	32	250	24.5	150	30	1°30'	1°30'	3	RS6025T	②TKY25T	SRFT25 SRBT25
	25S25E150	●	1	12.5	25	25	250	24.5	150	30	—	—	2	RS6025T	②TKY25T	SRFT25 SRBT25
	30S32E	●	1	15	30	32	300	29.5	200	35	—	—	2	RS8030T	②TKY30T	SRFT30 SRBT30
Extra Long	SRFH20S25X	▲	1	10	20	25	250	19.5	150	24	1°30'	1°30'	3	RS5020T	②TKY20T	SRFT20 SRBT20
	25S32X	▲	1	12.5	25	32	300	24.5	200	30	1°30'	1°30'	3	RS6025T	②TKY25T	SRFT25 SRBT25
	30S32X	▲	1	15	30	32	350	29.5	250	35	—	—	2	RS8030T	②TKY30T	SRFT30 SRBT30
	32S32X	▲	1	16	32	32	350	31.5	250	35	—	—	2	RS8030T	②TKY30T	SRFT32 SRBT32

(Note) Ensure inserts are fitted correctly. (Refer to page 7.)

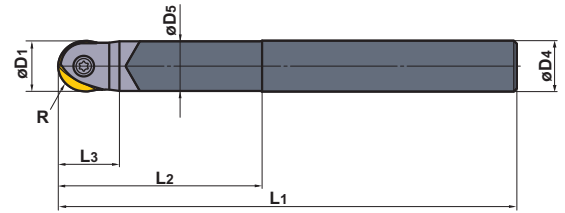
* Clamp Torque (N · m) : RS3008T=1.5, RS3510T=2.5, RS4015T=3.3, RS5020T=5.0, RS6025T=7.5, RS8030T=10.0

● : Inventory maintained in Japan. ▲ : Inventory maintained in Japan. To be replaced by new products.

Indexable Ball Nose End Mill for Finishing



Fig.1



CARBIDE SHANK TYPE

Right hand tool holder only.

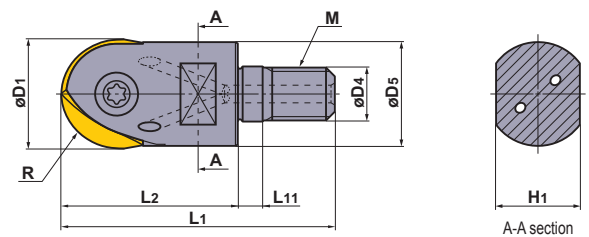
Type	Order Number	Stock	Number of Teeth	Dimensions (mm)							Type (Fig.)	* 	 ①	 ②
				R	D1	D4	L1	D5	L2	L3				
Standard	SRFH10S10MW	●	1	5	10	10	110	9.5	40	13	1	RS3008T	①TKY08D	SRFT10 SRBT10
	12S12MW	●	1	6	12	12	120	11.5	50	15	1	RS3510T	①TKY10D	SRFT12 SRBT12
	16S16MW	●	1	8	16	16	130	15.5	50	20	1	RS4015T	②TKY15T	SRFT16 SRBT16
	20S20MW	●	1	10	20	20	180	19.5	80	24	1	RS5020T	②TKY20T	SRFT20 SRBT20
	25S25MW	●	1	12.5	25	25	200	24.5	100	30	1	RS6025T	②TKY25T	SRFT25 SRBT25
	30S32MW	●	1	15	30	32	230	29.5	130	35	1	RS8030T	②TKY30T	SRFT30 SRBT30
				16	32	32	231	29.5	131	36				SRFT32 SRBT32
Long	SRFH10S10LW	●	1	5	10	10	150	9.5	60	13	1	RS3008T	①TKY08D	SRFT10 SRBT10
	12S12LW	●	1	6	12	12	160	11.5	70	15	1	RS3510T	①TKY10D	SRFT12 SRBT12
	16S16LW	●	1	8	16	16	160	15.5	70	20	1	RS4015T	②TKY15T	SRFT16 SRBT16
	16S16EW	●	1	8	16	16	200	15.5	110	20	1	RS4015T	②TKY15T	SRFT16 SRBT16
	20S20LW	●	1	10	20	20	250	19.5	150	24	1	RS5020T	②TKY20T	SRFT20 SRBT20
	25S25LW	●	1	12.5	25	25	300	24.5	200	30	1	RS6025T	②TKY25T	SRFT25 SRBT25
	30S32LW	●	1	15	30	32	350	29.5	250	35	1	RS8030T	②TKY30T	SRFT30 SRBT30
				16	32	32	351	29.5	251	36				SRFT32 SRBT32

(Note 1) SRFH30S32MW and SRFH30S32LW tool body can use both inserts SRFT30 and SRFT32.

However, the overall length L_1 differs.

(Note 2) Ensure inserts are fitted in the correct way. (Refer to page 7.)

* Clamp Torque (N · m) : RS3008T=1.5, RS3510T=2.5, RS4015T=3.3, RS5020T=5.0, RS6025T=7.5, RS8030T=10.0



SCREW-IN TYPE

Right hand tool holder only.

Order Number	Stock	Coolant Hole *1	Number of Teeth	Dimensions (mm)									Tool Weight (kg)	*2 		
				R	D1	D4	D5	L1	L2	L11	H1	M		Clamp Screw	Wrench	Insert
SRFH16AM0830	●	Y	1	8	16	8.5	14.9	48	30	6	10	8	0.1	RS4015T	TKY15T	SRFT16 SRBT16
20AM1035	●	Y	1	10	20	10.5	18.4	54	35	6	14	10	0.1	RS5020T	TKY20T	SRFT20 SRBT20
25AM1240	●	Y	1	12.5	25	12.5	23.5	62	40	6	19	12	0.1	RS6025T	TKY25T	SRFT25 SRBT25
30AM1645	●	Y	1	15	30	17	28.1	68	45	6	24	16	0.2	RS8030T	TKY30T	SRFT30 SRBT30
				16	32	17	28.1	69	46	6	24	16	0.2			SRFT32 SRBT32

(Note 1) SRFH30AM1645 tool body can use both inserts SRFT30 and SRFT32. However, the overall length L_1 differs.

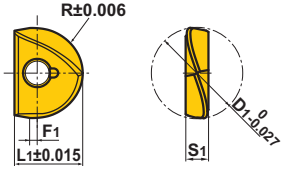
(Note 2) For screw-in type arbors, refer to page 12.

*1 Y=Yes

*2 Clamp Torque (N · m) : RS4015T=3.3, RS5020T=5.0, RS6025T=7.5, RS8030T=10.0

● : Inventory maintained in Japan. (2 inserts in one case)

INSERTS

Shape	Order Number	Coated			Dimensions (mm)					Geometry
		NEW EP6120	VP15TF	MP8010	D ₁	R	L ₁	F ₁	S ₁	
	SRFT10	●	●	●	10	5	8.5	0.5	2.6	
	12	●	●	●	12	6	10	0.5	3	
	16	●	●	●	16	8	12	1	4	
	20	●	●	●	20	10	15	1	5	
	25	●	●	●	25	12.5	18.5	1	6	
	30	●	●	●	30	15	22.5	1	7	
	32	●	●	●	32	16	23.5	1	7	

RECOMMENDED CUTTING CONDITIONS

	Work Material	Hardness	Grade	Cutting Speed vc (m/min)	Feed per Tooth fz (mm/tooth)	Depth of Cut ap (mm)
P	Mild Steel (SS400, S10C)	≤180HB	EP6120	200 (80—300)	0.2 (0.1—0.3)	≤0.05D ₁
	Carbon Steel, Alloy Steel (S45C, SCM440)	180—280HB	EP6120	200 (80—300)	0.2 (0.1—0.3)	≤0.05D ₁
			VP15TF	200 (80—300)	0.2 (0.1—0.3)	≤0.05D ₁
	Carbon Steel, Alloy Steel (SNCM439)	280—350HB	EP6120	200 (80—300)	0.2 (0.1—0.3)	≤0.05D ₁
	Pre-Hardened Steel (NAK, PX5)	35—45HRC	EP6120	150 (80—200)	0.2 (0.1—0.3)	≤0.05D ₁
			VP15TF	150 (80—200)	0.2 (0.1—0.3)	≤0.05D ₁
K	Alloy Tool Steel (SKD, SKT)	≤350HB	EP6120	150 (80—200)	0.2 (0.1—0.3)	≤0.05D ₁
			VP15TF	150 (80—200)	0.2 (0.1—0.3)	≤0.05D ₁
N	Gray Cast Iron (FC300)	Tensile Strength ≤350Mpa	MP8010	250 (80—450)	0.2 (0.1—0.3)	≤0.05D ₁
	Ductile Cast Iron (FCD450)	Tensile Strength ≤450Mpa	MP8010	200 (80—300)	0.2 (0.1—0.3)	≤0.05D ₁
	Ductile Cast Iron (FCD700)	Tensile Strength ≤800Mpa	MP8010	200 (80—300)	0.2 (0.1—0.3)	≤0.05D ₁
N	Copper, Copper Alloys		EP6120	200 (80—300)	0.2 (0.1—0.3)	≤0.05D ₁
H	Hardened Steel (SKD61, SKT4)	45—55HRC	MP8010	100 (60—120)	0.2 (0.1—0.3)	≤0.05D ₁
	Hardened Steel (SKD11)	55—65HRC	MP8010	80 (60—120)	0.2 (0.1—0.3)	≤0.01D ₁

(Note 1) The above values are average condition values at actual cutting speeds. The values change slightly according to the machine conditions, And method of workholding. Adjust the values depending on the actual conditions, referring to the above values.

(Note 2) For end mills with a carbide shank, set the cutting conditions approx 20% higher.

(Note 3) Please note the following when machining hardened steel with MP8010.

- Please shorten the overhang length as much as possible.
- A carbide shank is recommended.
- Please pay special attention to the depth of cut to prevent fracturing.

CUTTING SPEED FORMULAE

1. Employing θ° ➡ Calculate cutting speed at point P.
(Cutting speed at the cutting depth border for oblique machining)

$$\text{Formula : Cutting Speed} = \frac{\pi \cdot D_1 \cdot \sin \theta \cdot n}{1000} \text{ (m/min)}$$

$$\theta^\circ = \cos^{-1} \left(\frac{D_1 - 2ap}{D_1} \right) + 90 - \alpha$$

n : Spindle Speed (min^{-1})

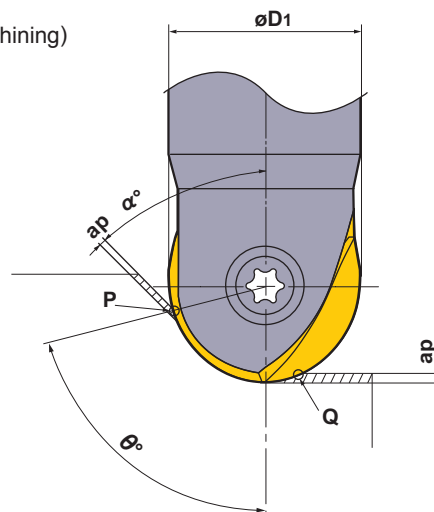
2. Employing ap ➡ Calculate cutting speed at point Q.
(Cutting speed at the cutting depth border)

$$\text{Formula : Cutting Speed} = \frac{2\pi n \sqrt{ap(D_1 - ap)}}{1000} \text{ (m/min)}$$

n : Spindle Speed (min^{-1})

D_1 : Cutting Edge Diameter (mm)

ap : Depth of Cut (mm)



FITTING INSERTS ON HOLDERS

1. Clean the insert seat

Clean the insert seat in the holder body by blowing air or using a brush.

2. Fit the insert

Place the concave mark of the insert into the clamp-screw-fastening part of the holder (only SRF type inserts). Fasten the clamp screw while firmly pressing the insert against the insert seat wall. It is recommended to fasten at the correct torque and use anti-seize lubricant MK1KS.



RADIUS END MILL



SUF

Light Alloy	Cast Iron	Carbon Steel - Alloy Steel	Stainless Steel	Hardened Steel



- Highly accurate corner radius tolerance allows for high precision finishing.
- Seamless gash.

Fig.1

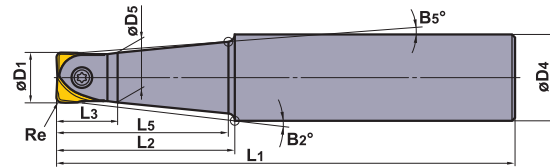


Fig.2

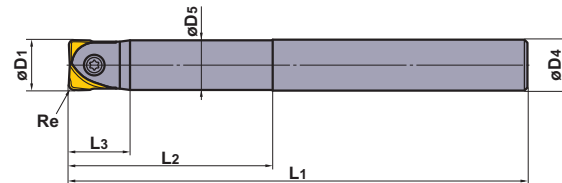
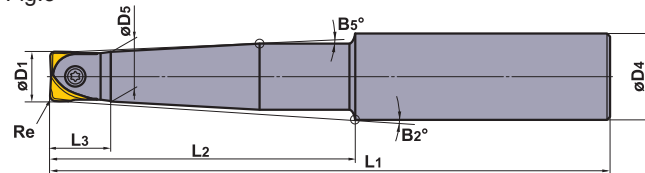


Fig.3



STEEL SHANK TYPE

Right hand tool holder only.

Type	Order Number	Stock	Number of Teeth	Dimensions (mm)								Type (Fig.)	* Clamp Screw	① Wrench	② Insert
				D1	D4	L1	D5	L2	L3	B2°	B5°				
Standard	SRFH10S12M	●	1	10	12	110	9.5	40	13	1°38'	1°30'	1	RS3008T	①TKY08D	SUFT10R○○
	12S16M	●	1	12	16	120	11.5	50	15	2°36'	1°30'	1	RS3510T	①TKY10D	SUFT12R○○
	16S20M	●	1	16	20	130	15.5	50	20	2°44'	1°30'	1	RS4015T	②TKY15T	SUFT16R○○
	20S25M	●	1	20	25	150	19.5	70	24	2°23'	1°30'	1	RS5020T	②TKY20T	SUFT20R○○
	25S32M	●	1	25	32	180	24.5	80	30	2°58'	1°30'	1	RS6025T	②TKY25T	SUFT25R○○
	30S32M	●	1	30	32	200	29.5	100	35	—	—	2	RS8030T	②TKY30T	SUFT30R○○
	32S32M	●	1	32	32	200	31.5	100	35	—	—	2	RS8030T	②TKY30T	SUFT32R○○
Semi-long	SRFH10S12L	●	1	10	12	150	9.5	60	13	1°30'	1°30'	1	RS3008T	①TKY08D	SUFT10R○○
	12S16L	●	1	12	16	160	11.5	70	15	1°47'	1°30'	1	RS3510T	①TKY10D	SUFT12R○○
	16S20L	●	1	16	20	160	15.5	70	20	1°51'	1°30'	1	RS4015T	②TKY15T	SUFT16R○○
	20S25L	●	1	20	25	180	19.5	80	24	2°03'	1°30'	1	RS5020T	②TKY20T	SUFT20R○○
	20S20L80	●	1	20	20	180	19.5	80	24	—	—	2	RS5020T	②TKY20T	SUFT20R○○
	25S32L	●	1	25	32	200	24.5	100	30	2°17'	1°30'	1	RS6025T	②TKY25T	SUFT25R○○
	25S25L100	●	1	25	25	200	24.5	100	30	—	—	2	RS6025T	②TKY25T	SUFT25R○○
Long	SRFH20S25E	●	1	20	25	220	19.5	120	24	1°30'	1°30'	3	RS5020T	②TKY20T	SUFT20R○○
	20S20E120	●	1	20	20	220	19.5	120	24	—	—	2	RS5020T	②TKY20T	SUFT20R○○
	25S32E	●	1	25	32	250	24.5	150	30	1°30'	1°30'	3	RS6025T	②TKY25T	SUFT25R○○
	25S25E150	●	1	25	25	250	24.5	150	30	—	—	2	RS6025T	②TKY25T	SUFT25R○○
	30S32E	●	1	30	32	300	29.5	200	35	—	—	2	RS8030T	②TKY30T	SUFT30R○○
Extra Long	SRFH20S25X	▲	1	20	25	250	19.5	150	24	1°30'	1°30'	3	RS5020T	②TKY20T	SUFT20R○○
	25S32X	▲	1	25	32	300	24.5	200	30	1°30'	1°30'	3	RS6025T	②TKY25T	SUFT25R○○
	30S32X	▲	1	30	32	350	29.5	250	35	—	—	2	RS8030T	②TKY30T	SUFT30R○○
	32S32X	▲	1	32	32	350	31.5	250	35	—	—	2	RS8030T	②TKY30T	SUFT32R○○

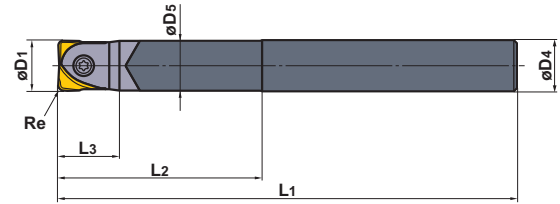
(Note) Ensure inserts are fitted correctly. (Refer to page 10.)

* Clamp Torque (N · m) : RS3008T=1.5, RS3510T=2.5, RS4015T=3.3, RS5020T=5.0, RS6025T=7.5, RS8030T=10.0

Indexable Corner Radius End Mill for Finishing



Fig.1



CARBIDE SHANK TYPE

Right hand tool holder only.

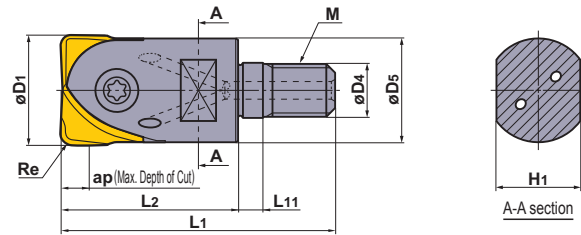
Type	Order Number	Stock	Number of Teeth	Dimensions (mm)						Type (Fig.)	* 		
				D1	D4	L1	D5	L2	L3				
Standard	SRFH10S10MW	●	1	10	10	110	9.5	40	13	1	RS3008T	①TKY08D	SUFT10R
	12S12MW	●	1	12	12	120	11.5	50	15	1	RS3510T	①TKY10D	SUFT12R
	16S16MW	●	1	16	16	130	15.5	50	20	1	RS4015T	②TKY15T	SUFT16R
	20S20MW	●	1	20	20	180	19.5	80	24	1	RS5020T	②TKY20T	SUFT20R
	25S25MW	●	1	25	25	200	24.5	100	30	1	RS6025T	②TKY25T	SUFT25R
	30S32MW	●	1	30	32	230	29.5	130	35	1	RS8030T	②TKY30T	SUFT30R
Long	SRFH10S10LW	●	1	10	10	150	9.5	60	13	1	RS3008T	①TKY08D	SUFT10R
	12S12LW	●	1	12	12	160	11.5	70	15	1	RS3510T	①TKY10D	SUFT12R
	16S16LW	●	1	16	16	160	15.5	70	20	1	RS4015T	②TKY15T	SUFT16R
	20S20LW	●	1	20	20	250	19.5	150	24	1	RS5020T	②TKY20T	SUFT20R
	25S25LW	●	1	25	25	300	24.5	200	30	1	RS6025T	②TKY25T	SUFT25R
	30S32LW	●	1	30	32	350	29.5	250	35	1	RS8030T	②TKY30T	SUFT30R
				32	32	351	29.5	251	36				SUFT32R

(Note 1) SRFH30S32MW and SRFH30S32LW tool body can use both inserts SUFT30R and SUFT32R.

However, the overall length L1 differs.

(Note 2) Ensure inserts are fitted correctly. (Refer to page 10.)

* Clamp Torque (N · m) : RS3008T=1.5, RS3510T=2.5, RS4015T=3.3, RS5020T=5.0, RS6025T=7.5, RS8030T=10.0



SCREW-IN TYPE

Right hand tool holder only.

Order Number	Stock	Coolant Hole *1	Number of Teeth	Dimensions (mm)								Tool Weight (kg)	*2 		
				D1	D4	D5	L1	L2	L11	H1	M				
SRFH16AM0830	●	Y	1	16	8.5	14.9	48	30	6	10	8	0.1	RS4015T	TKY15T	SUFT16R
20AM1035	●	Y	1	20	10.5	18.4	54	35	6	14	10	0.1	RS5020T	TKY20T	SUFT20R
25AM1240	●	Y	1	25	12.5	23.5	62	40	6	19	12	0.1	RS6025T	TKY25T	SUFT25R
30AM1645	●	Y	1	30	17	28.1	68	45	6	24	16	0.2	RS8030T	TKY30T	SUFT30R
				32	17	28.1	69	46	6	24	16				SUFT32R

(Note 1) SRFH30AM1645 tool body can use both inserts SUFT30R and SUFT32R.

However, the overall length L1 differs.

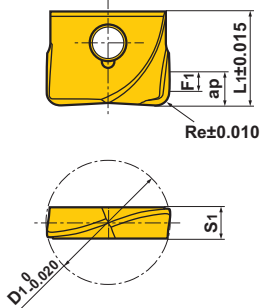
(Note 2) For screw-in type arbors, refer to page 12.

*1 Y=Yes

*2 Clamp Torque (N · m) : RS4015T=3.3, RS5020T=5.0, RS6025T=7.5, RS8030T=10.0

● : Inventory maintained. (2 inserts in one case)

INSERTS

Shape	Order Number	Coated			Dimensions (mm)						Geometry
		MP8010	VP15TF		D ₁	Re	F ₁	ap	L ₁	S ₁	
	SUFT10R05	●	●		10	0.5	1	1.5	8.5	2.6	
	10R10	●	●		10	1	1	2	8.5	2.6	
	10R20	●	●		10	2	1	3	8.5	2.6	
	12R05	●	●		12	0.5	1.2	1.7	10	3	
	12R10	●	●		12	1	1.2	2.2	10	3	
	12R20	●	●		12	2	1.2	3.2	10	3	
	12R30	●	●		12	3	1.2	4.2	10	3	
	16R05	●	●		16	0.5	1.6	2.1	12	4	
	16R10	●	●		16	1	1.6	2.6	12	4	
	16R15	●	●		16	1.5	1.6	3.1	12	4	
	16R20	●	●		16	2	1.6	3.6	12	4	
	16R30	●	●		16	3	1.6	4.6	12	4	
	20R05	●	●		20	0.5	2	2.5	15	5	
	20R10	●	●		20	1	2	3	15	5	
	20R15	●	●		20	1.5	2	3.5	15	5	
	20R20	●	●		20	2	2	4	15	5	
	20R30	●	●		20	3	2	5	15	5	
	25R05	●	●		25	0.5	2.5	3	18.5	6	
	25R10	●	●		25	1	2.5	3.5	18.5	6	
	25R20	●	●		25	2	2.5	4.5	18.5	6	
	25R30	●	●		25	3	2.5	5.5	18.5	6	
	30R05	●	●		30	0.5	3	3.5	22.5	7	
	30R10	●	●		30	1	3	4	22.5	7	
	30R20	●	●		30	2	3	5	22.5	7	
	30R30	●	●		30	3	3	6	22.5	7	
	32R05	●	●		32	0.5	3.2	3.7	23.5	7	
	32R10	●	●		32	1	3.2	4.2	23.5	7	
	32R20	●	●		32	2	3.2	5.2	23.5	7	

FITTING INSERTS ON HOLDERS

1. Clean the insert seat

Clean the insert seat in the holder body by blowing air or using a brush.

2. Fit the insert

Place the concave mark of the insert into the clamp-screw-fastening part of the holder(only SRF type inserts). Fasten the clamp screw while firmly pressing the insert against the insert seat wall. It is recommended to fasten at the correct torque and use anti-seize lubricant MK1KS.



RECOMMENDED CUTTING CONDITIONS

SHOULDER MILLING(At small widths of cut)

	Work Material	Hardness	Grade	Cutting Speed vc (m/min)	Depth of Cut ap (mm)	Cutting Width ae (mm)	Feed per Tooth fz (mm/tooth)
P	Carbon Steel Alloy Steel	180—280HB	VP15TF	200 (80—300)	≤0.05D ₁	≤0.05D ₁	0.2 (≤0.4)
	Pre-Hardened Steel	≤45HRC	VP15TF	150 (80—200)	≤0.05D ₁	≤0.05D ₁	0.15 (≤0.3)
	Alloy Tool Steel	180—380HB	VP15TF	150 (80—200)	≤0.05D ₁	≤0.05D ₁	0.15 (≤0.3)
M	Stainless Steel	≤270HB	VP15TF	150 (100—200)	≤0.05D ₁	≤0.05D ₁	0.2 (≤0.4)
K	Gray Cast Iron	Tensile Strength ≤350MPa	MP8010	250 (180—450)	≤0.05D ₁	≤0.1D ₁	0.3 (≤0.4)
	Ductile Cast Iron	Tensile Strength ≤800MPa	MP8010	200 (80—300)	≤0.05D ₁	≤0.1D ₁	0.3 (≤0.4)
H	Hardened Steel	45—55HRC	MP8010	100 (80—120)	≤0.05D ₁	≤0.02D ₁	0.1 (≤0.2)
	Hardened Steel	55—65HRC	MP8010	80 (60—100)	≤0.05D ₁	≤0.02D ₁	0.1 (≤0.2)

SLOTTING•SHOULDER MILLING(At large widths of cut)

	Work Material	Hardness	Grade	Cutting Speed vc (m/min)	Depth of Cut ap (mm)	Cutting Width ae (mm)	Feed per Tooth fz (mm/tooth)
P	Carbon Steel Alloy Steel	180—280HB	VP15TF	200 (80—300)	≤0.02D ₁	≤D ₁	0.2 (≤0.4)
	Pre-Hardened Steel	≤45HRC	VP15TF	150 (80—200)	≤0.02D ₁	≤D ₁	0.15 (≤0.3)
	Alloy Tool Steel	180—380HB	VP15TF	150 (80—200)	≤0.02D ₁	≤D ₁	0.15 (≤0.3)
M	Stainless Steel	≤270HB	VP15TF	150 (100—200)	≤0.02D ₁	≤D ₁	0.2 (≤0.4)
K	Gray Cast Iron	Tensile Strength ≤350MPa	MP8010	250 (180—450)	≤0.03D ₁	≤D ₁	0.3 (≤0.4)
	Ductile Cast Iron	Tensile Strength ≤800MPa	MP8010	200 (80—300)	≤0.03D ₁	≤D ₁	0.3 (≤0.4)
H	Hardened Steel	45—55HRC	MP8010	100 (80—120)	≤0.01D ₁	≤D ₁	0.1 (≤0.2)
	Hardened Steel	55—65HRC	MP8010	70 (60—80)	≤0.01D ₁	≤D ₁	0.1 (≤0.2)

(Note 1) These cutting conditions are standard when using a standard steel shank. If vibration or insert edge chipping occurs, decrease the width and depth of cut and the feed rate accordingly.

(Note 2) The value of cutting speed is calculated at the peripheral diameter of the tool. Please calculate the spindle speed of tool in the following way.

Spindle speed of cutting tool $n(\text{min}^{-1}) = 1000 \times \text{Cutting speed } vc \div \text{Diameter of cutting tool } D_1 \div 3.14$

(Note 3) Please note the following when machining hardened steel with MP8010.

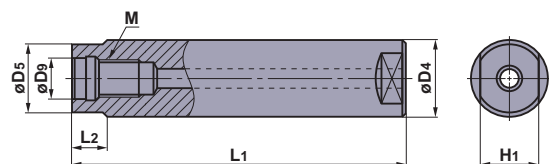
- Please shorten the overhang length as much as possible.
- A carbide shank is recommended.
- Please pay special attention to the depth of cut to prevent fracturing.

ARBORS

ARBORS FOR SCREW-IN TOOLS

STRAIGHT SHANK ARBOR

Type	Order Number	Stock	Dimensions (mm)						
			D9	D4	D5	L1	L2	H1	M
STEEL SHANK TYPE	SC16M08S100S	●	8.5	16	14.5	100	10	10	M8
	08S200L	●	8.5	16	14.5	200	10	10	M8
	SC20M10S120S	●	10.5	20	18.5	120	10	14	M10
	10S220L	●	10.5	20	18.5	220	10	14	M10
	SC25M12S125S	●	12.5	25	23.5	125	10	19	M12
	12S245L	●	12.5	25	23.5	245	10	19	M12
	SC32M16S140S	●	17	32	28.5	140	15	24	M16
	16S280L	●	17	32	28.5	280	15	24	M16
CARBIDE SHANK TYPE	SC16M08S100SW	●	8.5	16	14.5	100	10	10	M8
	08S200LW	●	8.5	16	14.5	200	10	10	M8
	SC20M10S120SW	●	10.5	20	18.5	120	10	14	M10
	10S220LW	●	10.5	20	18.5	220	10	14	M10
	SC25M12S125SW	●	12.5	25	23.5	125	10	19	M12
	12S245LW	●	12.5	25	23.5	245	10	19	M12
	SC32M16S140SW	●	17	32	28.5	140	15	24	M16
	16S280LW	●	17	32	28.5	280	15	24	M16



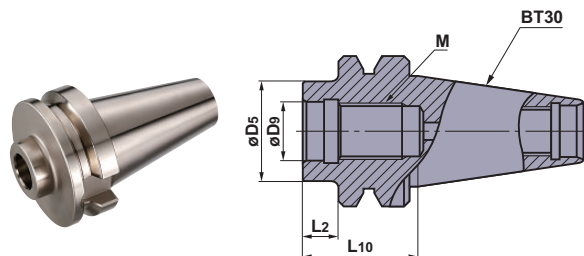
HOW TO INSTALL THE SCREW-IN HEAD

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

Screw Size	Recommended Torque	Wrench Size
M8	23	10
M10	46	14
M12	80	19
M16	90	24

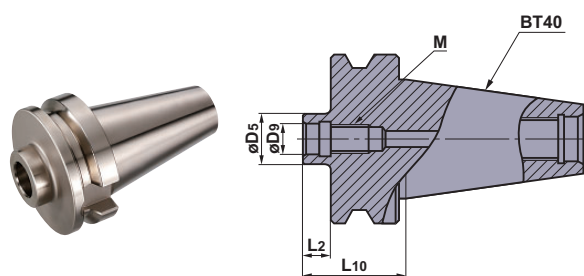
- Cutting tools become extremely hot during cutting. Never touch them with bare hands after operation as this may produce risk of injuries or burns.
- Do not handle cutting tools with bare hands as this may cause injuries.

BT30 SHANK ARBOR



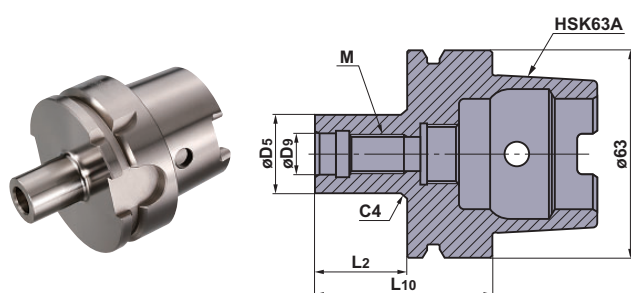
Order Number	Stock	Dimensions (mm)				
		D9	D5	L10	L2	M
SC16M08S10-BT30	●	8.5	14.5	32	10	M8
20M10S10-BT30	●	10.5	18.5	32	10	M10
25M12S10-BT30	●	12.5	23.5	32	10	M12
32M16S10-BT30	●	17.0	28.5	32	10	M16

BT40 SHANK ARBOR



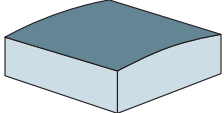
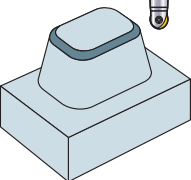
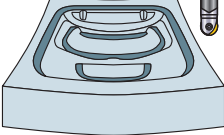
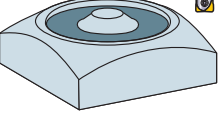
Order Number	Stock	Dimensions (mm)				
		D9	D5	L10	L2	M
SC16M08S10-BT40	●	8.5	14.5	37	10	M8
20M10S10-BT40	●	10.5	18.5	37	10	M10
25M12S10-BT40	●	12.5	23.5	37	10	M12
32M16S10-BT40	●	17.0	28.5	37	10	M16

HSK63A SHANK ARBOR



Order Number	Stock	Dimensions (mm)				
		D9	D5	L10	L2	M
SC16M08S22-HSK63A	●	8.5	14.5	48	22	M8
20M10S24-HSK63A	●	10.5	18.5	50	24	M10
25M12S27-HSK63A	●	12.5	23.5	53	27	M12
32M16S28-HSK63A	●	17.0	28.5	54	28	M16

APPLICATION EXAMPLES

Tool		SRFH20S25M	SRFH20S25M	SRFH30S32LW	SRFH20S20LW
Insert		SRFT20	SRFT20	SRFT30	SUFT20R10
Grade		VP15TF	MP8010	MP8010	VP15TF
Machine		Bridge column machining centre	Vertical type M/C	Bridge column machining centre	Vertical type M/C
Work Material		PX5(HRC33) 	SKD11(HRC60) 	JIS FC300 	JIS SCM445 (HRC35) 
Component		Resin mould	Press mould	Press mould	Resin mould
Cutting Conditions	Actual Cutting Speed (m/min)	250	30-100	150-940	188
	Table Feed (mm/min)	1400	636	10000	1800
	Feed per Tooth (mm/tooth)	0.18	0.2	0.5	0.3
	Depth of Cut (mm)	0.2	0.2	0.2	0.1
	Width of Cut (mm)	1.2	0.3	0.5	0.3
Coolant		Water soluble	Air blow	Air blow	Air blow
Results		Low cutting noise and good surface finish.	Higher efficiency machining is achieved and the cutting time can be decreased compared with conventional PVD coated carbide.	Using the same conditions as a CBN grade, a cut length of 10000m was achieved. Surface quality was excellent and tool costs were reduced.	The surface finish on the bottom face is improved compared to a competitors grade. VP15TF also achieved double tool life.



Indexable Ball Nose End Mill
for Finishing

Indexable Corner Radius End Mill
for Finishing

SRF/SUF

For Your Safety

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

MITSUBISHI MATERIALS CORPORATION

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URL : <http://www.mitsubishicarbide.com>
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