MOLDINO
The Edge To Innovation

Epoch SUS series

EPSF/EPSM/EPSW-PN

Epoch SUS Finish, Epoch SUS Multi, Epoch SUS Wave

Additional lineup of Epoch SUS Finish for finishing.

(size : ϕ3.0～12.0　36 items)

MOLDINO Tool Engineering, Ltd.

New Product News | No.1201E-15 | 2026-2

Abundant lineup! Adapt various machining from roughing to finishing.

Features of Epoch SUS series

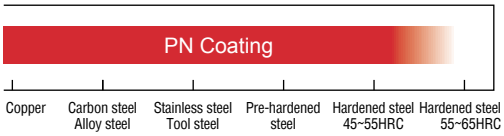
01 Suppressing vibration by unequal pitch geometry. EPSF EPSM EPSW

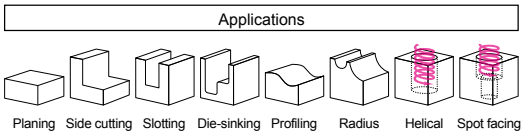
02 Smooth chip evacuation by double gash EPSM EPSW

03 Improving chipping-resistance & wear-resistance by double-eccentric relief face. EPSM

04 Smooth chip evacuation by optimized flute geometry EPSW

05 Improving wear-resistance and tool life by PN Coating. EPSF EPSM EPSW





EPSF-PN : φ3～φ12 [36 Items]
EPSM-PN : φ1～φ20 [642 Items]
EPSW-PN : φ4～φ20 [62 Items]

Overview of Epoch SUS Series

Finishing NEW
Epoch® SUS Finish EPSF

Realization of high geometrical precision & surface quality even in thin wall machining.

Roughing ～ Finishing
Epoch® SUS Multi EPSM

Versatility in both roughing and finishing applications.
Realization of long-tool-life & stable machining by double-eccentric relief face.

Roughing
Epoch® SUS Wave EPSW

Cutting force is reduced by roughing type.
Realization of less chatter machining even in low-rigidity situations including spindle, clamping, parts geometry.

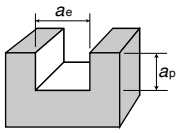
Line-ups of Epoch SUS series

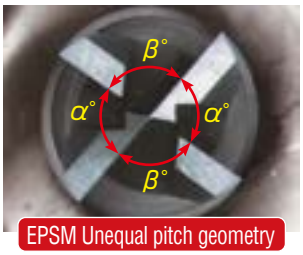
	Flute tip shape		Short Flute length 1.5DC	Regular Flute length 2.5DC	Medium Flute length 4DC	Long Flute length 5DC	Long shank Flute length 1.5DC	Under neck 3DC Flute length 1.5DC	Under neck 5DC Flute length 1.5DC
SUS Finish EPSF-PN NEW	Square			EPSF-PN φ3～φ12 13 Items P.6	EPSFM-PN φ3～φ12 13 Items P.7	EPSFL-PN φ3～φ12 10 Items P.7			
SUS Multi EPSM-PN	Square		EPSMS4-PN φ1～φ20 127 Items P.8	EPSM4-PN φ1～φ20 217 Items P.10	EPSMM4-PN φ3～φ20 12 Items P.14	EPSML4-PN φ6～φ20 15 Items P.14	EPSMLS4-PN φ3～φ17 13 Items P.15	EPSM4-3DC-PN φ1～φ20 31 Items P.16	EPSM4-5DC-PN φ1～φ20 31 Items P.17
	Radius			EPSM4-CR-PN φ1～φ20 82 Items P.12		EPSML4-CR-PN φ6～φ20 32 Items P.15			EPSM4-5DC-CR-PN φ1～φ20 82 Items P.18
SUS Wave EPSW-PN	Square			EPSW-PN φ4～φ20 25 Items P.20		EPSWL-PN φ6～φ20 15 Items P.21		EPSW-3DC-PN φ4～φ20 11 Items P.21	EPSW-5DC-PN φ4～φ20 11 Items P.22

Features 01 Unequal pitch geometry
Dramatically suppressing vibration

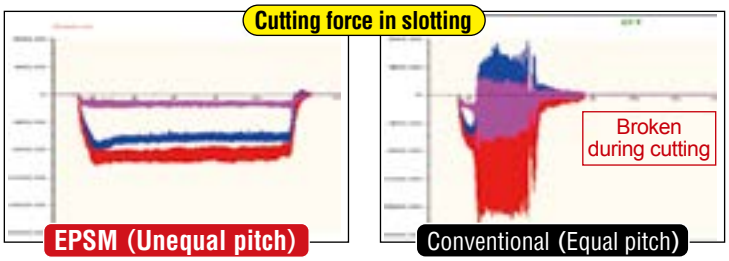
EPSF EPSM EPSW

Tool：Square type ϕ8×4NT, Work material：SUS304, Rotation : n=2100min^{-1} ,
Feed rate :v_f=230mm/min, $a_p \times a_e$ = 6.4×8mm, Coolant：Wet





EPSM Unequal pitch geometry



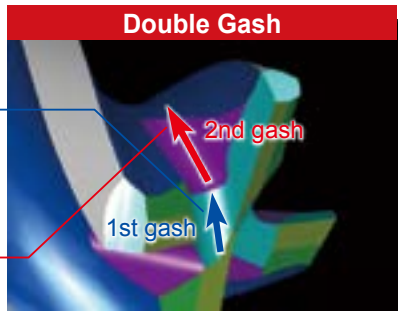
EPSM (Unequal pitch) Conventional (Equal pitch)

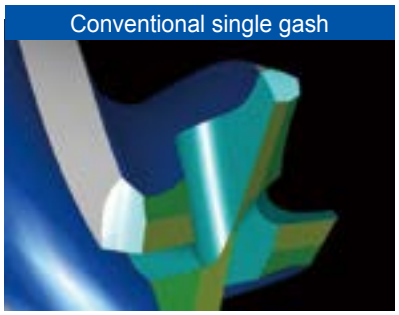
Features 02 Double Gash
Smooth chip evacuation

EPSM EPSW

1st gash for high rigidity !

2nd gash for stable chip evacuation !

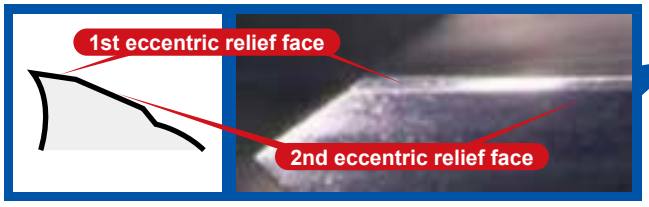




**"Double Gash" achieves perfect balance with rigidity and chip evacuation!
It guarantees high performance in vertical and horizontal milling!**

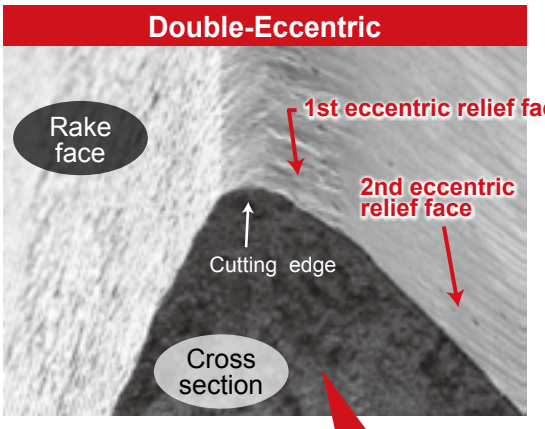
Features 03 Introduction of Double-eccentric relief face
Improving chipping-resistance & wear-resistance

EPSM

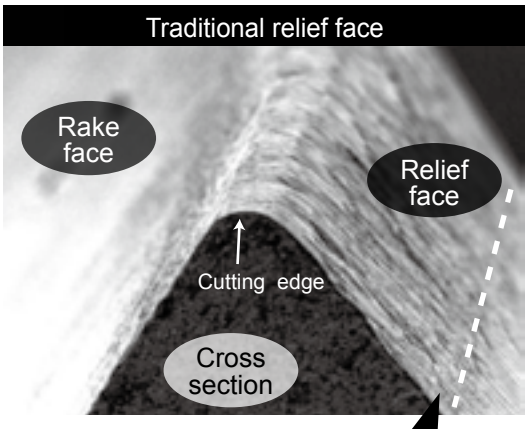


Double-eccentric relief face realize a small wear when guaranteeing higher cutting edge rigidity.

Wear status after SUS304 side milling



Wear is restricted by first eccentric relief face



Flank wear extended to the dotted line.

Features 04 Optimized Flute geometry
Smooth chip evacuation

EPSW

EPSW Optimized flute geometry

Conventional flute geometry

EPSW optimized flute geometry dramatically improves disposal even for small chips.

Features 05 PN Coating
Improving wear-resistance and tool life

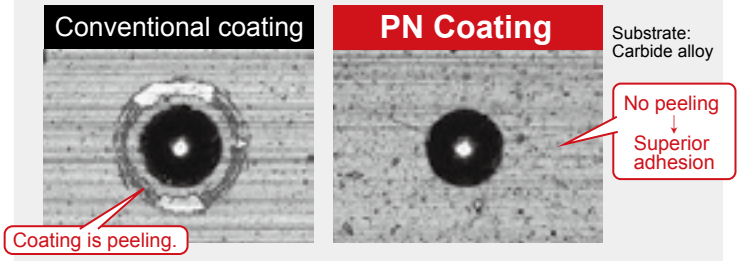
EPSF EPSM EPSW

Features and characteristics

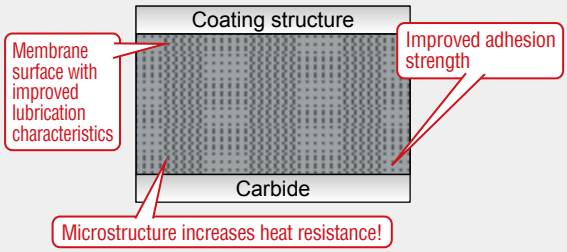
- A heat-resistant coating material with excellent adhesion to the tool substrate was achieved by optimizing the Al content.
- Exhibits excellent cutting life for cutting materials such as plastic molds, etc. where tool seizure often occurs. Provides the long life in cutting processing of materials starting with HPM-MAGIC and including pre-hardened steel, carbon steel, alloy steel, SUS, SKD61, SKD11, etc.

Note) This product obtains less electric conductivity. Therefore, Please caution of using electric transmitted measuring systems.

Adhesion of PN Coating



Cross-sectional structure and characteristics of PN Coating membrane



Cutting force comparison by cutting depth amount
(when performing side cutting with φ8mm tool)

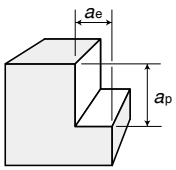
Epoch SUS Multi *a*p & *a*e EPSM

*a*e(mm)	Total cutting force (N)							
7	331	683	1053	1431	1799	2156	2513	2844
6	302	626	955	1275	1612	1926	2227	2538
5	265	543	824	1105	1370	1662	1922	2174
4	215	461	689	914	1125	1382	1569	1777
3		362	527	714	879	1071	1214	1364
2			381	511	606	745	830	951
1				273	340	408	484	539
	1	2	3	4	5	6	7	8

Standard depth of cut

*a*p (mm)

EPSM4080-24-PN
Work material : SUS304
n=2400min^{-1}(*v*c=60m/min)
*v*f=380mm/min(*f*z=0.04mm/t)
HSK63A
Coolant：Wet



2500N～
2000～2500N
1500～2000N
1000～1500N
500～1000N
～500N

※Value indicates total cutting force.
※The chart was created beased on experimental data only for reference, please adjust according to user's own cutting situation.

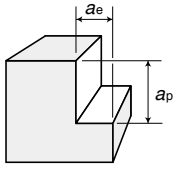
Epoch SUS Wave *a*p & *a*e EPSW

*a*e(mm)	Total cutting force (N)							
7	320	604	928	1231	1476	1802	2094	2420
6	305	556	824	1081	1342	1640	1883	2140
5	258	481	713	932	1124	1399	1599	1814
4	208	406	589	778	916	1151	1300	1489
3		309	456	604	699	864	995	1144
2			308	412	495	598	679	781
1				221	269	314	367	427
	1	2	3	4	5	6	7	8

Standard depth of cut

*a*p (mm)

EPSW4080-24-PN
Work material : SUS304
n=2400min^{-1}(*v*c=60m/min)
*v*f=380mm/min(*f*z=0.04mm/t)
HSK63A
Coolant：Wet



2500N～
2000～2500N
1500～2000N
1000～1500N
500～1000N
～500N

EPSW
provides lower cutting force at the same cutting depth.

This table can be reference data for comparing cutting force based on different *a*p & *a*e. Lower cutting force could lead to more stable machining.

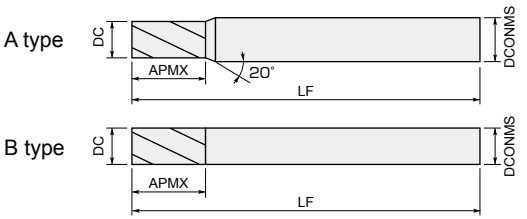
Example. In the case of same cutting situation,

①If Φ8 endmill with *a*p=7mm & *a*e=3mm can lead to a machining. Cutting force of *a*p=4mm & *a*e=5mm could be same level.
②In the same parameter, EPSW has lower cutting force than EPSM.
③In the case of same metal removal rate, lower *a*p causes lower cutting force.

Epoch SUS Finish EPSF

General Side milling conditions ····· P.29
Side finishing conditions ····· P.30

4 Flutes



EPSF4○○○-PN Regular Square type φ3~φ12

Carbide | PN | Helix angle 43° | 0 -0.015 (φ3~φ6) | 0 -0.02 (φ7~φ12) | h5 | Unequal Pitch

Item code	Stock	Size (mm)				Shape
		Tool dia.	Flute length	Overall length	Shank dia.	
		DC	APMX	LF	DCONMS	
EPSF4030-PN	●	**3**	**7.5**	56	6	A
EPSF4035-PN	●	**3.5**	**8.8**	56	6	A
EPSF4040-PN	●	**4**	**10**	56	6	A
EPSF4045-PN	●	**4.5**	**11.3**	56	6	A
EPSF4050-PN	●	**5**	**12.5**	56	6	A
EPSF4055-PN	●	**5.5**	**13.8**	56	6	A
EPSF4060-PN	●	**6**	**15**	56	6	B
EPSF4070-PN	●	**7**	**17.5**	63	8	A
EPSF4080-PN	●	**8**	**20**	63	8	B
EPSF4090-PN	●	**9**	**22.5**	74	10	A
EPSF4100-PN	●	**10**	**25**	74	10	B
EPSF4110-PN	●	**11**	**27.5**	86	12	A
EPSF4120-PN	●	**12**	**30**	86	12	B

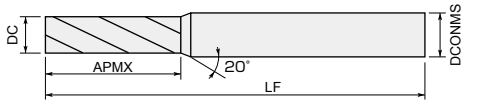
● : Stocked items.

Epoch SUS Finish EPSFM

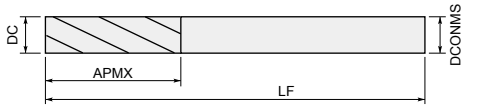
Side finishing conditions ····· P.31

4 Flutes

A type



B type



EPSFM4○○○-PN Medium Square type ϕ3~ϕ12

Carbide PN Helix angle 43° 0 −0.015 (ϕ3~ϕ6) 0 −0.02 (ϕ7~ϕ12) h5 Unequal Pitch

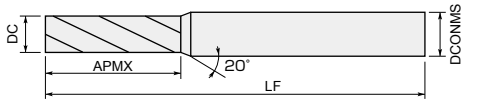
Item code	Stock	Size (mm)				Shape
		Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	
EPSFM4030-PN	●	3	12	56	6	A
EPSFM4035-PN	●	3.5	14	56	6	A
EPSFM4040-PN	●	4	16	56	6	A
EPSFM4045-PN	●	4.5	18	70	6	A
EPSFM4050-PN	●	5	20	70	6	A
EPSFM4055-PN	●	5.5	22	70	6	A
EPSFM4060-PN	●	6	24	70	6	B
EPSFM4070-PN	●	7	28	75	8	A
EPSFM4080-PN	●	8	32	80	8	B
EPSFM4090-PN	●	9	36	100	10	A
EPSFM4100-PN	●	10	40	100	10	B
EPSFM4110-PN	●	11	44	120	12	A
EPSFM4120-PN	●	12	48	120	12	B

Epoch SUS Finish EPSFL

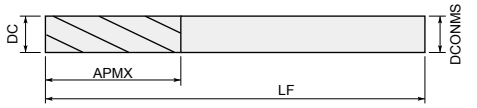
Side finishing conditions ····· P.31

4 Flutes

A type



B type



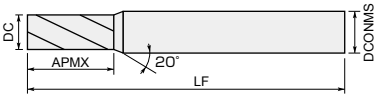
EPSFL4○○○-PN Long Square type ϕ3~ϕ12

Carbide PN Helix angle 43° 0 −0.015 (ϕ3~ϕ6) 0 −0.02 (ϕ7~ϕ12) h5 Unequal Pitch

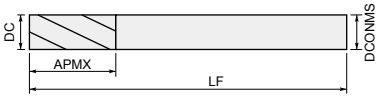
Item code	Stock	Size (mm)				Shape
		Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	
EPSFL4030-PN	●	3	15	56	6	A
EPSFL4040-PN	●	4	20	70	6	A
EPSFL4050-PN	●	5	25	70	6	A
EPSFL4060-PN	●	6	30	70	6	B
EPSFL4070-PN	●	7	35	80	8	A
EPSFL4080-PN	●	8	40	80	8	B
EPSFL4090-PN	●	9	45	100	10	A
EPSFL4100-PN	●	10	50	100	10	B
EPSFL4110-PN	●	11	55	120	12	A
EPSFL4120-PN	●	12	60	120	12	B

Epoch SUS Multi EPSMS

4 Flutes



A type



B type

EPSMS4○○○-PN Short Square type ϕ1～ϕ20

Carbide PN Helix angle 40° 0 −0.015 (ϕ1～ϕ6) 0 −0.02 (ϕ6.1～ϕ20) h5 (ϕ6～ϕ12) h6 (ϕ16,ϕ20) Unequal Pitch

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSMS4010-PN	□	1	1.5	56	6	A
EPSMS4011-PN	□	1.1	1.7	56	6	A
EPSMS4012-PN	□	1.2	1.8	56	6	A
EPSMS4013-PN	□	1.3	2	56	6	A
EPSMS4014-PN	□	1.4	2.1	56	6	A
EPSMS4015-PN	□	1.5	2.3	56	6	A
EPSMS4016-PN	□	1.6	2.4	56	6	A
EPSMS4017-PN	□	1.7	2.6	56	6	A
EPSMS4018-PN	□	1.8	2.7	56	6	A
EPSMS4019-PN	□	1.9	2.9	56	6	A
EPSMS4020-PN	□	2	3	56	6	A
EPSMS4021-PN	□	2.1	3.2	56	6	A
EPSMS4022-PN	□	2.2	3.3	56	6	A
EPSMS4023-PN	□	2.3	3.5	56	6	A
EPSMS4024-PN	□	2.4	3.6	56	6	A
EPSMS4025-PN	□	2.5	3.8	56	6	A
EPSMS4026-PN	□	2.6	3.9	56	6	A
EPSMS4027-PN	□	2.7	4.1	56	6	A
EPSMS4028-PN	□	2.8	4.2	56	6	A
EPSMS4029-PN	□	2.9	4.4	56	6	A
EPSMS4030-PN	□	3	4.5	56	6	A
EPSMS4031-PN	□	3.1	4.7	56	6	A
EPSMS4032-PN	□	3.2	4.8	56	6	A
EPSMS4033-PN	□	3.3	5	56	6	A
EPSMS4034-PN	□	3.4	5.1	56	6	A
EPSMS4035-PN	□	3.5	5.3	56	6	A
EPSMS4036-PN	□	3.6	5.4	56	6	A
EPSMS4037-PN	□	3.7	5.6	56	6	A
EPSMS4038-PN	□	3.8	5.7	56	6	A
EPSMS4039-PN	□	3.9	5.9	56	6	A
EPSMS4040-PN	□	4	6	56	6	A
EPSMS4041-PN	□	4.1	6.2	56	6	A
EPSMS4042-PN	□	4.2	6.3	56	6	A
EPSMS4043-PN	□	4.3	6.5	56	6	A
EPSMS4044-PN	□	4.4	6.6	56	6	A
EPSMS4045-PN	□	4.5	6.8	56	6	A
EPSMS4046-PN	□	4.6	6.9	56	6	A
EPSMS4047-PN	□	4.7	7.1	56	6	A
EPSMS4048-PN	□	4.8	7.2	56	6	A
EPSMS4049-PN	□	4.9	7.4	56	6	A

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSMS4050-PN	□	5	7.5	56	6	A
EPSMS4051-PN	□	5.1	7.7	56	6	A
EPSMS4052-PN	□	5.2	7.8	56	6	A
EPSMS4053-PN	□	5.3	8	56	6	A
EPSMS4054-PN	□	5.4	8.1	56	6	A
EPSMS4055-PN	□	5.5	8.3	56	6	A
EPSMS4056-PN	□	5.6	8.4	56	6	A
EPSMS4057-PN	□	5.7	8.6	56	6	A
EPSMS4058-PN	□	5.8	8.7	56	6	A
EPSMS4059-PN	□	5.9	8.9	56	6	A
EPSMS4060-PN	□	6	9	56	6	B
EPSMS4061-PN	□	6.1	9.2	63	8	A
EPSMS4062-PN	□	6.2	9.3	63	8	A
EPSMS4063-PN	□	6.3	9.5	63	8	A
EPSMS4064-PN	□	6.4	9.6	63	8	A
EPSMS4065-PN	□	6.5	9.8	63	8	A
EPSMS4066-PN	□	6.6	9.9	63	8	A
EPSMS4067-PN	□	6.7	10.1	63	8	A
EPSMS4068-PN	□	6.8	10.2	63	8	A
EPSMS4069-PN	□	6.9	10.4	63	8	A
EPSMS4070-PN	□	7	10.5	63	8	A
EPSMS4071-PN	□	7.1	10.7	63	8	A
EPSMS4072-PN	□	7.2	10.8	63	8	A
EPSMS4073-PN	□	7.3	11	63	8	A
EPSMS4074-PN	□	7.4	11.1	63	8	A
EPSMS4075-PN	□	7.5	11.3	63	8	A
EPSMS4076-PN	□	7.6	11.4	63	8	A
EPSMS4077-PN	□	7.7	11.6	63	8	A
EPSMS4078-PN	□	7.8	11.7	63	8	A
EPSMS4079-PN	□	7.9	11.9	63	8	A
EPSMS4080-PN	□	8	12	63	8	B
EPSMS4081-PN	□	8.1	12.2	74	10	A
EPSMS4082-PN	□	8.2	12.3	74	10	A
EPSMS4083-PN	□	8.3	12.5	74	10	A
EPSMS4084-PN	□	8.4	12.6	74	10	A
EPSMS4085-PN	□	8.5	12.8	74	10	A
EPSMS4086-PN	□	8.6	12.9	74	10	A
EPSMS4087-PN	□	8.7	13.1	74	10	A
EPSMS4088-PN	□	8.8	13.2	74	10	A
EPSMS4089-PN	□	8.9	13.4	74	10	A

□ : Stocked by specified distributor. Contact with our sales department.

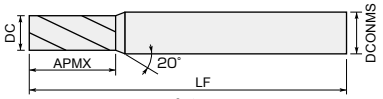
EPSMS4○○○-PN Short Square type φ1～φ20

Item code	Stock	Size (mm)				Shape
		Tool dia.	Flute length	Overall length	Shank dia.	
		DC	APMX	LF	DCONMS	
EPSMS4090-PN	□	9	13.5	74	10	A
EPSMS4091-PN	□	9.1	13.7	74	10	A
EPSMS4092-PN	□	9.2	13.8	74	10	A
EPSMS4093-PN	□	9.3	14	74	10	A
EPSMS4094-PN	□	9.4	14.1	74	10	A
EPSMS4095-PN	□	9.5	14.3	74	10	A
EPSMS4096-PN	□	9.6	14.4	74	10	A
EPSMS4097-PN	□	9.7	14.6	74	10	A
EPSMS4098-PN	□	9.8	14.7	74	10	A
EPSMS4099-PN	□	9.9	14.9	74	10	A
EPSMS4100-PN	□	10	15	74	10	B
EPSMS4101-PN	□	10.1	15.2	86	12	A
EPSMS4102-PN	□	10.2	15.3	86	12	A
EPSMS4103-PN	□	10.3	15.5	86	12	A
EPSMS4104-PN	□	10.4	15.6	86	12	A
EPSMS4105-PN	□	10.5	15.8	86	12	A
EPSMS4106-PN	□	10.6	15.9	86	12	A
EPSMS4107-PN	□	10.7	16.1	86	12	A
EPSMS4108-PN	□	10.8	16.2	86	12	A
EPSMS4109-PN	□	10.9	16.4	86	12	A
EPSMS4110-PN	□	11	16.5	86	12	A
EPSMS4111-PN	□	11.1	16.7	86	12	A
EPSMS4112-PN	□	11.2	16.8	86	12	A
EPSMS4113-PN	□	11.3	17	86	12	A
EPSMS4114-PN	□	11.4	17.1	86	12	A
EPSMS4115-PN	□	11.5	17.3	86	12	A
EPSMS4116-PN	□	11.6	17.4	86	12	A
EPSMS4117-PN	□	11.7	17.6	86	12	A
EPSMS4118-PN	□	11.8	17.7	86	12	A
EPSMS4119-PN	□	11.9	17.9	86	12	A
EPSMS4120-PN	□	12	18	86	12	B
EPSMS4125-PN	□	12.5	18.8	100	16	A
EPSMS4130-PN	□	13	19.5	100	16	A
EPSMS4135-PN	□	13.5	20.3	100	16	A
EPSMS4140-PN	□	14	21	100	16	A
EPSMS4145-PN	□	14.5	21.8	100	16	A
EPSMS4150-PN	□	15	22.5	100	16	A
EPSMS4155-PN	□	15.5	23.3	100	16	A
EPSMS4160-PN	□	16	24	100	16	B
EPSMS4165-PN	□	16.5	24.8	110	20	A

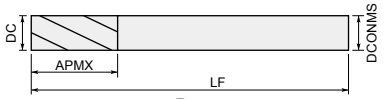
Item code	Stock	Size (mm)				Shape
		Tool dia.	Flute length	Overall length	Shank dia.	
		DC	APMX	LF	DCONMS	
EPSMS4170-PN	□	17	25.5	110	20	A
EPSMS4175-PN	□	17.5	26.3	110	20	A
EPSMS4180-PN	□	18	27	110	20	A
EPSMS4185-PN	□	18.5	27.8	110	20	A
EPSMS4190-PN	□	19	28.5	110	20	A
EPSMS4195-PN	□	19.5	29.3	110	20	A
EPSMS4200-PN	□	20	30	110	20	B

Epoch SUS Multi EPSM

4 Flutes



A type



B type

EPSM4○○○○-PN Regular Square type φ1～φ20

Carbide | PN | Helix angle 40° | 0 −0.015 (φ1～φ6) | 0 −0.02 (φ6.05～φ20) | h5 (φ6～φ12) | h6 (φ16,φ20) | Unequal Pitch

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSM4010-PN	●	1	2.5	56	6	A
EPSM40105-PN	□	1.05	2.8	56	6	A
EPSM4011-PN	□	1.1	2.8	56	6	A
EPSM40115-PN	□	1.15	3	56	6	A
EPSM4012-PN	□	1.2	3	56	6	A
EPSM40125-PN	□	1.25	3.3	56	6	A
EPSM4013-PN	□	1.3	3.3	56	6	A
EPSM40135-PN	□	1.35	3.5	56	6	A
EPSM4014-PN	□	1.4	3.5	56	6	A
EPSM40145-PN	□	1.45	3.8	56	6	A
EPSM4015-PN	□	1.5	3.8	56	6	A
EPSM40155-PN	□	1.55	4	56	6	A
EPSM4016-PN	□	1.6	4	56	6	A
EPSM40165-PN	□	1.65	4.3	56	6	A
EPSM4017-PN	□	1.7	4.3	56	6	A
EPSM40175-PN	□	1.75	4.5	56	6	A
EPSM4018-PN	□	1.8	4.5	56	6	A
EPSM40185-PN	□	1.85	4.8	56	6	A
EPSM4019-PN	□	1.9	4.8	56	6	A
EPSM40195-PN	□	1.95	5	56	6	A
EPSM4020-PN	●	2	5	56	6	A
EPSM40205-PN	□	2.05	5.3	56	6	A
EPSM4021-PN	□	2.1	5.3	56	6	A
EPSM40215-PN	□	2.15	5.5	56	6	A
EPSM4022-PN	□	2.2	5.5	56	6	A
EPSM40225-PN	□	2.25	5.8	56	6	A
EPSM4023-PN	□	2.3	5.8	56	6	A
EPSM40235-PN	□	2.35	6	56	6	A
EPSM4024-PN	□	2.4	6	56	6	A
EPSM40245-PN	□	2.45	6.3	56	6	A
EPSM4025-PN	□	2.5	6.3	56	6	A
EPSM40255-PN	□	2.55	6.5	56	6	A
EPSM4026-PN	□	2.6	6.5	56	6	A
EPSM40265-PN	□	2.65	6.8	56	6	A
EPSM4027-PN	□	2.7	6.8	56	6	A
EPSM40275-PN	□	2.75	7	56	6	A
EPSM4028-PN	□	2.8	7	56	6	A
EPSM40285-PN	□	2.85	7.3	56	6	A
EPSM4029-PN	□	2.9	7.3	56	6	A
EPSM40295-PN	□	2.95	7.5	56	6	A
EPSM4030-PN	●	3	7.5	56	6	A
EPSM40305-PN	□	3.05	7.8	56	6	A
EPSM4031-PN	□	3.1	7.8	56	6	A
EPSM40315-PN	□	3.15	8	56	6	A
EPSM4032-PN	□	3.2	8	56	6	A
EPSM40325-PN	□	3.25	8.3	56	6	A
EPSM4033-PN	□	3.3	8.3	56	6	A
EPSM40335-PN	□	3.35	8.5	56	6	A
EPSM4034-PN	□	3.4	8.5	56	6	A
EPSM40345-PN	□	3.45	8.8	56	6	A
EPSM4035-PN	□	3.5	8.8	56	6	A
EPSM40355-PN	□	3.55	9	56	6	A
EPSM4036-PN	□	3.6	9	56	6	A
EPSM40365-PN	□	3.65	9.3	56	6	A
EPSM4037-PN	□	3.7	9.3	56	6	A

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSM40375-PN	□	3.75	9.5	56	6	A
EPSM4038-PN	□	3.8	9.5	56	6	A
EPSM40385-PN	□	3.85	9.8	56	6	A
EPSM4039-PN	□	3.9	9.8	56	6	A
EPSM40395-PN	□	3.95	10	56	6	A
EPSM4040-PN	●	4	10	56	6	A
EPSM40405-PN	□	4.05	10.3	56	6	A
EPSM4041-PN	□	4.1	10.3	56	6	A
EPSM40415-PN	□	4.15	10.5	56	6	A
EPSM4042-PN	□	4.2	10.5	56	6	A
EPSM40425-PN	□	4.25	10.8	56	6	A
EPSM4043-PN	□	4.3	10.8	56	6	A
EPSM40435-PN	□	4.35	11	56	6	A
EPSM4044-PN	□	4.4	11	56	6	A
EPSM40445-PN	□	4.45	11.3	56	6	A
EPSM4045-PN	□	4.5	11.3	56	6	A
EPSM40455-PN	□	4.55	11.5	56	6	A
EPSM4046-PN	□	4.6	11.5	56	6	A
EPSM40465-PN	□	4.65	11.8	56	6	A
EPSM4047-PN	□	4.7	11.8	56	6	A
EPSM40475-PN	□	4.75	12	56	6	A
EPSM4048-PN	□	4.8	12	56	6	A
EPSM40485-PN	□	4.85	12.3	56	6	A
EPSM4049-PN	□	4.9	12.3	56	6	A
EPSM40495-PN	□	4.95	12.5	56	6	A
EPSM4050-PN	●	5	12.5	56	6	A
EPSM40505-PN	□	5.05	12.8	56	6	A
EPSM4051-PN	□	5.1	12.8	56	6	A
EPSM40515-PN	□	5.15	13	56	6	A
EPSM4052-PN	□	5.2	13	56	6	A
EPSM40525-PN	□	5.25	13.3	56	6	A
EPSM4053-PN	□	5.3	13.3	56	6	A
EPSM40535-PN	□	5.35	13.5	56	6	A
EPSM4054-PN	□	5.4	13.5	56	6	A
EPSM40545-PN	□	5.45	13.8	56	6	A
EPSM4055-PN	□	5.5	13.8	56	6	A
EPSM40555-PN	□	5.55	14	56	6	A
EPSM4056-PN	□	5.6	14	56	6	A
EPSM40565-PN	□	5.65	14.3	56	6	A
EPSM4057-PN	□	5.7	14.3	56	6	A
EPSM40575-PN	□	5.75	14.5	56	6	A
EPSM4058-PN	□	5.8	14.5	56	6	A
EPSM40585-PN	□	5.85	14.8	56	6	A
EPSM4059-PN	□	5.9	14.8	56	6	A
EPSM40595-PN	□	5.95	15	56	6	A
EPSM4060-PN	●	6	15	56	6	B
EPSM40605-PN	□	6.05	15.3	63	8	A
EPSM4061-PN	□	6.1	15.3	63	8	A
EPSM40615-PN	□	6.15	15.5	63	8	A
EPSM4062-PN	□	6.2	15.5	63	8	A
EPSM40625-PN	□	6.25	15.8	63	8	A
EPSM4063-PN	□	6.3	15.8	63	8	A
EPSM40635-PN	□	6.35	16	63	8	A
EPSM4064-PN	□	6.4	16	63	8	A
EPSM40645-PN	□	6.45	16.3	63	8	A

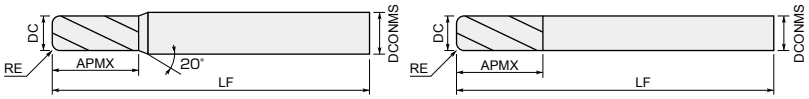
● : Stocked items. □ : Stocked by specified distributor. Contact with our sales department.

EPSM4○○○○-PN Regular Square type ϕ1~ϕ20

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSM4065-PN	□	6.5	16.3	63	8	A
EPSM40655-PN	□	6.55	16.5	63	8	A
EPSM4066-PN	□	6.6	16.5	63	8	A
EPSM40665-PN	□	6.65	16.8	63	8	A
EPSM4067-PN	□	6.7	16.8	63	8	A
EPSM40675-PN	□	6.75	17	63	8	A
EPSM4068-PN	□	6.8	17	63	8	A
EPSM40685-PN	□	6.85	17.3	63	8	A
EPSM4069-PN	□	6.9	17.3	63	8	A
EPSM40695-PN	□	6.95	17.5	63	8	A
EPSM4070-PN	●	7	17.5	63	8	A
EPSM40705-PN	□	7.05	17.8	63	8	A
EPSM4071-PN	□	7.1	17.8	63	8	A
EPSM40715-PN	□	7.15	18	63	8	A
EPSM4072-PN	□	7.2	18	63	8	A
EPSM40725-PN	□	7.25	18.3	63	8	A
EPSM4073-PN	□	7.3	18.3	63	8	A
EPSM40735-PN	□	7.35	18.5	63	8	A
EPSM4074-PN	□	7.4	18.5	63	8	A
EPSM40745-PN	□	7.45	18.8	63	8	A
EPSM4075-PN	□	7.5	18.8	63	8	A
EPSM40755-PN	□	7.55	19	63	8	A
EPSM4076-PN	□	7.6	19	63	8	A
EPSM40765-PN	□	7.65	19.3	63	8	A
EPSM4077-PN	□	7.7	19.3	63	8	A
EPSM40775-PN	□	7.75	19.5	63	8	A
EPSM4078-PN	□	7.8	19.5	63	8	A
EPSM40785-PN	□	7.85	19.8	63	8	A
EPSM4079-PN	□	7.9	19.8	63	8	A
EPSM40795-PN	□	7.95	20	63	8	A
EPSM4080-PN	●	8	20	63	8	B
EPSM40805-PN	□	8.05	20.3	74	10	A
EPSM4081-PN	□	8.1	20.3	74	10	A
EPSM40815-PN	□	8.15	20.5	74	10	A
EPSM4082-PN	□	8.2	20.5	74	10	A
EPSM40825-PN	□	8.25	20.8	74	10	A
EPSM4083-PN	□	8.3	20.8	74	10	A
EPSM40835-PN	□	8.35	21	74	10	A
EPSM4084-PN	□	8.4	21	74	10	A
EPSM40845-PN	□	8.45	21.3	74	10	A
EPSM4085-PN	□	8.5	21.3	74	10	A
EPSM40855-PN	□	8.55	21.5	74	10	A
EPSM4086-PN	□	8.6	21.5	74	10	A
EPSM40865-PN	□	8.65	21.8	74	10	A
EPSM4087-PN	□	8.7	21.8	74	10	A
EPSM40875-PN	□	8.75	22	74	10	A
EPSM4088-PN	□	8.8	22	74	10	A
EPSM40885-PN	□	8.85	22.3	74	10	A
EPSM4089-PN	□	8.9	22.3	74	10	A
EPSM40895-PN	□	8.95	22.5	74	10	A
EPSM4090-PN	●	9	22.5	74	10	A
EPSM40905-PN	□	9.05	22.8	74	10	A
EPSM4091-PN	□	9.1	22.8	74	10	A
EPSM40915-PN	□	9.15	23	74	10	A
EPSM4092-PN	□	9.2	23	74	10	A

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSM40925-PN	□	9.25	23.3	74	10	A
EPSM4093-PN	□	9.3	23.3	74	10	A
EPSM40935-PN	□	9.35	23.5	74	10	A
EPSM4094-PN	□	9.4	23.5	74	10	A
EPSM40945-PN	□	9.45	23.8	74	10	A
EPSM4095-PN	□	9.5	23.8	74	10	A
EPSM40955-PN	□	9.55	24	74	10	A
EPSM4096-PN	□	9.6	24	74	10	A
EPSM40965-PN	□	9.65	24.3	74	10	A
EPSM4097-PN	□	9.7	24.3	74	10	A
EPSM40975-PN	□	9.75	24.5	74	10	A
EPSM4098-PN	□	9.8	24.5	74	10	A
EPSM40985-PN	□	9.85	24.8	74	10	A
EPSM4099-PN	□	9.9	24.8	74	10	A
EPSM40995-PN	□	9.95	25	74	10	A
EPSM4100-PN	●	10	25	74	10	B
EPSM4101-PN	□	10.1	25.3	86	12	A
EPSM4102-PN	□	10.2	25.5	86	12	A
EPSM4103-PN	□	10.3	25.8	86	12	A
EPSM4104-PN	□	10.4	26	86	12	A
EPSM4105-PN	□	10.5	26.3	86	12	A
EPSM4106-PN	□	10.6	26.5	86	12	A
EPSM4107-PN	□	10.7	26.8	86	12	A
EPSM4108-PN	□	10.8	27	86	12	A
EPSM4109-PN	□	10.9	27.3	86	12	A
EPSM4110-PN	●	11	27.5	86	12	A
EPSM4111-PN	□	11.1	27.8	86	12	A
EPSM4112-PN	□	11.2	28	86	12	A
EPSM4113-PN	□	11.3	28.3	86	12	A
EPSM4114-PN	□	11.4	28.5	86	12	A
EPSM4115-PN	□	11.5	28.8	86	12	A
EPSM4116-PN	□	11.6	29	86	12	A
EPSM4117-PN	□	11.7	29.3	86	12	A
EPSM4118-PN	□	11.8	29.5	86	12	A
EPSM4119-PN	□	11.9	29.8	86	12	A
EPSM4120-PN	●	12	30	86	12	B
EPSM4125-PN	□	12.5	31.3	105	16	A
EPSM4130-PN	□	13	32.5	105	16	A
EPSM4135-PN	□	13.5	33.8	105	16	A
EPSM4140-PN	□	14	35	105	16	A
EPSM4145-PN	□	14.5	36.3	110	16	A
EPSM4150-PN	□	15	37.5	110	16	A
EPSM4155-PN	□	15.5	38.8	110	16	A
EPSM4160-PN	●	16	40	110	16	B
EPSM4165-PN	□	16.5	41.3	120	20	A
EPSM4170-PN	□	17	42.5	120	20	A
EPSM4175-PN	□	17.5	43.8	120	20	A
EPSM4180-PN	□	18	45	120	20	A
EPSM4185-PN	□	18.5	46.3	125	20	A
EPSM4190-PN	□	19	47.5	125	20	A
EPSM4195-PN	□	19.5	48.8	125	20	A
EPSM4200-PN	●	20	50	125	20	B

Epoch SUS Multi EPSM-CR



EPSM4□□□-R□.□-PN Regular Radius type φ1~φ20

Carbide | PN | Helix angle 40° | 0 −0.015 φ1~φ6 | 0 −0.02 φ7~φ20 | h5 φ6~φ12 | h6 φ16,φ20 | Unequal Pitch

Item code	Stock	Size(mm)					No. of flutes	Shape
		Tool dia. DC	Coner radius RE	Flute length APMX	Overall length LF	Shank dia. DCONMS		
EPSM4010-R0.1-PN	●	1	0.1	2.5	56	6	4	A
EPSM4020-R0.1-PN	●	2	0.1	5	56	6	4	A
EPSM4020-R0.2-PN	●		0.2	5	56	6	4	A
EPSM4030-R0.2-PN	●	3	0.2	7.5	56	6	4	A
EPSM4030-R0.5-PN	●		0.5	7.5	56	6	4	A
EPSM4040-R0.2-PN	●	4	0.2	10	56	6	4	A
EPSM4040-R0.5-PN	●		0.5	10	56	6	4	A
EPSM4040-R1.0-PN	●		1	10	56	6	4	A
EPSM4050-R0.2-PN	●	5	0.2	12.5	56	6	4	A
EPSM4050-R0.5-PN	●		0.5	12.5	56	6	4	A
EPSM4050-R1.0-PN	●		1	12.5	56	6	4	A
EPSM4060-R0.3-PN	●	6	0.3	15	56	6	4	B
EPSM4060-R0.5-PN	●		0.5	15	56	6	4	B
EPSM4060-R1.0-PN	●		1	15	56	6	4	B
EPSM4060-R1.5-PN	●		1.5	15	56	6	4	B
EPSM4070-R0.3-PN	●	7	0.3	17.5	63	8	4	A
EPSM4070-R0.5-PN	●		0.5	17.5	63	8	4	A
EPSM4070-R1.0-PN	●		1	17.5	63	8	4	A
EPSM4080-R0.3-PN	●	8	0.3	20	63	8	4	B
EPSM4080-R0.5-PN	●		0.5	20	63	8	4	B
EPSM4080-R1.0-PN	●		1	20	63	8	4	B
EPSM4080-R1.5-PN	●		1.5	20	63	8	4	B
EPSM4080-R2.0-PN	●		2	20	63	8	4	B
EPSM4090-R0.3-PN	●	9	0.3	22.5	74	10	4	A
EPSM4090-R0.5-PN	●		0.5	22.5	74	10	4	A
EPSM4090-R1.0-PN	●		1	22.5	74	10	4	A
EPSM4100-R0.3-PN	●	10	0.3	25	74	10	4	B
EPSM4100-R0.5-PN	●		0.5	25	74	10	4	B
EPSM4100-R1.0-PN	●		1	25	74	10	4	B
EPSM4100-R1.5-PN	●		1.5	25	74	10	4	B
EPSM4100-R2.0-PN	●		2	25	74	10	4	B
EPSM4110-R0.3-PN	●	11	0.3	27.5	86	12	4	A
EPSM4110-R0.5-PN	●		0.5	27.5	86	12	4	A
EPSM4110-R1.0-PN	●		1	27.5	86	12	4	A
EPSM4120-R0.3-PN	●	12	0.3	30	86	12	4	B
EPSM4120-R0.5-PN	●		0.5	30	86	12	4	B
EPSM4120-R1.0-PN	●		1	30	86	12	4	B
EPSM4120-R1.5-PN	●		1.5	30	86	12	4	B
EPSM4120-R2.0-PN	●		2	30	86	12	4	B
EPSM4120-R2.5-PN	●		2.5	30	86	12	4	B
EPSM4120-R3.0-PN	●		3	30	86	12	4	B

● : Stocked items. □ : Stocked by specified distributor. Contact with our sales department.

EPSM4○○○-R○.○-PN Regular Radius type ϕ1~ϕ20

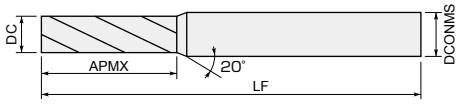
Item code	Stock	Size(mm)					No. of flutes	Shape
		Tool dia.	Coner radius	Flute length	Overall length	Shank dia.		
		DC	RE	APMX	LF	DCONMS		
EPSM4130-R0.5-PN	□	13	0.5	32.5	105	16	4	A
EPSM4130-R1.0-PN	□		1	32.5	105	16	4	A
EPSM4130-R1.5-PN	□		1.5	32.5	105	16	4	A
EPSM4130-R2.0-PN	□		2	32.5	105	16	4	A
EPSM4130-R3.0-PN	□		3	32.5	105	16	4	A
EPSM4140-R0.5-PN	□	14	0.5	35	105	16	4	A
EPSM4140-R1.0-PN	□		1	35	105	16	4	A
EPSM4140-R1.5-PN	□		1.5	35	105	16	4	A
EPSM4140-R2.0-PN	□		2	35	105	16	4	A
EPSM4140-R3.0-PN	□		3	35	105	16	4	A
EPSM4150-R0.5-PN	□	15	0.5	37.5	110	16	4	A
EPSM4150-R1.0-PN	□		1	37.5	110	16	4	A
EPSM4150-R1.5-PN	□		1.5	37.5	110	16	4	A
EPSM4150-R2.0-PN	□		2	37.5	110	16	4	A
EPSM4150-R3.0-PN	□		3	37.5	110	16	4	A
EPSM4160-R0.5-PN	●	16	0.5	40	110	16	4	B
EPSM4160-R1.0-PN	●		1	40	110	16	4	B
EPSM4160-R1.5-PN	●		1.5	40	110	16	4	B
EPSM4160-R2.0-PN	●		2	40	110	16	4	B
EPSM4160-R3.0-PN	●		3	40	110	16	4	B
EPSM4170-R0.5-PN	□	17	0.5	42.5	120	20	4	A
EPSM4170-R1.0-PN	□		1	42.5	120	20	4	A
EPSM4170-R1.5-PN	□		1.5	42.5	120	20	4	A
EPSM4170-R2.0-PN	□		2	42.5	120	20	4	A
EPSM4170-R3.0-PN	□		3	42.5	120	20	4	A
EPSM4180-R0.5-PN	□	18	0.5	45	120	20	4	A
EPSM4180-R1.0-PN	□		1	45	120	20	4	A
EPSM4180-R1.5-PN	□		1.5	45	120	20	4	A
EPSM4180-R2.0-PN	□		2	45	120	20	4	A
EPSM4180-R3.0-PN	□		3	45	120	20	4	A
EPSM4190-R0.5-PN	□	19	0.5	47.5	125	20	4	A
EPSM4190-R1.0-PN	□		1	47.5	125	20	4	A
EPSM4190-R1.5-PN	□		1.5	47.5	125	20	4	A
EPSM4190-R2.0-PN	□		2	47.5	125	20	4	A
EPSM4190-R3.0-PN	□		3	47.5	125	20	4	A
EPSM4200-R0.5-PN	●	20	0.5	50	125	20	4	B
EPSM4200-R1.0-PN	●		1	50	125	20	4	B
EPSM4200-R1.5-PN	●		1.5	50	125	20	4	B
EPSM4200-R2.0-PN	●		2	50	125	20	4	B
EPSM4200-R3.0-PN	●		3	50	125	20	4	B
EPSM4200-R5.0-PN	●		5	50	125	20	4	B

Epoch SUS Multi EPSMM

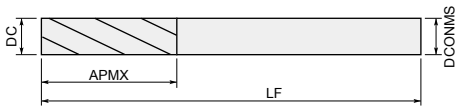
General Side milling conditions ····· P.28

4 Flutes

A type



B type



EPSMM4○○○-PN Medium Square type ϕ3~ϕ20

Carbide | PN | Helix angle 40° | 0 −0.015 (ϕ3~ϕ6) | 0 −0.02 (ϕ7~ϕ20) | h5 (ϕ6~ϕ12) | h6 (ϕ16,ϕ20) | Unequal Pitch

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSMM4030-PN	●	3	12	56	6	A
EPSMM4040-PN	●	4	16	56	6	A
EPSMM4050-PN	●	5	20	70	6	A
EPSMM4060-PN	●	6	24	70	6	B
EPSMM4070-PN	●	7	28	75	8	A
EPSMM4080-PN	●	8	32	80	8	B

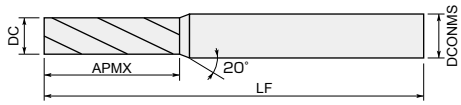
Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSMM4090-PN	●	9	36	100	10	A
EPSMM4100-PN	●	10	40	100	10	B
EPSMM4110-PN	●	11	44	120	12	A
EPSMM4120-PN	●	12	48	120	12	B
EPSMM4160-PN	●	16	64	135	16	B
EPSMM4200-PN	●	20	80	155	20	B

Epoch SUS Multi EPSML

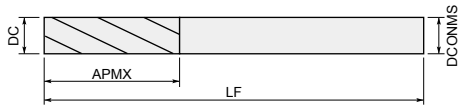
General Side milling conditions ····· P.28

4 Flutes

A type



B type



EPSML4○○○-PN Long Square type ϕ6~ϕ20

Carbide | PN | Helix angle 40° | 0 −0.015 (ϕ6) | 0 −0.02 (ϕ7~ϕ20) | h5 (ϕ6~ϕ12) | h6 (ϕ16,ϕ20) | Unequal Pitch

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSML4060-PN	●	6	30	70	6	B
EPSML4070-PN	□	7	35	80	8	A
EPSML4080-PN	●	8	40	80	8	B
EPSML4090-PN	□	9	45	100	10	A
EPSML4100-PN	●	10	50	100	10	B
EPSML4110-PN	□	11	55	120	12	A
EPSML4120-PN	●	12	60	120	12	B
EPSML4130-PN	□	13	65	130	16	A

Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSML4140-PN	□	14	70	130	16	A
EPSML4150-PN	□	15	75	130	16	A
EPSML4160-PN	●	16	80	135	16	B
EPSML4170-PN	□	17	85	135	20	A
EPSML4180-PN	□	18	90	145	20	A
EPSML4190-PN	□	19	95	145	20	A
EPSML4200-PN	●	20	100	155	20	B

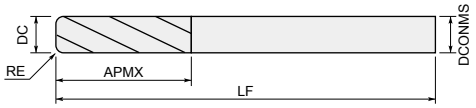
● : Stocked items. □ : Stocked by specified distributor. Contact with our sales department.

Epoch SUS Multi EPSML-CR

General Side milling conditions ····· P.28

4 Flutes

B type



EPSML4○○○-R○.○-PN Long Radius type φ6~φ20

Carbide | PN | Helix angle 40° | 0 −0.015 (φ6) | 0 −0.02 (φ8~φ20) | h5 (φ6~φ12) | h6 (φ16,φ20) | Unequal Pitch

Item code	Stock	Size (mm) Tool dia. DC	Corner radius RE	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSML4060-R0.3-PN	□	6	0.3	30	70	6	B
EPSML4060-R0.5-PN	□		0.5	30	70	6	B
EPSML4060-R1.0-PN	□		1	30	70	6	B
EPSML4060-R1.5-PN	□		1.5	30	70	6	B
EPSML4080-R0.3-PN	□	8	0.3	40	80	8	B
EPSML4080-R0.5-PN	□		0.5	40	80	8	B
EPSML4080-R1.0-PN	□		1	40	80	8	B
EPSML4080-R1.5-PN	□		1.5	40	80	8	B
EPSML4080-R2.0-PN	□		2	40	80	8	B
EPSML4100-R0.3-PN	□	10	0.3	50	100	10	B
EPSML4100-R0.5-PN	□		0.5	50	100	10	B
EPSML4100-R1.0-PN	□		1	50	100	10	B
EPSML4100-R1.5-PN	□		1.5	50	100	10	B
EPSML4100-R2.0-PN	□		2	50	100	10	B
EPSML4120-R0.3-PN	□	12	0.3	60	120	12	B
EPSML4120-R0.5-PN	□		0.5	60	120	12	B

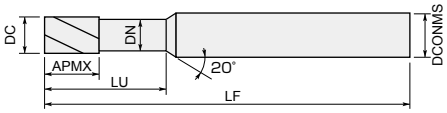
Item code	Stock	Size (mm) Tool dia. DC	Corner radius RE	Flute length APMX	Overall length LF	Shank dia. DCONMS	Shape
EPSML4120-R1.0-PN	□	12	1	60	120	12	B
EPSML4120-R1.5-PN	□		1.5	60	120	12	B
EPSML4120-R2.0-PN	□		2	60	120	12	B
EPSML4120-R2.5-PN	□		2.5	60	120	12	B
EPSML4120-R3.0-PN	□		3	60	120	12	B
EPSML4160-R0.5-PN	□	16	0.5	80	135	16	B
EPSML4160-R1.0-PN	□		1	80	135	16	B
EPSML4160-R1.5-PN	□		1.5	80	135	16	B
EPSML4160-R2.0-PN	□		2	80	135	16	B
EPSML4160-R3.0-PN	□		3	80	135	16	B
EPSML4200-R0.5-PN	□	20	0.5	100	155	20	B
EPSML4200-R1.0-PN	□		1	100	155	20	B
EPSML4200-R1.5-PN	□		1.5	100	155	20	B
EPSML4200-R2.0-PN	□		2	100	155	20	B
EPSML4200-R3.0-PN	□		3	100	155	20	B
EPSML4200-R5.0-PN	□		5	100	155	20	B

Epoch SUS Multi EPSMLS

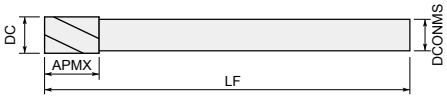
General Side milling conditions ····· P.26

4 Flutes

A type



B type



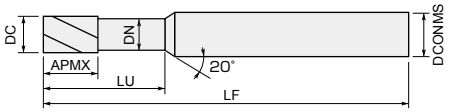
EPSMLS4○○○-PN Long shank Square type φ3~φ17

Carbide | PN | Helix angle 40° | 0 −0.015 (φ3~φ6) | 0 −0.02 (φ7~φ17) | h5 (DC:3~5) | h6 (DC:6~17) | Unequal Pitch

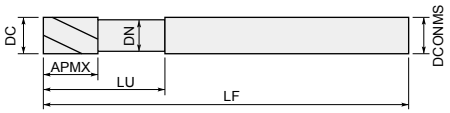
Item code	Stock	Size (mm) Tool dia. DC	Flute length APMX	Under neck length LU	Neck dia. DN	Overall length LF	Shank dia. DCONMS	No. of flutes	Shape
EPSMLS4030-PN	●	3	4.5	10.5	2.88	80	6	4	A
EPSMLS4040-PN	●	4	6	14	3.7	80	6	4	A
EPSMLS4050-PN	●	5	7.5	17.5	4.6	100	6	4	A
EPSMLS4060-PN	●	6	9	—	—	120	5	4	B
EPSMLS4070-PN	●	7	9	—	—	120	6	4	B
EPSMLS4080-PN	●	8	12	—	—	135	7	4	B
EPSMLS4090-PN	●	9	12	—	—	135	8	4	B
EPSMLS4100-PN	●	10	15	—	—	150	9	4	B
EPSMLS4110-PN	●	11	15	—	—	150	10	4	B
EPSMLS4120-PN	●	12	18	—	—	160	11	4	B
EPSMLS4130-PN	●	13	18	—	—	160	12	4	B
EPSMLS4160-PN	●	16	24	—	—	180	15	4	B
EPSMLS4170-PN	●	17	24	—	—	180	16	4	B

Epoch SUS Multi EPSM

A type



B type



EPSM4○○○-○○.○-PN Under neck 3DC Square type φ1~φ20

Carbide | PN | Helix angle 40° | 0 −0.015 (φ1~φ6) | 0 −0.02 (φ6.5~φ20) | h5 (φ6~φ12) | h6 (φ16,φ20) | Unequal Pitch

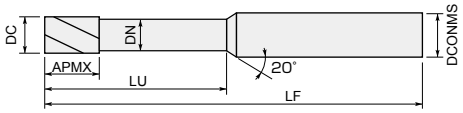
Item code	Stock	Size (mm)						No. of flutes	Shape
		Tool dia.	Flute length	Under neck length	Neck dia.	Overall length	Shank dia.		
		DC	APMX	LU	DN	LF	DCONMS		
EPSM4010-3-PN	●	1	1.5	3	0.96	56	6	4	A
EPSM4015-4.5-PN	□	1.5	2.3	4.5	1.44	56	6	4	A
EPSM4020-6-PN	●	2	3	6	1.92	56	6	4	A
EPSM4025-7.5-PN	□	2.5	3.8	7.5	2.4	56	6	4	A
EPSM4030-9-PN	●	3	4.5	9	2.88	56	6	4	A
EPSM4035-10.5-PN	□	3.5	5.3	10.5	3.35	56	6	4	A
EPSM4040-12-PN	●	4	6	12	3.7	56	6	4	A
EPSM4045-13.5-PN	□	4.5	6.8	13.5	4.15	56	6	4	A
EPSM4050-15-PN	●	5	7.5	15	4.6	56	6	4	A
EPSM4055-16.5-PN	□	5.5	8.3	16.5	5.05	56	6	4	A
EPSM4060-18-PN	●	6	9	18	5.5	56	6	4	B
EPSM4065-19.5-PN	□	6.5	9.8	19.5	5.95	63	8	4	A
EPSM4070-21-PN	●	7	10.5	21	6.4	63	8	4	A
EPSM4075-22.5-PN	□	7.5	11.3	22.5	6.85	63	8	4	A
EPSM4080-24-PN	●	8	12	24	7.3	63	8	4	B
EPSM4085-25.5-PN	□	8.5	12.8	25.5	7.8	74	10	4	A
EPSM4090-27-PN	●	9	13.5	27	8.3	74	10	4	A
EPSM4095-28.5-PN	□	9.5	14.3	28.5	8.7	74	10	4	A
EPSM4100-30-PN	●	10	15	30	9.1	74	10	4	B
EPSM4105-31.5-PN	□	10.5	15.8	31.5	9.65	86	12	4	A
EPSM4110-33-PN	●	11	16.5	33	10.2	86	12	4	A
EPSM4115-34.5-PN	□	11.5	17.3	34.5	10.6	86	12	4	A
EPSM4120-36-PN	●	12	18	36	11	86	12	4	B
EPSM4130-39-PN	□	13	19.5	39	11.7	105	16	4	A
EPSM4140-42-PN	□	14	21	42	12.7	105	16	4	A
EPSM4150-45-PN	□	15	22.5	45	13.6	110	16	4	A
EPSM4160-48-PN	●	16	24	48	14.5	110	16	4	B
EPSM4170-51-PN	□	17	25.5	51	15.4	120	20	4	A
EPSM4180-54-PN	□	18	27	54	16.3	120	20	4	A
EPSM4190-57-PN	□	19	28.5	57	17.3	125	20	4	A
EPSM4200-60-PN	●	20	30	60	18.2	125	20	4	B

● : Stocked items. □ : Stocked by specified distributor. Contact with our sales department.

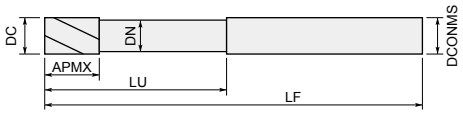
Epoch SUS Multi EPSM

General Side milling conditions ····· P.26
General Slotting conditions ····· P.27
Side finishing conditions ····· P.30

A type



B type



EPSM4□□□-□□□.□-PN Under neck 5DC Square type ϕ1~ϕ20

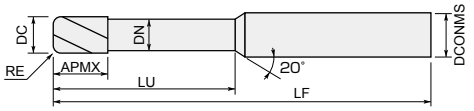
Carbide | PN | Helix angle 40° | 0 −0.015 ϕ1~ϕ6 | 0 −0.02 ϕ6.5~ϕ20 | h5 ϕ6~ϕ12 | h6 ϕ16,ϕ20 | Unequal Pitch

Item code	Stock	Size (mm)						No. of flutes	Shape
		Tool dia.	Flute length	Under neck length	Neck dia.	Overall length	Shank dia.		
		DC	APMX	LU	DN	LF	DCONMS		
EPSM4010-5-PN	●	**1**	**1.5**	5	0.96	68	6	4	A
EPSM4015-7.5-PN	□	**1.5**	**2.3**	7.5	1.44	68	6	4	A
EPSM4020-10-PN	●	**2**	**3**	10	1.92	68	6	4	A
EPSM4025-12.5-PN	□	**2.5**	**3.8**	12.5	2.4	68	6	4	A
EPSM4030-15-PN	●	**3**	**4.5**	15	2.88	68	6	4	A
EPSM4035-17.5-PN	□	**3.5**	**5.3**	17.5	3.35	68	6	4	A
EPSM4040-20-PN	●	**4**	**6**	20	3.7	68	6	4	A
EPSM4045-22.5-PN	□	**4.5**	**6.8**	22.5	4.15	68	6	4	A
EPSM4050-25-PN	●	**5**	**7.5**	25	4.6	68	6	4	A
EPSM4055-27.5-PN	□	**5.5**	**8.3**	27.5	5.05	68	6	4	A
EPSM4060-30-PN	●	**6**	**9**	30	5.5	68	6	4	B
EPSM4065-32.5-PN	□	**6.5**	**9.8**	32.5	5.95	80	8	4	A
EPSM4070-35-PN	●	**7**	**10.5**	35	6.4	80	8	4	A
EPSM4075-37.5-PN	□	**7.5**	**11.3**	37.5	6.85	80	8	4	A
EPSM4080-40-PN	●	**8**	**12**	40	7.3	80	8	4	B
EPSM4085-42.5-PN	□	**8.5**	**12.8**	42.5	7.8	94	10	4	A
EPSM4090-45-PN	●	**9**	**13.5**	45	8.3	94	10	4	A
EPSM4095-47.5-PN	□	**9.5**	**14.3**	47.5	8.7	94	10	4	A
EPSM4100-50-PN	●	**10**	**15**	50	9.1	94	10	4	B
EPSM4105-52.5-PN	□	**10.5**	**15.8**	52.5	9.65	110	12	4	A
EPSM4110-55-PN	●	**11**	**16.5**	55	10.2	110	12	4	A
EPSM4115-57.5-PN	□	**11.5**	**17.3**	57.5	10.6	110	12	4	A
EPSM4120-60-PN	●	**12**	**18**	60	11	110	12	4	B
EPSM4130-65-PN	□	**13**	**19.5**	65	11.7	125	16	4	A
EPSM4140-70-PN	□	**14**	**21**	70	12.7	125	16	4	A
EPSM4150-75-PN	□	**15**	**22.5**	75	13.6	135	16	4	A
EPSM4160-80-PN	●	**16**	**24**	80	14.5	135	16	4	B
EPSM4170-85-PN	□	**17**	**25.5**	85	15.4	145	20	4	A
EPSM4180-90-PN	□	**18**	**27**	90	16.3	145	20	4	A
EPSM4190-95-PN	□	**19**	**28.5**	95	17.3	155	20	4	A
EPSM4200-100-PN	●	**20**	**30**	100	18.2	155	20	4	B

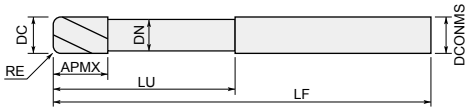
Epoch SUS Multi EPSM-CR

General Side milling conditions ····· P.26
General Slotting conditions ····· P.27
Side finishing conditions ····· P.30

A type



B type



EPSM4□□□-□□□-R□.□-PN Under neck 5DC Radius type φ1~φ20

Carbide | PN | Helix angle 40° | 0 −0.015 (φ1~φ6) | 0 −0.02 (φ7~φ20) | h5 (φ6~φ12) | h6 (φ16,φ20) | Unequal Pitch

Item code	Stock	Size (mm)							No. of flutes	Shape
		Tool dia.	Coner radius	Flute length	Under neck length	Neck dia.	Overall length	Shank dia.		
		DC	RE	APMX	LU	DN	LF	DCONMS		
EPSM4010-5-R0.1-PN	●	1	0.1	1.5	5	0.96	68	6	4	A
EPSM4020-10-R0.1-PN	●	2	0.1	3	10	1.92	68	6	4	A
EPSM4020-10-R0.2-PN	●		0.2	3	10	1.92	68	6	4	A
EPSM4030-15-R0.2-PN	●	3	0.2	4.5	15	2.88	68	6	4	A
EPSM4030-15-R0.5-PN	●		0.5	4.5	15	2.88	68	6	4	A
EPSM4040-20-R0.2-PN	●	4	0.2	6	20	3.7	68	6	4	A
EPSM4040-20-R0.5-PN	●		0.5	6	20	3.7	68	6	4	A
EPSM4040-20-R1.0-PN	●		1	6	20	3.7	68	6	4	A
EPSM4050-25-R0.2-PN	●	5	0.2	7.5	25	4.6	68	6	4	A
EPSM4050-25-R0.5-PN	●		0.5	7.5	25	4.6	68	6	4	A
EPSM4050-25-R1.0-PN	●		1	7.5	25	4.6	68	6	4	A
EPSM4060-30-R0.3-PN	●	6	0.3	9	30	5.5	68	6	4	B
EPSM4060-30-R0.5-PN	●		0.5	9	30	5.5	68	6	4	B
EPSM4060-30-R1.0-PN	●		1	9	30	5.5	68	6	4	B
EPSM4060-30-R1.5-PN	●		1.5	9	30	5.5	68	6	4	B
EPSM4070-35-R0.3-PN	●	7	0.3	10.5	35	6.4	80	8	4	A
EPSM4070-35-R0.5-PN	●		0.5	10.5	35	6.4	80	8	4	A
EPSM4070-35-R1.0-PN	●		1	10.5	35	6.4	80	8	4	A
EPSM4080-40-R0.3-PN	●	8	0.3	12	40	7.3	80	8	4	B
EPSM4080-40-R0.5-PN	●		0.5	12	40	7.3	80	8	4	B
EPSM4080-40-R1.0-PN	●		1	12	40	7.3	80	8	4	B
EPSM4080-40-R1.5-PN	●		1.5	12	40	7.3	80	8	4	B
EPSM4080-40-R2.0-PN	●		2	12	40	7.3	80	8	4	B
EPSM4090-45-R0.3-PN	●	9	0.3	13.5	45	8.3	94	10	4	A
EPSM4090-45-R0.5-PN	●		0.5	13.5	45	8.3	94	10	4	A
EPSM4090-45-R1.0-PN	●		1	13.5	45	8.3	94	10	4	A
EPSM4100-50-R0.3-PN	●	10	0.3	15	50	9.1	94	10	4	B
EPSM4100-50-R0.5-PN	●		0.5	15	50	9.1	94	10	4	B
EPSM4100-50-R1.0-PN	●		1	15	50	9.1	94	10	4	B
EPSM4100-50-R1.5-PN	●		1.5	15	50	9.1	94	10	4	B
EPSM4100-50-R2.0-PN	●		2	15	50	9.1	94	10	4	B
EPSM4110-55-R0.3-PN	●	11	0.3	16.5	55	10.2	110	12	4	A
EPSM4110-55-R0.5-PN	●		0.5	16.5	55	10.2	110	12	4	A
EPSM4110-55-R1.0-PN	●		1	16.5	55	10.2	110	12	4	A
EPSM4120-60-R0.3-PN	●	12	0.3	18	60	11	110	12	4	B
EPSM4120-60-R0.5-PN	●		0.5	18	60	11	110	12	4	B
EPSM4120-60-R1.0-PN	●		1	18	60	11	110	12	4	B
EPSM4120-60-R1.5-PN	●		1.5	18	60	11	110	12	4	B
EPSM4120-60-R2.0-PN	●		2	18	60	11	110	12	4	B
EPSM4120-60-R2.5-PN	●		2.5	18	60	11	110	12	4	B
EPSM4120-60-R3.0-PN	●		3	18	60	11	110	12	4	B

● : Stocked items. □ : Stocked by specified distributor. Contact with our sales department.

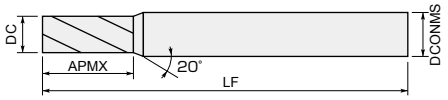
EPSM4□□□-□□□-R□.□-PN Under neck 5DC Radius type φ1～φ20

Item code	Stock	Size (mm)							No. of flutes	Shape
		Tool dia.	Coner radius	Flute length	Under neck length	Neck dia.	Overall length	Shank dia.		
		DC	RE	APMX	LU	DN	LF	DCONMS		
EPSM4130-65-R0.5-PN	□	13	0.5	19.5	65	11.7	125	16	4	A
EPSM4130-65-R1.0-PN	□		1	19.5	65	11.7	125	16	4	A
EPSM4130-65-R1.5-PN	□		1.5	19.5	65	11.7	125	16	4	A
EPSM4130-65-R2.0-PN	□		2	19.5	65	11.7	125	16	4	A
EPSM4130-65-R3.0-PN	□		3	19.5	65	11.7	125	16	4	A
EPSM4140-70-R0.5-PN	□	14	0.5	21	70	12.7	125	16	4	A
EPSM4140-70-R1.0-PN	□		1	21	70	12.7	125	16	4	A
EPSM4140-70-R1.5-PN	□		1.5	21	70	12.7	125	16	4	A
EPSM4140-70-R2.0-PN	□		2	21	70	12.7	125	16	4	A
EPSM4140-70-R3.0-PN	□		3	21	70	12.7	125	16	4	A
EPSM4150-75-R0.5-PN	□	15	0.5	22.5	75	13.6	135	16	4	A
EPSM4150-75-R1.0-PN	□		1	22.5	75	13.6	135	16	4	A
EPSM4150-75-R1.5-PN	□		1.5	22.5	75	13.6	135	16	4	A
EPSM4150-75-R2.0-PN	□		2	22.5	75	13.6	135	16	4	A
EPSM4150-75-R3.0-PN	□		3	22.5	75	13.6	135	16	4	A
EPSM4160-80-R0.5-PN	●	16	0.5	24	80	14.5	135	16	4	B
EPSM4160-80-R1.0-PN	●		1	24	80	14.5	135	16	4	B
EPSM4160-80-R1.5-PN	●		1.5	24	80	14.5	135	16	4	B
EPSM4160-80-R2.0-PN	●		2	24	80	14.5	135	16	4	B
EPSM4160-80-R3.0-PN	●		3	24	80	14.5	135	16	4	B
EPSM4170-85-R0.5-PN	□	17	0.5	25.5	85	15.4	145	20	4	A
EPSM4170-85-R1.0-PN	□		1	25.5	85	15.4	145	20	4	A
EPSM4170-85-R1.5-PN	□		1.5	25.5	85	15.4	145	20	4	A
EPSM4170-85-R2.0-PN	□		2	25.5	85	15.4	145	20	4	A
EPSM4170-85-R3.0-PN	□		3	25.5	85	15.4	145	20	4	A
EPSM4180-90-R0.5-PN	□	18	0.5	27	90	16.3	145	20	4	A
EPSM4180-90-R1.0-PN	□		1	27	90	16.3	145	20	4	A
EPSM4180-90-R1.5-PN	□		1.5	27	90	16.3	145	20	4	A
EPSM4180-90-R2.0-PN	□		2	27	90	16.3	145	20	4	A
EPSM4180-90-R3.0-PN	□		3	27	90	16.3	145	20	4	A
EPSM4190-95-R0.5-PN	□	19	0.5	28.5	95	17.3	155	20	4	A
EPSM4190-95-R1.0-PN	□		1	28.5	95	17.3	155	20	4	A
EPSM4190-95-R1.5-PN	□		1.5	28.5	95	17.3	155	20	4	A
EPSM4190-95-R2.0-PN	□		2	28.5	95	17.3	155	20	4	A
EPSM4190-95-R3.0-PN	□		3	28.5	95	17.3	155	20	4	A
EPSM4200-100-R0.5-PN	●	20	0.5	30	100	18.2	155	20	4	B
EPSM4200-100-R1.0-PN	●		1	30	100	18.2	155	20	4	B
EPSM4200-100-R1.5-PN	●		1.5	30	100	18.2	155	20	4	B
EPSM4200-100-R2.0-PN	●		2	30	100	18.2	155	20	4	B
EPSM4200-100-R3.0-PN	●		3	30	100	18.2	155	20	4	B
EPSM4200-100-R5.0-PN	●		5	30	100	18.2	155	20	4	B

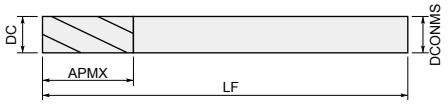
Epoch SUS Wave EPSW

General Side milling conditions ····· P.23
General Slotting conditions ····· P.25

A type



B type



EPSW□□□□-PN Regular Roughing type φ4~φ20

Carbide | PN | Helix angle 30° | 0 −0.05 | h5 φ6~φ12 | h6 φ16,φ20 | Unequal Pitch

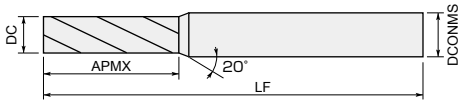
Item code	Stock	Size (mm)					No. of flutes	Shape
		Tool dia.	Flute length	Overall length	Shank dia.	Corner chamfering width		
		DC	APMX	LF	DCONMS			
EPSW3040-PN	●	**4**	**10**	56	6	0.3	3	A
EPSW3045-PN	□	**4.5**	**11.3**	56	6	0.3	3	A
EPSW3050-PN	●	**5**	**12.5**	56	6	0.3	3	A
EPSW3055-PN	□	**5.5**	**13.8**	56	6	0.3	3	A
EPSW4060-PN	●	**6**	**15**	56	6	0.4	4	B
EPSW4065-PN	□	**6.5**	**16.3**	63	8	0.4	4	A
EPSW4070-PN	●	**7**	**17.5**	63	8	0.4	4	A
EPSW4075-PN	□	**7.5**	**18.8**	63	8	0.4	4	A
EPSW4080-PN	●	**8**	**20**	63	8	0.5	4	B
EPSW4085-PN	□	**8.5**	**21.3**	74	10	0.5	4	A
EPSW4090-PN	●	**9**	**22.5**	74	10	0.5	4	A
EPSW4095-PN	□	**9.5**	**23.8**	74	10	0.5	4	A
EPSW4100-PN	●	**10**	**25**	74	10	0.5	4	B
EPSW4105-PN	□	**10.5**	**26.3**	86	12	0.5	4	A
EPSW4110-PN	●	**11**	**27.5**	86	12	0.5	4	A
EPSW4115-PN	□	**11.5**	**28.8**	86	12	0.5	4	A
EPSW4120-PN	●	**12**	**30**	86	12	0.5	4	B
EPSW4130-PN	□	**13**	**32.5**	105	16	0.7	4	A
EPSW4140-PN	□	**14**	**35**	105	16	0.7	4	A
EPSW4150-PN	□	**15**	**37.5**	110	16	0.7	4	A
EPSW4160-PN	●	**16**	**40**	110	16	0.7	4	B
EPSW4170-PN	□	**17**	**42.5**	120	20	0.7	4	A
EPSW4180-PN	□	**18**	**45**	120	20	0.7	4	A
EPSW4190-PN	□	**19**	**47.5**	125	20	0.7	4	A
EPSW4200-PN	●	**20**	**50**	125	20	0.7	4	B

● : Stocked items. □ : Stocked by specified distributor. Contact with our sales department.

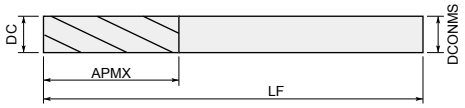
Epoch SUS Wave EPSWL

General Side milling conditions ····· P.28

A type



B type



EPSWL○○○○-PN Long Roughing type ϕ6~ϕ20

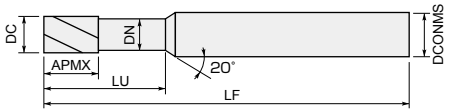
Carbide | PN | Helix angle 30° | 0 −0.05 | h5 ϕ6~ϕ12 | h6 ϕ16,ϕ20 | Unequal Pitch

Item code	Stock	Size (mm)					No. of flutes	Shape
		Tool dia.	Flute length	Overall length	Shank dia.	Corner chamfering width		
		DC	APMX	LF	DCONMS			
EPSWL4060-PN	●	6	30	70	6	0.4	4	B
EPSWL4070-PN	□	7	35	80	8	0.4	4	A
EPSWL4080-PN	●	8	40	80	8	0.5	4	B
EPSWL4090-PN	□	9	45	100	10	0.5	4	A
EPSWL4100-PN	●	10	50	100	10	0.5	4	B
EPSWL4110-PN	□	11	55	120	12	0.5	4	A
EPSWL4120-PN	●	12	60	120	12	0.5	4	B
EPSWL4130-PN	□	13	65	130	16	0.7	4	A
EPSWL4140-PN	□	14	70	130	16	0.7	4	A
EPSWL4150-PN	□	15	75	130	16	0.7	4	A
EPSWL4160-PN	●	16	80	135	16	0.7	4	B
EPSWL4170-PN	□	17	85	135	20	0.7	4	A
EPSWL4180-PN	□	18	90	145	20	0.7	4	A
EPSWL4190-PN	□	19	95	145	20	0.7	4	A
EPSWL4200-PN	●	20	100	155	20	0.7	4	B

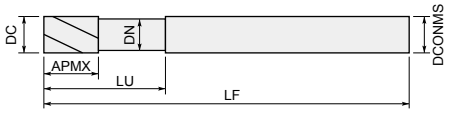
Epoch SUS Wave EPSW

General Side milling conditions ····· P.23
General Slotting conditions ····· P.25

A type



B type



EPSW○○○○-○○-PN Under neck 3DC Roughing type ϕ4~ϕ20

Carbide | PN | Helix angle 30° | 0 −0.05 | h5 ϕ6~ϕ12 | h6 ϕ16,ϕ20 | Unequal Pitch

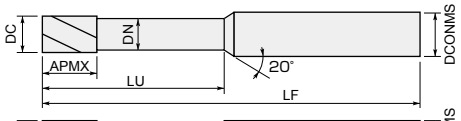
Item code	Stock	Size (mm)							No. of flutes	Shape
		Tool dia.	Flute length	Under neck length	Neck dia.	Overall length	Shank dia.	Corner chamfering width		
		DC	APMX	LU	DN	LF	DCONMS			
EPSW3040-12-PN	●	4	6	12	3.7	56	6	0.3	3	A
EPSW3050-15-PN	●	5	7.5	15	4.6	56	6	0.3	3	A
EPSW4060-18-PN	●	6	9	18	5.5	56	6	0.4	4	B
EPSW4070-21-PN	●	7	10.5	21	6.4	63	8	0.4	4	A
EPSW4080-24-PN	●	8	12	24	7.3	63	8	0.5	4	B
EPSW4090-27-PN	●	9	13.5	27	8.3	74	10	0.5	4	A
EPSW4100-30-PN	●	10	15	30	9.1	74	10	0.5	4	B
EPSW4110-33-PN	●	11	16.5	33	10.2	86	12	0.5	4	A
EPSW4120-36-PN	●	12	18	36	11	86	12	0.5	4	B
EPSW4160-48-PN	●	16	24	48	14.5	110	16	0.7	4	B
EPSW4200-60-PN	●	20	30	60	18.2	125	20	0.7	4	B

Features
Dimensions, SUS Finish
Dimensions, SUS Multi
Dimensions, SUS Wave
Re-grinding
Cutting condition
Technical Data

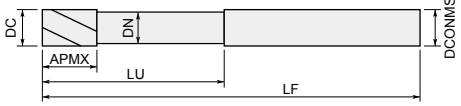
Epoch SUS Wave EPSW

General Side milling conditions ····· P.26
General Slotting conditions ····· P.27

A type



B type



EPSW□□□□-□□□-PN Under neck 5DC Roughing type ϕ4~ϕ20

Carbide | PN | Helix angle 30° | 0 −0.05 | h5 ϕ6~ϕ12 | h6 ϕ16,ϕ20 | Unequal Pitch

Item code	Stock	Size (mm)							No. of flutes	Shape
		Tool dia.	Flute length	Under neck length	Neck dia.	Overall length	Shank dia.	Corner chamfering width		
		DC	APMX	LU	DN	LF	DCONMS			
EPSW3040-20-PN	●	4	6	20	3.7	68	6	0.3	3	A
EPSW3050-25-PN	●	5	7.5	25	4.6	68	6	0.3	3	A
EPSW4060-30-PN	●	6	9	30	5.5	68	6	0.4	4	B
EPSW4070-35-PN	●	7	10.5	35	6.4	80	8	0.4	4	A
EPSW4080-40-PN	●	8	12	40	7.3	80	8	0.5	4	B
EPSW4090-45-PN	●	9	13.5	45	8.3	94	10	0.5	4	A
EPSW4100-50-PN	●	10	15	50	9.1	94	10	0.5	4	B
EPSW4110-55-PN	●	11	16.5	55	10.2	110	12	0.5	4	A
EPSW4120-60-PN	●	12	18	60	11	110	12	0.5	4	B
EPSW4160-80-PN	●	16	24	80	14.5	135	16	0.7	4	B
EPSW4200-100-PN	●	20	30	100	18.2	155	20	0.7	4	B

Re-grinding compatibility range table

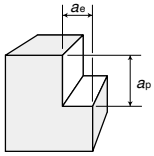
Item code	Product name	Line up tool dia. (mm)	Shape	Re-grinding compatibility range (mm)	
				Outer dia.	End
EPSF-PN	Epoch SUS Finish -Regular	3 ~12		6~12	4~12
EPSFM-PN	Epoch SUS Finish -Medium	3 ~12		6~12	4~12
EPSFL-PN	Epoch SUS Finish -Long	3 ~12		6~12	4~12
EPSMS-PN	Epoch SUS Multi -Short	1 ~20		6~20	4~20
EPSM-PN	Epoch SUS Multi -Regular	1 ~20		6~20	4~20
EPSMM-PN	Epoch SUS Multi -Medium	3 ~20		6~20	4~20
EPSML-PN	Epoch SUS Multi -Long	6 ~20		6~20	6~20
EPSMLS-PN	Epoch SUS Multi -Long shank	3 ~17		6~17	4~17
EPSM-3DC-PN	Epoch SUS Multi -Under neck 3DC	1 ~20		6~20	4~20
EPSM-5DC-PN	Epoch SUS Multi -Under neck 5DC	1 ~20		6~20	4~20
EPSW-PN	Epoch SUS Wave -Regular	4 ~20		6~20	4~20
EPSWL-PN	Epoch SUS Wave -Long	6 ~20		6~20	6~20
EPSW-3DC-PN	Epoch SUS Wave -Under neck 3DC	4 ~20		6~20	4~20
EPSW-5DC-PN	Epoch SUS Wave -Under neck 5DC	4 ~20		6~20	4~20
EPSM-CR-PN	Epoch SUS Multi -Regular, Corner Radius	1 ~20		6~20	4~20
EPSML-CR-PN	Epoch SUS Multi -Long, Corner Radius	6 ~20		6~20	6~20
EPSM-5DC-CR-PN	Epoch SUS Multi -Under neck 5DC, Corner Radius	1 ~20		6~20	4~20

●:Stocked items.

Recommended Cutting Conditions

General Side milling conditions

EPSMS※2	EPSM	EPSM-CR	EPSM-3DC	EPSW	EPSW-3DC
Short	Regular	Regular, Corner radius	Under neck 3DC	Regular, Roughing	Under neck 3DC, Roughing



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	ap=1DC, ae=0.5DC		ap=1DC, ae=0.5DC		ap=1DC, ae=0.5DC		ap=1DC, ae=0.1DC		ap=1DC, ae=0.05DC	
	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min
1	31,800	760	22,300	360	19,100	310	12,700	150	9,500	76
1.5	21,200	780	14,900	370	12,700	310	8,500	160	6,400	79
2	15,900	810	11,100	380	9,500	320	6,400	160	4,800	82
2.5	12,700	830	8,900	390	7,600	330	5,100	170	3,800	83
3	10,600	860	7,400	400	6,400	350	4,200	170	3,200	86
3.5	9,100	880	6,400	410	5,500	350	3,600	170	2,700	87
4	8,000	910※	5,600	430※	4,800	360※	3,200	180※	2,400	91※
4.5	7,100	930※	5,000	440※	4,200	370※	2,800	180※	2,100	92※
5	6,400	960※	4,500	450※	3,800	380※	2,500	190※	1,900	95※
5.5	5,800	960※	4,100	450※	3,500	380※	2,300	190※	1,700	93※
6	5,300	950	3,700	440	3,200	380	2,100	190	1,600	96
6.5	4,900	960	3,400	440	2,900	380	2,000	200	1,500	97
7	4,500	940	3,200	450	2,700	380	1,800	190	1,400	98
7.5	4,200	940	3,000	450	2,500	370	1,700	190	1,300	97
8	4,000	960	2,800	450	2,400	380	1,600	190	1,200	96
8.5	3,700	940	2,600	440	2,200	370	1,500	190	1,100	93
9	3,500	940	2,500	450	2,100	380	1,400	190	1,100	99
9.5	3,400	970	2,300	440	2,000	380	1,300	190	1,000	95
10	3,200	960	2,200	440	1,900	380	1,300	200	1,000	100
10.5	3,000	920	2,100	430	1,800	370	1,200	180	900	92
11	2,900	910	2,000	420	1,700	360	1,200	190	900	94
11.5	2,800	890	1,900	400	1,700	360	1,100	170	800	85
12	2,700	870	1,900	410	1,600	350	1,100	180	800	86
13	2,400	820	1,700	390	1,500	340	1,000	170	700	80
14	2,300	840	1,600	390	1,400	340	900	160	700	85
15	2,100	810	1,500	390	1,300	340	800	150	600	77
16	2,000	820	1,400	380	1,200	330	800	160	600	82
17	1,900	800	1,300	370	1,100	310	700	150	600	85
18	1,800	800	1,200	350	1,100	320	700	150	500	74
19	1,700	780	1,200	370	1,000	310	700	160	500	77
20	1,600	770	1,100	350	1,000	320	600	140	500	80

※ Please reduce feed rate to 75% because EPSW with dia. 4, 4,5, 5 and 5.5 are 3 flutes type.
※2 The table above indicates cutting parameter for regular type and 3DC type, please reduce both rotation and feed rate to 1.1 times when using short type.

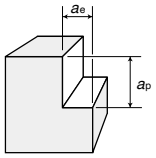
【Note】

PN Coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
Use the appropriate coolant for the work material and machining shape.
Use the high-rigidity and high accuracy machine as possible.
These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
Please adjust it if chatter or abnormal vibration occurs.

Recommended Cutting Conditions

High speed Side milling conditions

EPSMS※2 Short | **EPSM** Regular | **EPSM-CR** Regular, Corner radius | **EPSM-3DC** Under neck 3DC



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	ap=1DC, ae=0.5DC		ap=1DC, ae=0.5DC		ap=1DC, ae=0.5DC		ap=1DC, ae=0.1DC		ap=1DC, ae=0.05DC	
	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min
1	41,400	990	31,800	510	28,600	460	19,100	230	15,900	127
1.5	27,600	1,020	21,200	520	19,100	470	12,700	230	10,600	130
2	20,700	1,060	15,900	540	14,300	490	9,500	240	8,000	136
2.5	16,600	1,080	12,700	550	11,500	500	7,600	250	6,400	139
3	13,800	1,120	10,600	570	9,500	510	6,400	260	5,300	143
3.5	11,800	1,140	9,100	590	8,200	530	5,500	270	4,500	145
4	10,300	1,170	8,000	610	7,200	550	4,800	270	4,000	152
4.5	9,200	1,200	7,100	620	6,400	560	4,200	270	3,500	153
5	8,300	1,250	6,400	640	5,700	570	3,800	280	3,200	160
5.5	7,500	1,240	5,800	640	5,200	570	3,500	290	2,900	160
6	6,900	1,240	5,300	640	4,800	580	3,200	290	2,700	162
6.5	6,400	1,250	4,900	640	4,400	570	2,900	280	2,400	156
7	5,900	1,240	4,500	630	4,100	570	2,700	280	2,300	161
7.5	5,500	1,240	4,200	630	3,800	570	2,500	280	2,100	158
8	5,200	1,250	4,000	640	3,600	580	2,400	290	2,000	160
8.5	4,900	1,250	3,700	630	3,400	580	2,200	280	1,900	162
9	4,600	1,240	3,500	630	3,200	580	2,100	280	1,800	162
9.5	4,400	1,250	3,400	650	3,000	570	2,000	280	1,700	162
10	4,100	1,230	3,200	640	2,900	580	1,900	290	1,600	160
10.5	3,900	1,190	3,000	610	2,700	550	1,800	270	1,500	153
11	3,800	1,190	2,900	610	2,600	540	1,700	270	1,400	146
11.5	3,600	1,140	2,800	590	2,500	530	1,700	270	1,400	148
12	3,400	1,100	2,700	580	2,400	520	1,600	260	1,300	140
13	3,200	1,100	2,400	550	2,200	500	1,500	260	1,200	137
14	3,000	1,100	2,300	560	2,000	490	1,400	260	1,100	134
15	2,800	1,080	2,100	540	1,900	490	1,300	250	1,100	142
16	2,600	1,060	2,000	540	1,800	490	1,200	240	1,000	136
17	2,400	1,020	1,900	540	1,700	480	1,100	230	900	127
18	2,300	1,020	1,800	530	1,600	470	1,100	240	900	133
19	2,200	1,020	1,700	520	1,500	460	1,000	230	800	123
20	2,100	1,010	1,600	510	1,400	450	1,000	240	800	128

※2 The table above indicates cutting parameter for regular type and 3DC type, please reduce both rotation and feed rate to 1.1 times when using short type

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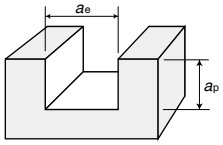
Please adjust it if chatter or abnormal vibration occurs.

General Slotting conditions

EPSMS※2 Short | **EPSM** Regular | **EPSM-CR** Regular, Corner radius | **EPSM-3DC** Under neck 3DC | **EPSW** Regular, Roughing | **EPSW-3DC** Under neck 3DC, Roughing



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	a_p=1DC		a_p=1DC		a_p=1DC		a_p=0.5DC		a_p=0.5DC	
	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min
1	28,600	360	19,100	190	17,500	130	11,100	60	6,400	19
1.5	19,100	390	12,700	210	11,700	140	7,400	60	4,200	21
2	14,300	430	9,500	230	8,800	160	5,600	70	3,200	23
2.5	11,500	470	7,600	250	7,000	170	4,500	70	2,500	24
3	9,500	500	6,400	270	5,800	180	3,700	80	2,100	26
3.5	8,200	540	5,500	290	5,000	200	3,200	80	1,800	28
4	7,200	580※	4,800	310※	4,400	210※	2,800	90※	1,600	31※
4.5	6,400	610※	4,200	320※	3,900	220※	2,500	100※	1,400	32※
5	5,700	640※	3,800	340※	3,500	240※	2,200	100※	1,300	35※
5.5	5,200	680※	3,500	370※	3,200	250※	2,000	100※	1,200	38※
6	4,800	720	3,200	380	2,900	260	1,900	110	1,100	40
6.5	4,400	710	2,900	380	2,700	260	1,700	110	1,000	39
7	4,100	720	2,700	380	2,500	260	1,600	110	900	38
7.5	3,800	710	2,500	370	2,300	260	1,500	110	800	36
8	3,600	720	2,400	380	2,200	260	1,400	110	800	38
8.5	3,400	720	2,200	370	2,100	270	1,300	110	700	36
9	3,200	720	2,100	380	1,900	260	1,200	110	700	38
9.5	3,000	710	2,000	380	1,800	260	1,200	110	700	40
10	2,900	730	1,900	380	1,800	270	1,100	110	600	36
10.5	2,700	690	1,800	370	1,700	260	1,100	110	600	37
11	2,600	680	1,700	360	1,600	250	1,000	100	600	38
11.5	2,500	660	1,700	360	1,500	240	1,000	110	600	38
12	2,400	650	1,600	350	1,500	240	900	100	500	32
13	2,200	630	1,500	340	1,300	220	900	100	500	34
14	2,000	610	1,400	340	1,300	240	800	100	500	37
15	1,900	610	1,300	340	1,200	230	700	90	400	31
16	1,800	610	1,200	330	1,100	220	700	100	400	33
17	1,700	600	1,100	310	1,000	210	700	100	400	34
18	1,600	590	1,100	320	1,000	220	600	90	400	35
19	1,500	580	1,000	310	900	210	600	90	300	28
20	1,400	560	1,000	320	900	220	600	100	300	29

※ Please reduce feed rate to 75% because EPSW with dia. 4, 4,5, 5 and 5.5 are 3 flutes type.
※2 The table above indicates cutting parameter for regular type and 3DC type, please reduce both rotation and feed rate to 1.1 times when using short type.

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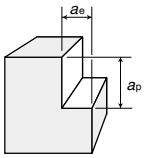
Please adjust it if chatter or abnormal vibration occurs.
Please setup feed 1/5 that of slotting parameter and step 0.01DC for drilling application.
Please setup feed 70% of slotting parameter and ramping angle 3° for ramping application.

Recommended Cutting Conditions

General Side milling conditions

EPSMLS※4 Long shank | **EPSM-5DC** Under neck 5DC | **EPSM-5DC-CR** Under neck 5DC, Corner radius | **EPSW-5DC** Under neck 5DC, Roughing



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC) ap=0.5DC, ae=0.25DC		Tool steels, Pre-hardened steels (30～40HRC) ap=0.5DC, ae=0.25DC		Stainless steels ap=0.5DC, ae=0.25DC		Titanium alloys ap=0.5DC, ae=0.1DC		Super heat-resistant alloys ap=0.5DC, ae=0.05DC	
	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min
1	28,600	690	19,100	310	15,900	250	12,700	150	9,500	76
1.5	19,100	710	12,700	320	10,600	260	8,500	160	6,400	80
2	14,300	730	9,500	320	8,000	270	6,400	160	4,800	82
2.5	11,500	760	7,600	330	6,400	280	5,100	170	3,800	84
3	9,500	770	6,400	350	5,300	290	4,200	170	3,200	86
3.5	8,200	800	5,500	360	4,500	290	3,600	180	2,700	88
4	7,200	820※	4,800	360※	4,000	300※	3,200	180※	2,400	91※
4.5	6,400	850	4,200	370	3,500	310	2,800	190	2,100	93
5	5,700	860※	3,800	380※	3,200	320※	2,500	190※	1,900	95※
5.5	5,200	860	3,500	390	2,900	320	2,300	190	1,700	94
6	4,800	860	3,200	380	2,700	320	2,100	190	1,600	96
6.5	4,400	860	2,900	380	2,400	310	2,000	200	1,500	98
7	4,100	860	2,700	380	2,300	320	1,800	190	1,400	98
7.5	3,800	860	2,500	380	2,100	320	1,700	190	1,300	98
8	3,600	860	2,400	380	2,000	320	1,600	190	1,200	96
8.5	3,400	870	2,200	370	1,900	320	1,500	190	1,100	94
9	3,200	860	2,100	380	1,800	320	1,400	190	1,100	99
9.5	3,000	860	2,000	380	1,700	320	1,300	190	1,000	95
10	2,900	870	1,900	380	1,600	320	1,300	200	1,000	100
10.5	2,700	830	1,800	370	1,500	310	1,200	190	900	93
11	2,600	820	1,700	360	1,400	290	1,200	190	900	94
11.5	2,500	800	1,700	360	1,400	300	1,100	180	800	86
12	2,400	780	1,600	350	1,300	280	1,100	180	800	86
13	2,200	760	1,500	350	1,200	280	1,000	170	700	81
14	2,000	740	1,400	340	1,100	270	900	170	700	86
15	1,900	740	1,300	340	1,100	280	800	150	600	77
16	1,800	730	1,200	330	1,000	270	800	160	600	82
17	1,700	730	1,100	310	900	260	700	150	600	86
18	1,600	720	1,100	330	900	270	700	160	500	75
19	1,500	690	1,000	310	800	250	700	160	500	77
20	1,400	670	1,000	320	800	260	600	140	500	80

※ Please reduce feed rate to 75% because EPSW with dia. 4, and 5 are 3 flutes type.
※4 The above table shows cutting conditions for 5DC type tools with a 5DC overhang. Adjust conditions according to the tool overhang amount.

【Note】

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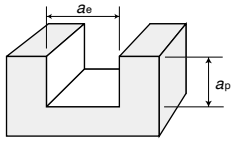
General Slotting conditions

EPSM-5DC Under neck 5DC | **EPSM-5DC-CR** Under neck 5DC, Corner radius | **EPSW-5DC** Under neck 5DC, Roughing



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	ap=0.5DC		ap=0.5DC		ap=0.5DC		ap=0.25DC		ap=0.25DC	
	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min
1	25,500	320	15,900	160	14,300	110	9,500	50	4,800	14
1.5	17,000	350	10,600	170	9,500	120	6,400	50	3,200	16
2	12,700	380	8,000	190	7,200	130	4,800	60	2,400	17
2.5	10,200	410	6,400	210	5,700	140	3,800	60	1,900	19
3	8,500	450	5,300	220	4,800	150	3,200	70	1,600	20
3.5	7,300	480	4,500	240	4,100	160	2,700	70	1,400	22
4	6,400	510※	4,000	260※	3,600	170※	2,400	80※	1,200	23※
4.5	5,700	550	3,500	270	3,200	180	2,100	80	1,100	25
5	5,100	570※	3,200	290※	2,900	200※	1,900	90※	1,000	27※
5.5	4,600	600	2,900	300	2,600	200	1,700	90	900	28
6	4,200	630	2,700	320	2,400	220	1,600	100	800	29
6.5	3,900	630	2,400	310	2,200	210	1,500	100	700	27
7	3,600	630	2,300	320	2,000	210	1,400	100	700	29
7.5	3,400	640	2,100	320	1,900	210	1,300	100	600	27
8	3,200	640	2,000	320	1,800	220	1,200	100	600	29
8.5	3,000	640	1,900	320	1,700	220	1,100	90	600	31
9	2,800	630	1,800	320	1,600	220	1,100	100	500	27
9.5	2,700	640	1,700	320	1,500	210	1,000	100	500	29
10	2,500	630	1,600	320	1,400	210	1,000	100	500	30
10.5	2,400	620	1,500	310	1,400	220	900	90	500	31
11	2,300	600	1,400	290	1,300	200	900	90	400	25
11.5	2,200	590	1,400	300	1,200	190	800	90	400	26
12	2,100	570	1,300	280	1,200	190	800	90	400	26
13	2,000	580	1,200	280	1,100	190	700	80	400	28
14	1,800	550	1,100	270	1,000	180	700	90	300	22
15	1,700	550	1,100	280	1,000	190	600	80	300	23
16	1,600	540	1,000	270	900	180	600	80	300	24
17	1,500	540	900	260	800	170	600	90	300	26
18	1,400	520	900	270	800	180	500	70	300	27
19	1,300	500	800	250	800	180	500	80	300	28
20	1,300	520	800	260	700	170	500	80	200	19

※Please reduce feed rate to 75% because EPSW with dia. 4, and 5 are 3 flutes type.

【Note】

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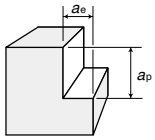
Use the high-rigidity and high accuracy machine as possible
These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
Please adjust it if chatter or abnormal vibration occurs.
Please setup feed 1/5 that of slotting parameter and step 0.01DC for drilling application.
Please setup feed 70% of slotting parameter and ramping angle 3° for ramping application.

Recommended Cutting Conditions

General Side milling conditions

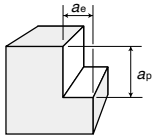
EPSMM
Medium



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	ap=2.5DC, ae=0.05DC		ap=2.5DC, ae=0.05DC		ap=2.5DC, ae=0.05DC		ap=2.5DC, ae=0.03DC		ap=2.5DC, ae=0.02DC	
	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min
3	7,400	600	5,300	290	4,500	240	3,000	120	2,100	57
4	5,600	640	4,000	300	3,400	260	2,200	120	1,600	61
5	4,500	670	3,200	320	2,700	270	1,800	130	1,300	65
6	3,700	660	2,600	310	2,300	270	1,500	130	1,100	66
7	3,200	670	2,200	310	2,000	280	1,300	130	900	63
8	2,800	670	2,000	320	1,700	270	1,100	130	800	64
9	2,500	670	1,700	310	1,500	270	1,000	130	700	63
10	2,200	660	1,600	320	1,400	280	900	130	600	60
11	2,000	630	1,400	290	1,200	250	800	120	600	63
12	1,800	580	1,300	280	1,100	240	750	120	500	54
16	1,400	570	1,000	270	850	230	550	110	400	54
20	1,100	530	800	260	650	210	450	110	300	48

General Side milling conditions

EPSML Long
EPSML-CR Long, Corner radius
EPSWL Long, Roughing



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	ap=3DC, ae=0.05DC		ap=3DC, ae=0.05DC		ap=3DC, ae=0.05DC		ap=3DC, ae=0.02DC		ap=3DC, ae=0.01DC	
	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min	Revolution n min-1	Feed rate Vf mm/min
6	2,700	490	1,900	230	1,600	190	1,100	100	800	48
8	2,000	480	1,400	220	1,200	190	800	100	600	48
10	1,600	480	1,100	220	1,000	200	600	90	500	50
12	1,300	420	900	190	800	170	500	80	400	43
16	1,000	410	700	190	600	160	400	80	300	41
20	800	380	600	190	500	160	300	70	200	32

【Note】

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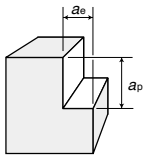
Please adjust it if chatter or abnormal vibration occurs.

General Side milling conditions

EPSF
Regular



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC) ap=1.0DC, ae=0.2DC		Tool steels, Pre-hardened steels (30～40HRC) ap=1.0DC, ae=0.1DC		Stainless steels ap=1.0DC, ae=0.1DC		Titanium alloys ap=1.0DC, ae=0.05DC		Super heat-resistant alloys ap=1.0DC, ae=0.05DC	
	Revolution n min-1	Feed rate vf mm/min	Revolution n min-1	Feed rate vf mm/min	Revolution n min-1	Feed rate vf mm/min	Revolution n min-1	Feed rate vf mm/min	Revolution n min-1	Feed rate vf mm/min
3	9,000	850	6,900	470	6,400	430	5,300	140	4,200	85
3.5	7,700	850	5,900	460	5,500	430	4,500	140	3,600	85
4	6,800	900	5,200	490	4,800	460	4,000	150	3,200	91
4.5	6,000	900	4,600	490	4,200	450	3,500	150	2,800	90
5	5,400	950	4,100	510	3,800	480	3,200	160	2,500	94
5.5	4,900	940	3,800	520	3,500	480	2,900	160	2,300	95
6	4,500	950	3,400	510	3,200	480	2,700	160	2,100	95
7	3,900	960	3,000	530	2,700	470	2,300	160	1,800	95
8	3,400	950	2,600	520	2,400	480	2,000	160	1,600	96
9	3,000	950	2,300	520	2,100	470	1,800	160	1,400	95
10	2,700	950	2,100	530	1,900	480	1,600	160	1,300	98
11	2,500	910	1,900	500	1,700	440	1,400	150	1,200	94
12	2,300	870	1,700	460	1,600	430	1,300	140	1,100	89

【Note】

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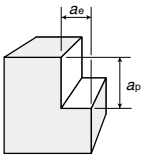
Recommended Cutting Conditions

Side finishing conditions

EPSF	EPSMS※3	EPSM	EPSM-CR	EPSM-3DC	EPSM-5DC※3	EPSM-5DC-CR※3
Regular	Short	Regular	Regular, Corner radius	Under neck 3DC	Under neck 5DC	Under neck 5DC, Corner radius



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	a_p=1DC, a_e=0.001DC～0.02DC		a_p=1DC, a_e=0.001DC～0.02DC		a_p=1DC, a_e=0.001DC～0.02DC		a_p=1DC, a_e=0.001DC～0.02DC		a_p=1DC, a_e=0.001DC～0.02DC	
	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min
1	45,500	980	35,000	500	31,500	450	21,000	230	17,500	130
1.5	30,300	1,010	23,300	520	21,000	460	14,000	230	11,700	130
2	22,800	1,050	17,500	540	15,800	480	10,500	240	8,800	130
2.5	18,200	1,070	14,000	550	12,600	490	8,400	250	7,000	140
3	15,200	1,110	11,700	570	10,500	510	7,000	260	5,800	140
3.5	13,000	1,130	10,000	580	9,000	520	6,000	260	5,000	140
4	11,400	1,170	8,800	600	7,900	540	5,300	270	4,400	150
4.5	10,100	1,190	7,800	610	7,000	550	4,700	280	3,900	150
5	9,100	1,230	7,000	630	6,300	570	4,200	280	3,500	160
5.5	8,300	1,230	6,400	630	5,700	560	3,800	280	3,200	160
6	7,600	1,230	5,800	630	5,300	570	3,500	280	2,900	160
6.5	7,000	1,230	5,400	630	4,800	560	3,200	280	2,700	160
7	6,500	1,230	5,000	630	4,500	570	3,000	280	2,500	160
7.5	6,100	1,240	4,700	630	4,200	570	2,800	280	2,300	160
8	5,700	1,230	4,400	630	3,900	560	2,600	280	2,200	160
8.5	5,400	1,240	4,100	630	3,700	570	2,500	290	2,100	160
9	5,100	1,240	3,900	630	3,500	570	2,300	280	1,900	150
9.5	4,800	1,230	3,700	630	3,300	560	2,200	280	1,800	150
10	4,600	1,240	3,500	630	3,200	580	2,100	280	1,800	160
10.5	4,300	1,180	3,300	600	3,000	550	2,000	270	1,700	160
11	4,100	1,160	3,200	600	2,900	550	1,900	270	1,600	150
11.5	4,000	1,140	3,000	570	2,700	510	1,800	260	1,500	140
12	3,800	1,110	2,900	560	2,600	510	1,800	260	1,500	150
13	3,500	1,080	2,700	560	2,400	490	1,600	250	1,300	130
14	3,300	1,090	2,500	550	2,300	500	1,500	250	1,300	140
15	3,000	1,040	2,300	530	2,100	490	1,400	240	1,200	140
16	2,800	1,030	2,200	540	2,000	490	1,300	240	1,100	130
17	2,700	1,030	2,100	530	1,900	480	1,200	230	1,000	130
18	2,500	1,000	1,900	500	1,800	480	1,200	240	1,000	130
19	2,400	1,000	1,800	500	1,700	470	1,100	230	900	120
20	2,300	990	1,800	520	1,600	460	1,100	240	900	130

※3 The table above indicates cutting parameter for regular type and 3DC type, please reduce both rotation and feed rate to 1.1 times when using short type, please reduce both rotation and feed rate to 70% when using 5DC type

【Note】

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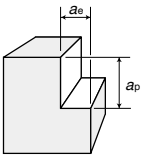
Side finishing conditions

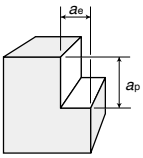
EPSFM
Medium



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	a_p=2.5DC, a_e=0.001DC～0.01DC		a_p=2.5DC, a_e=0.001DC～0.01DC		a_p=2.5DC, a_e=0.001DC～0.01DC		a_p=2.5DC, a_e=0.001DC～0.01DC		a_p=2.5DC, a_e=0.001DC～0.01DC	
	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min
3	7,070	480	4,060	250	4,830	290	4,830	180	2,940	71
4	5,320	510	3,080	260	3,640	310	3,640	190	2,240	77
5	4,200	530	2,450	280	2,870	320	2,870	190	1,750	79
6	3,500	530	2,030	270	2,380	320	2,380	190	1,470	79
7	3,010	530	1,750	280	2,100	330	2,100	200	1,260	79
8	2,660	530	1,540	280	1,820	330	1,820	200	1,120	81
9	2,380	540	1,330	270	1,610	330	1,610	200	980	79
10	2,100	530	1,260	280	1,470	330	1,470	200	910	82
11	1,890	490	1,120	260	1,330	310	1,330	190	840	79
12	1,750	470	1,050	260	1,190	290	1,190	170	770	75

Side finishing conditions

EPSFL
Long



Tool dia. DC (mm)	Carbon steels, Alloy steels Cast irons (～30HRC)		Tool steels, Pre-hardened steels (30～40HRC)		Stainless steels		Titanium alloys		Super heat-resistant alloys	
	a_p=3DC, a_e=0.001DC～0.01DC		a_p=3DC, a_e=0.001DC～0.01DC		a_p=3DC, a_e=0.001DC～0.01DC		a_p=3DC, a_e=0.001DC～0.01DC		a_p=3DC, a_e=0.001DC～0.01DC	
	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min	Revolution n min^{-1}	Feed rate v_f mm/min
3	5,050	340	2,900	180	3,450	210	3,450	130	2,100	51
4	3,800	360	2,200	190	2,600	220	2,600	130	1,600	55
5	3,000	380	1,750	200	2,050	230	2,050	140	1,250	56
6	2,500	380	1,450	200	1,700	230	1,700	140	1,050	57
7	2,150	380	1,250	200	1,500	240	1,500	140	900	57
8	1,900	380	1,100	200	1,300	230	1,300	140	800	58
9	1,700	380	950	190	1,150	230	1,150	140	700	57
10	1,500	380	900	200	1,050	240	1,050	140	650	59
11	1,350	350	800	190	950	220	950	130	600	56
12	1,250	340	750	180	850	210	850	120	550	53

【Note】

PN Coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
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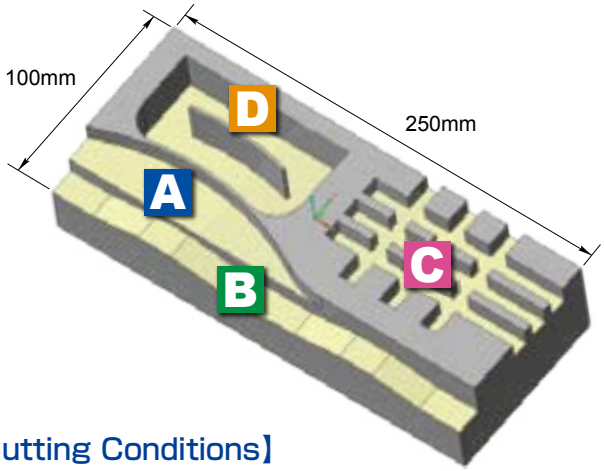
Cutting example for various cutting process. EPSM EPSW

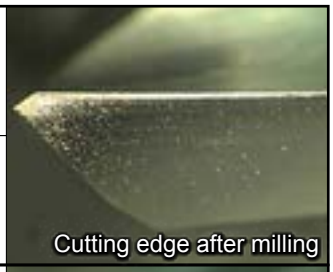
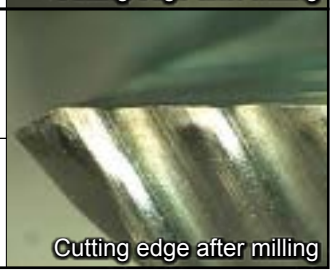
Work material:SUS304

Tool : Epoch SUS series, Coolant：wet



Work after milling

【Cutting Conditions】

A Side milling Epoch SUS Multi ϕ10×4NT **EPSM4100-30-PN**	n=2,900min^{-1} (v_c=90m/min), v_f=580mm/min (f_z=0.05mm/t), a_p×a_e=10×5mm, Cutting time=4min.	 Cutting edge after milling
B Side ramping Epoch SUS Multi ϕ10×4NT **EPSM4100-30-PN**	n=1,900min^{-1} (v_c=60m/min), v_f=300mm/min (f_z=0.04mm/t) a_p×a_e=10×3mm, Ramping angle=5°, Cutting time =4min.	
C Slotting Epoch SUS Wave ϕ10×4NT **EPSW4100-30-PN**	n=1,600min^{-1} (v_c=50m/min), v_f=230mm/min (f_z=0.036mm/t) a_p×a_e=10×10mm, Cutting time =3min.	 Cutting edge after milling
D Thin wall pocketing Epoch SUS Wave ϕ10×4NT **EPSW4100-30-PN**	n=1,900min^{-1} (v_c=60m/min), v_f=380mm/min (f_z=0.05mm/t) a_p×a_e=10×4mm, Thickness =2mm, Depth =25mm, Cutting time =20min.	

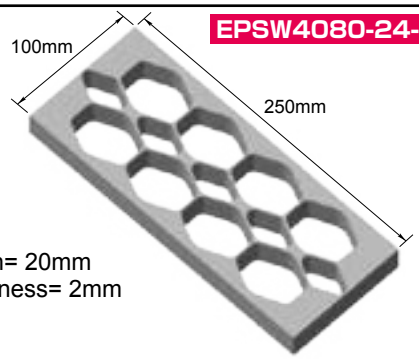
High efficiency machining for various situation

Cutting example of thin wall work geometry. EPSW

Work material:SUS304

Tool：Wave-form type ϕ8×4NT, n=2,400min^{-1} (v_c=60m/min),
v_f=380mm/min (f_z=0.04mm/t), a_p×a_e=8×4mm,
Coolant : wet Cutting time =50 min.

Stable & high efficiency, even in poor-clamping & thin-wall work geometry situations.



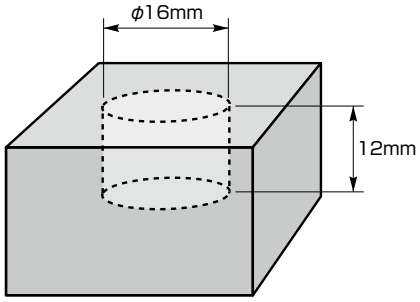
Comparison of tool life by pocketing. EPSW

Work material:SUS304

Tool : Wave-form type ϕ8×4NT, n=5,000min^{-1} (v_c=125m/min),
v_f=500mm/min (f_z=0.04mm/t), a_p×a_e=8×3mm, OH=24mm,
Ramping angle =5°, Coolant : Wet

Tool	Result
EPSW4080-24-PN	**Complete machining**
Conventional A	Broken during helical milling
Conventional B	Broken during helical milling
Conventional C	Broken during helical milling

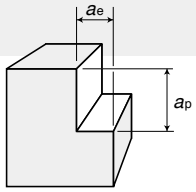
Work size

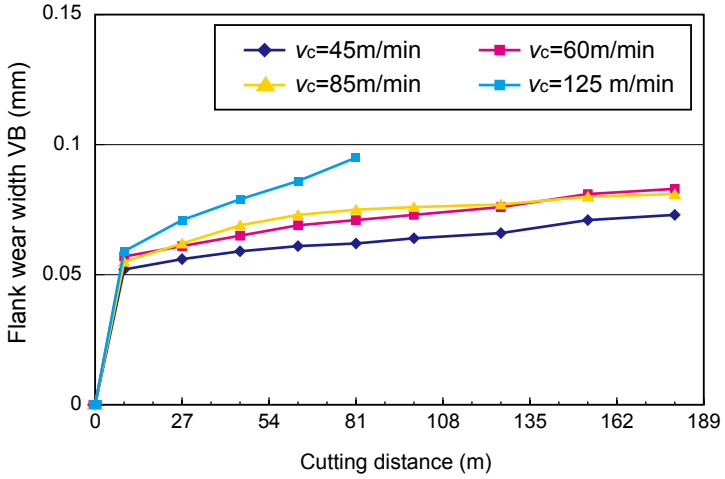


Tool life date by side milling. EPSM

Work material:SUS304

Tool : Square type ϕ8×4NT, f_z=0.04mm/t, a_p×a_e=8×3mm, OH=24mm,
Coolant：Wet



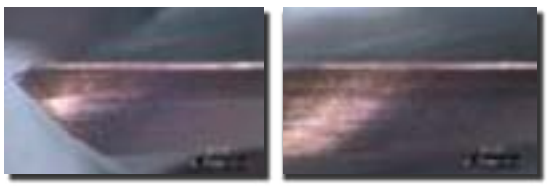


EPSM can achieve long life machining even in high speed milling.

Cutting example by side milling. EPSM

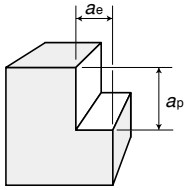
Work material:SUS304

Tool : Square type ϕ8×4NT, n=2,400min^{-1} (v_c=60m/min), v_f=380mm/min (f_z=0.04mm/t),
a_p×a_e=8×3mm, OH=24mm, Coolant : wet



EPSM4080-24-PN

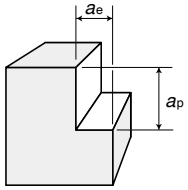
Cutting distance 405m
(About 18 hours)
Wear width Vb=0.088mm

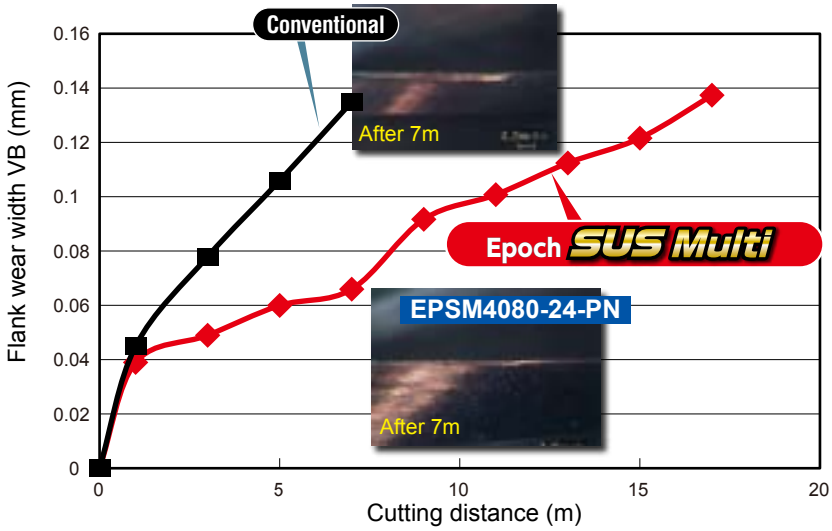


Comparison of tool life by side milling. EPSM

Work material : Inconel-718 (46HRC)

Tool : Square type ϕ8×4NT
n=1,200min^{-1} (v_c=30m/min),
v_f=140mm/min (f_z=0.03mm/t)
a_p×a_e=8×0.3mm, OH=24mm
Coolant : wet

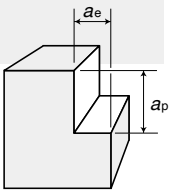


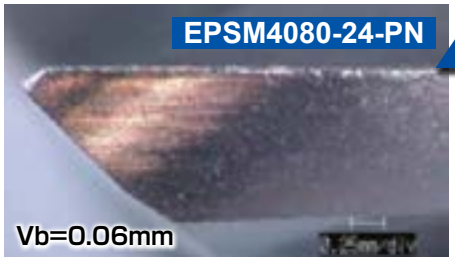


Cutting example by side milling. EPSM

Work material : 15-5PH

Tool : Square type ϕ8×4NT, n=3,200min^{-1} (v_c=80m/min), v_f=500mm/min (f_z=0.04mm/t),
a_p×a_e=3×1mm, OH=24mm, Coolant : wet



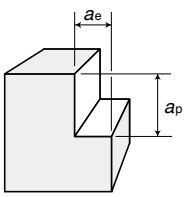


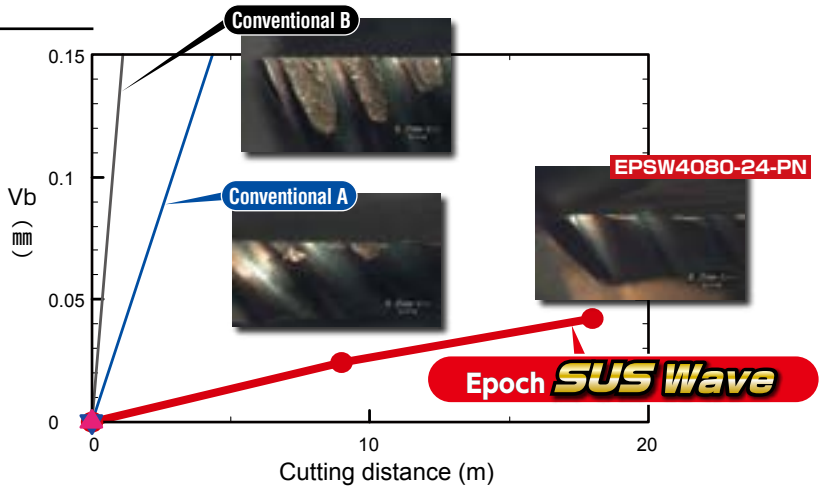
After 1.5 hours milling end mill still can be used for further application.
Even in 15-5PH cutting.

Comparison of tool life by side milling. EPSW

Work material : SUS304

Tool : Wave-form type ϕ8×4NT,
n=5000min^{-1} (v_c=125m/min),
v_f=800mm/min (f_z=0.04mm/t),
a_p×a_e=8×3mm, OH=24mm,
Coolant : Wet

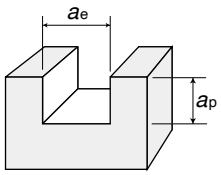


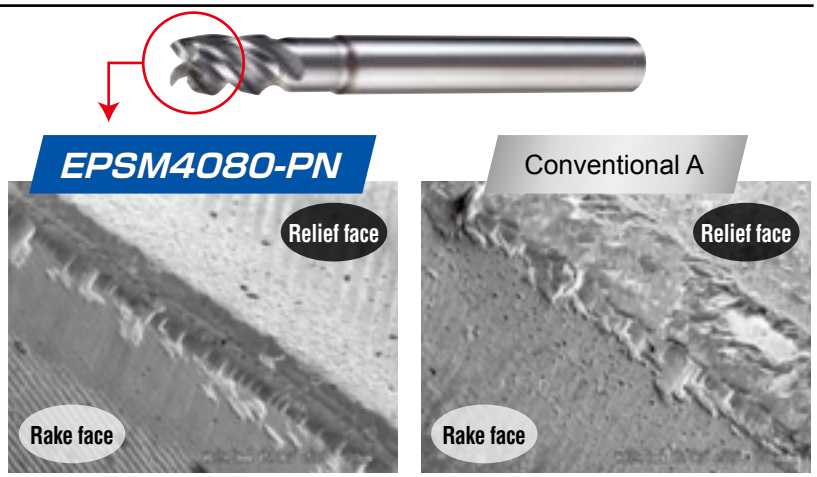


Comparison of tool wear by slotting. EPSM

Work material : SUS304

Tool：Square type ϕ8×4NT,
n=4,200min^{-1}（v_c=108m/min）,
v_f=230mm/min（f_z=0.014mm/t）,
a_p×a_e=6.4×8mm, OH=24mm,
Coolant : Wet,
Cutting distance : 4m

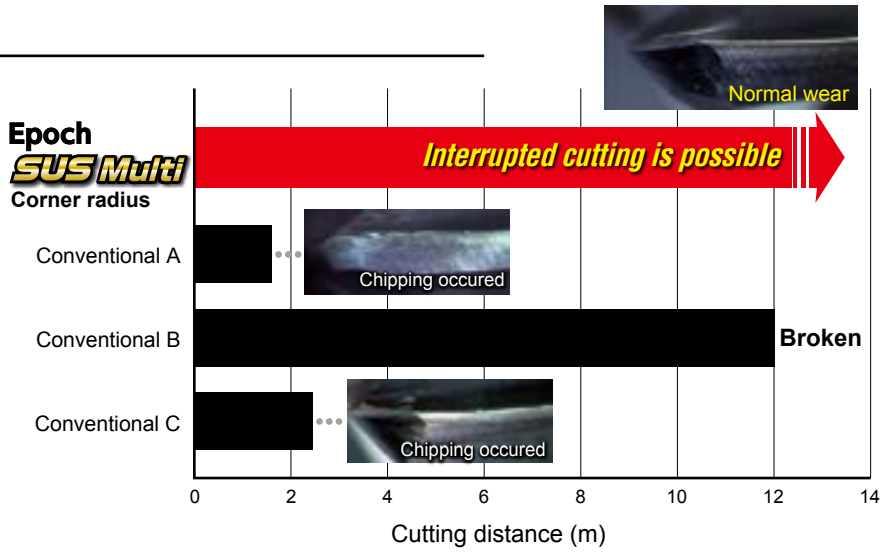




Comparison of tool life wear by slotting. EPSM-CR

Work material : SUS304

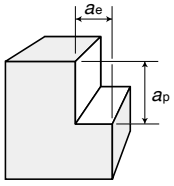
Tool：Radius type ϕ8×RE1
n=2,200min^{-1}（v_c=55m/min）,
v_f=260mm/min（f_z=0.3mm/t）,
a_p×a_e=8×8mm
Coolant : Wet



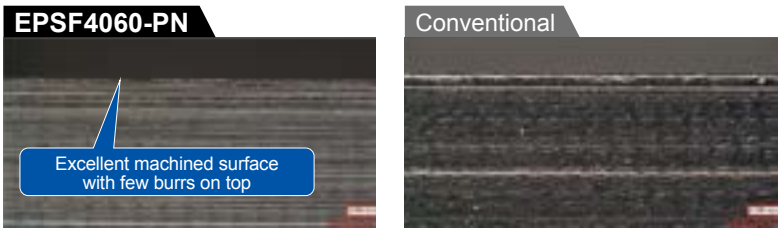
Comparison of finishing performance EPSF

Work material : SUS304

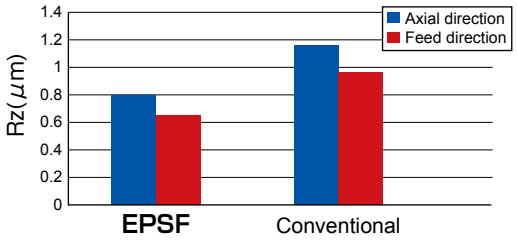
Tool : Square type(Regular) ϕ6×4NT n=3,500min^{-1}（v_c=66m/min）, v_f=480mm/min（fz=0.034mm/t）,
a_p×a_e=9×0.1mm Coolant：wet



Comparison of surface



Comparison of surface roughness



MOLDINO

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. Cautions regarding handling

(1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
(2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

(1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
(2) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions 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) Cutting tools 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 attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
(4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. **Please caution of fire while using oil base coolant, fire prevention is necessary.**
(5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

(1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
(2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
(3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with the local laws and regulations regarding prevention of hazards due to specified chemical substances.

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