

EPSM / EPSW

PN Coated End Mills for Machining of Stainless Steels



FEATURES

Innovative cutting edge design increases tool life

New PN coating exhibits excellent adhesion and wear resistance

EPSM: For both roughing and finishing applications in high-rigidity set-ups

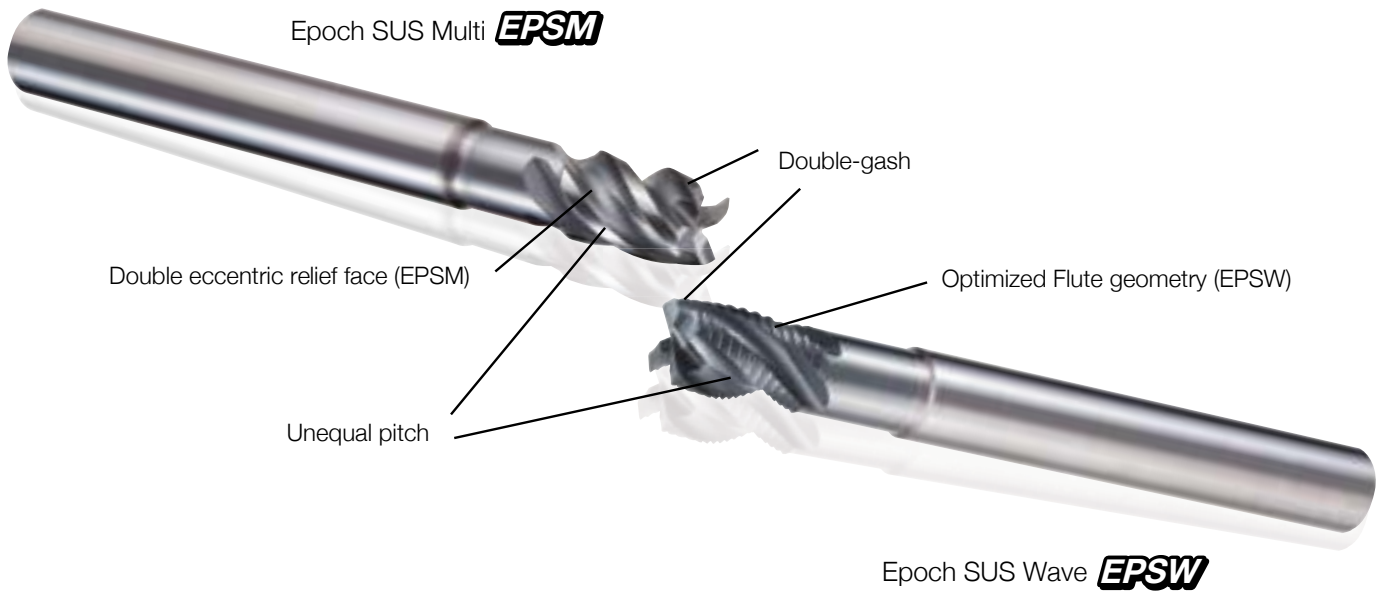
EPSW: Features wave form peripheral edges for stable machining even in low-rigidity set-ups

INTRODUCTION

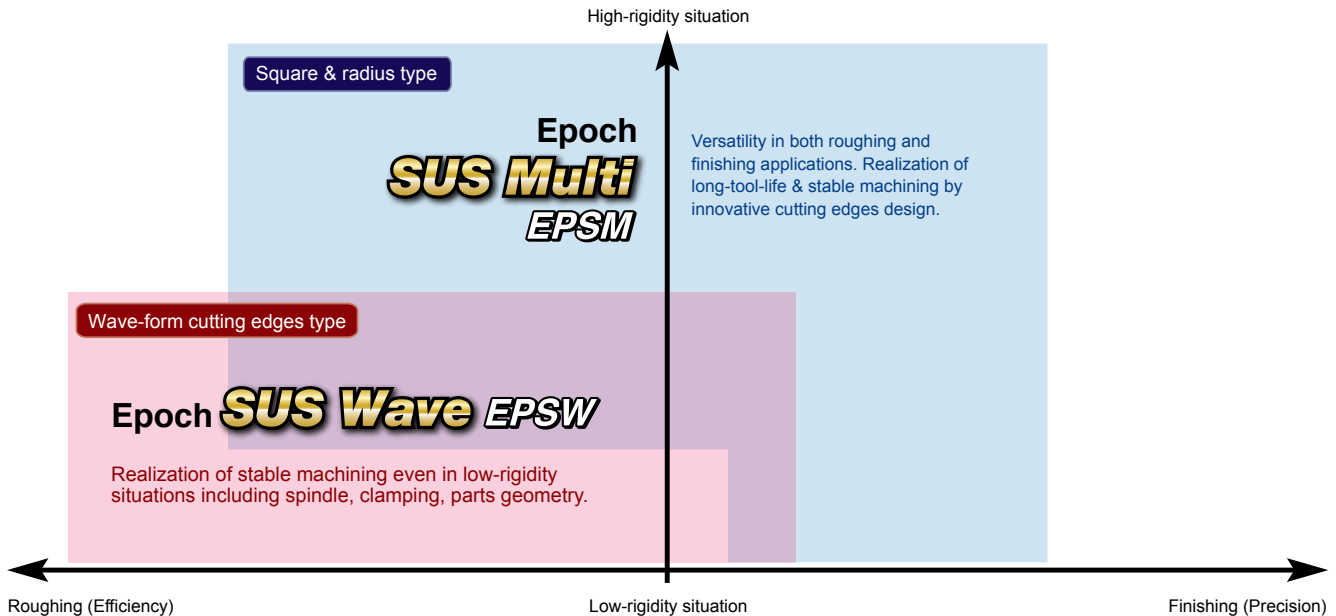
In the EPSM and EPSW End Mills, advanced cutting geometries combine with MOLDINO's superior coating technology to deliver enhanced performance in the machining of stainless steels. The unequal pitch geometry dramatically suppresses vibration, while the double gash provides smooth chip evacuation. Our new PN Coating exhibits excellent adhesion and wear resistance, delivering excellent tool life in stainless steels.

FEATURES

1. Unique Design for Maximum Performance in Stainless Steels



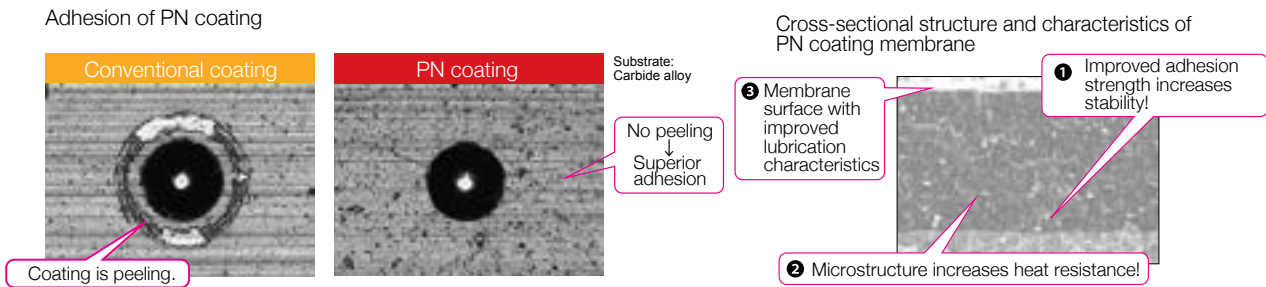
2. Overview of Epoch SUS Series



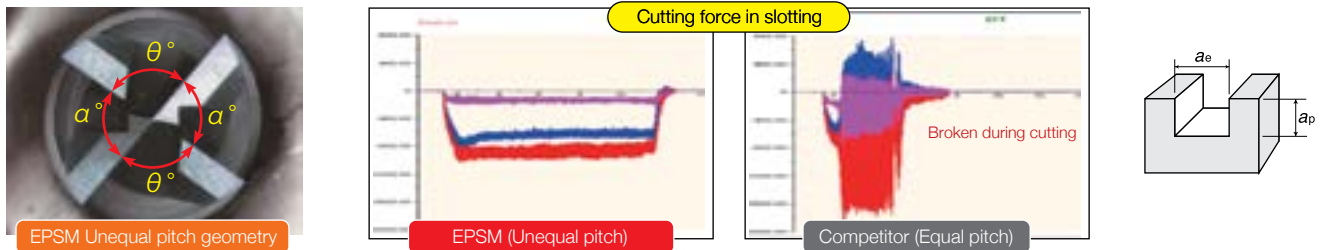
3. PN Coating Improves Wear Resistance and Tool Life in Stainless Steels

- A heat resistant coating material with excellent adhesion to the tool substrate was achieved by optimizing the Al content.
- Exhibits high hardness (3000HV) with good wear resistance due to doping of the AlCr coating layer with Si (TiAlN: 2800HV)
- Exhibits excellent cutting life for cutting materials such as plastic molds, etc. where tool seizure often occurs. (2x the cutting life compared to conventional products.) Provides the long life in cutting processing of materials starting with HPM-MAGIC and including prehardened steel, carbon steel, alloy steel, stainless steel, H13, D2 and more.

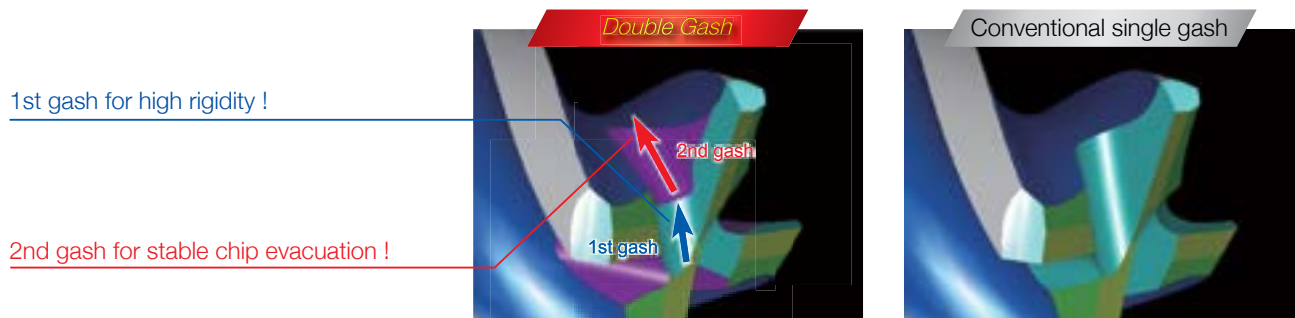
Note: This product obtains less electric conductivity. Therefore, please caution of using electric transmitted measuring systems.



4. Unequal Pitch Geometry Dramatically Suppresses Vibration

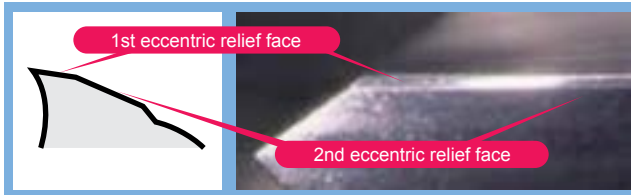


5. Double Gash Provides Smooth Chip Evacuation



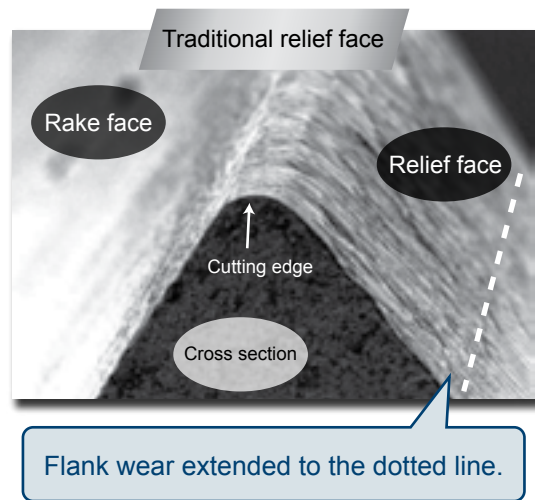
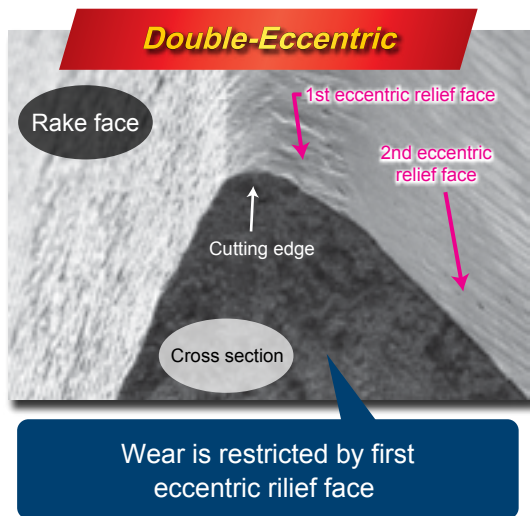
"Double Gash" achieves perfect balance with rigidity and chip evacuation! It guarantees high performance in vertical and horizontal milling!

6. Double-Eccentric Relief Face

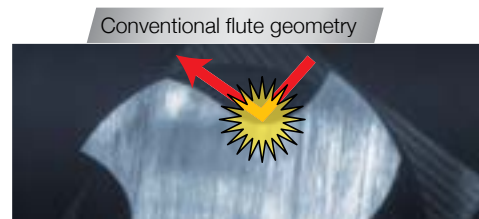
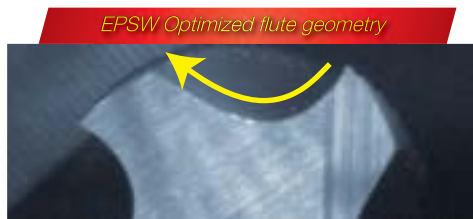


Double-eccentric relief face realize a stable and small wear when guaranteeing higher cutting edge rigidity,

Wear status after SUS side milling



7. EPSW Features Improved Wave Form Design



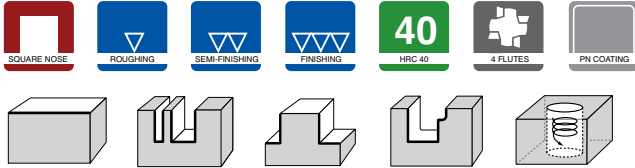
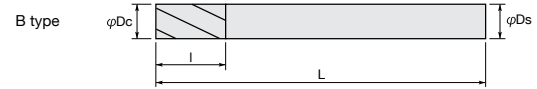
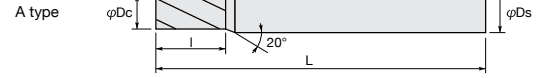
EPSW optimized flute geometry dramatically improves chip-disposal of wave-form cutter

8. Available for Versatile machining

Side Milling	Slotting	Bore-expanding	Blind Slotting (Plunging → Slotting)	Pocketting (Ramping → Side milling)	Pocketting (Plunging → Side milling)

EPSM

EPSM4-PN



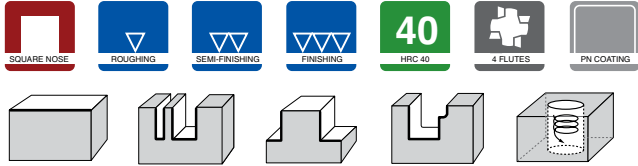
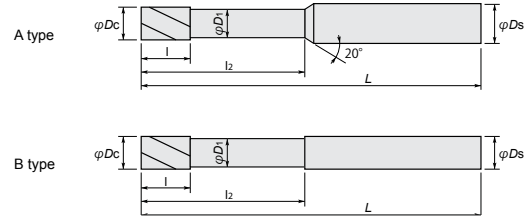
Ds (6-12)	h5	Dc (Ø1-6)	0/-0.015
Ds (16-20)	h6	Dc (Ø7-20)	0/-0.02
Helix Angle	40°		

Part No.	Stock	Size (mm)			D _s	Type
		D _c	l	L		
EPSM4010-PN	●	1.00	2.5	56	6	A
EPSM4020-PN	●	2.00	5.0	56	6	A
EPSM4030-PN	●	3.00	7.5	56	6	A
EPSM4040-PN	●	4.00	10.0	56	6	A
EPSM4050-PN	□	5.00	12.5	56	6	A
EPSM4060-PN	●	6.00	15.0	56	6	B
EPSM4070-PN	□	7.00	17.5	63	8	A
EPSM4080-PN	●	8.00	20.0	63	8	B
EPSM4090-PN	□	9.00	22.5	74	10	A
EPSM4100-PN	●	10.00	25.0	74	10	B
EPSM4110-PN	□	11.00	27.5	86	12	A
EPSM4120-PN	●	12.00	30.0	86	12	B
EPSM4160-PN	□	16.00	40.0	110	16	B
EPSM4200-PN	□	20.00	50.0	125	20	B

□ = Stocked items in Japan

EPSM

EPSM4-PN 3Dc & 5Dc Neck



3Dc Neck

Part No.	Stock	Size (mm)						Type
		D _c	l	l ₂	D ₁	L	D _s	
EPSM4010-3-PN	<input type="checkbox"/>	1.0	1.5	3.0	0.96	56	6	A
EPSM4020-6-PN	<input type="checkbox"/>	2.0	3.0	6.0	1.92	56	6	A
EPSM4030-9-PN	<input type="checkbox"/>	3.0	4.5	9.0	2.88	56	6	A
EPSM4040-12-PN	<input type="checkbox"/>	4.0	6.0	12.0	3.70	56	6	A
EPSM4050-15-PN	<input type="checkbox"/>	5.0	7.5	15.0	4.60	56	6	A
EPSM4060-18-PN	<input type="checkbox"/>	6.0	9.0	18.0	5.50	56	6	B
EPSM4070-21-PN	<input type="checkbox"/>	7.0	10.5	21.0	6.40	63	8	A
EPSM4080-24-PN	<input type="checkbox"/>	8.0	12.0	24.0	7.30	63	8	B
EPSM4090-27-PN	<input type="checkbox"/>	9.0	13.5	27.0	8.30	74	10	A
EPSM4100-30-PN	<input type="checkbox"/>	10.0	15.0	30.0	9.10	74	10	B
EPSM4110-33-PN	<input type="checkbox"/>	11.0	16.5	33.0	10.20	86	12	A
EPSM4120-36-PN	<input type="checkbox"/>	12.0	18.0	36.0	11.00	86	12	B
EPSM4160-48-PN	<input type="checkbox"/>	16.0	24.0	48.0	14.50	110	16	B
EPSM4200-60-PN	<input type="checkbox"/>	20.0	30.0	60.0	18.20	125	20	B

Ds (6-12)	h5	Dc (Ø1-6)	0/-0.015
Ds (16-20)	h6	Dc (Ø7-20)	0/-0.02
Helix Angle	40°		

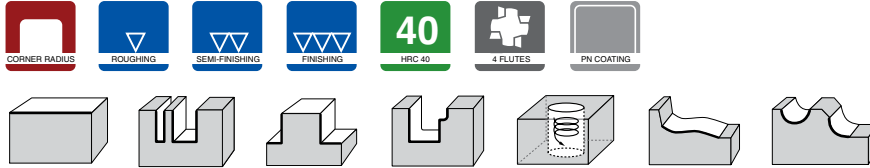
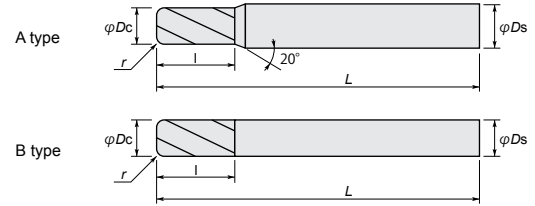
5Dc Neck

Part No.	Stock	Size (mm)						Type
		D _c	l	l ₂	D ₁	L	D _s	
EPSM4010-5-PN	<input type="checkbox"/>	1.0	1.5	5.0	0.96	68	6	A
EPSM4020-10-PN	<input type="checkbox"/>	2.0	3.0	10.0	1.92	68	6	A
EPSM4030-15-PN	<input type="checkbox"/>	3.0	4.5	15.0	2.88	68	6	A
EPSM4040-20-PN	<input type="checkbox"/>	4.0	6.0	20.0	3.70	68	6	A
EPSM4050-25-PN	<input type="checkbox"/>	5.0	7.5	25.0	4.60	68	6	A
EPSM4060-30-PN	<input type="checkbox"/>	6.0	9.0	30.0	5.50	68	6	B
EPSM4070-35-PN	<input type="checkbox"/>	7.0	10.5	35.0	6.40	80	8	A
EPSM4080-40-PN	<input type="checkbox"/>	8.0	12.0	40.0	7.30	80	8	B
EPSM4090-45-PN	<input type="checkbox"/>	9.0	13.5	45.0	8.30	94	10	A
EPSM4100-50-PN	<input type="checkbox"/>	10.0	15.0	50.0	9.10	94	10	B
EPSM4110-55-PN	<input type="checkbox"/>	11.0	16.5	55.0	10.20	110	12	A
EPSM4120-60-PN	<input type="checkbox"/>	12.0	18.0	60.0	11.00	110	12	B
EPSM4160-80-PN	<input type="checkbox"/>	16.0	24.0	80.0	14.50	135	16	B
EPSM4200-100-PN	<input type="checkbox"/>	20.0	30.0	100.0	18.20	155	20	B

= Stocked items in Japan

EPSM

EPSM4-R-PN



Ds (6-12)	h5	Dc (Ø1-6)	0/-0.015
Ds (16-20)	h6	Dc (Ø7-20)	0/-0.02
Helix Angle	40°		

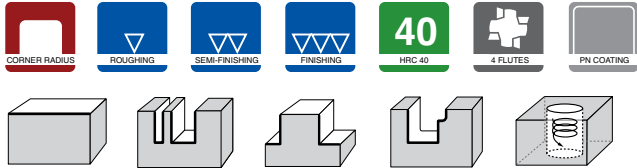
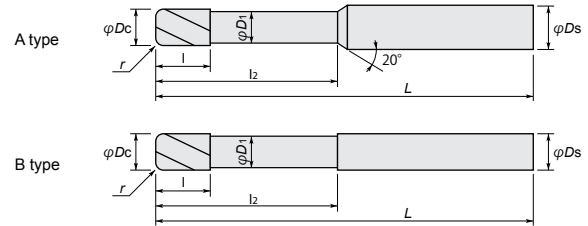
Part No.	Stock	Size (mm)					Type					
		D _c	r	l	L	D _s						
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EPSM4020-R0.1-PN	●	2	0.1	5.0	56	6	A					
EPSM4020-R0.2-PN	●		0.2									
EPSM4030-R0.2-PN	●	3	0.2	7.5	56	6	A					
EPSM4030-R0.5-PN	●		0.5									
EPSM4040-R0.2-PN	●	4	0.2	10.0	56	6	A					
EPSM4040-R0.5-PN	●		0.5									
EPSM4040-R1.0-PN	●		1.0									
EPSM4050-R0.2-PN	□	5	0.2	12.5	56	6	A					
EPSM4050-R0.5-PN	□		0.5									
EPSM4050-R1.0-PN	□		1.0									
EPSM4060-R0.3-PN	●	6	0.3	15.0	56	6	B					
EPSM4060-R0.5-PN	●		0.5									
EPSM4060-R1.0-PN	●		1.0									
EPSM4060-R1.5-PN	●		1.5									
EPSM4070-R0.3-PN	□	7	0.3	17.5	63	8	A					
EPSM4070-R0.5-PN	□		0.5									
EPSM4070-R1.0-PN	□		1.0									
EPSM4080-R0.3-PN	●	8	0.3	20.0	63	8	B					
EPSM4080-R0.5-PN	●		0.5									
EPSM4080-R1.0-PN	●		1.0									
EPSM4080-R1.5-PN	●		1.5									
EPSM4080-R2.0-PN	●	2.0										
EPSM4090-R0.3-PN	□	9	0.3	22.5	74	10	A					
EPSM4090-R0.5-PN	□		0.5									
EPSM4090-R1.0-PN	□		1.0									

Part No.	Stock	Size (mm)					Type
		D _c	r	l	L	D _s	
EPSM4100-R0.3-PN	●	10	0.3	25.0	74	10	B
EPSM4100-R0.5-PN	●		0.5				
EPSM4100-R1.0-PN	●		1.0				
EPSM4100-R1.5-PN	●		1.5				
EPSM4100-R2.0-PN	●	2.0					
EPSM4110-R0.3-PN	□	11	0.3	27.5	86	12	A
EPSM4110-R0.5-PN	□		0.5				
EPSM4110-R1.0-PN	□		1.0				
EPSM4120-R0.3-PN	●	12	0.3	30.0	86	12	B
EPSM4120-R0.5-PN	●		0.5				
EPSM4120-R1.0-PN	●		1.0				
EPSM4120-R1.5-PN	●		1.5				
EPSM4120-R2.0-PN	●		2.0				
EPSM4120-R2.5-PN	□		2.5				
EPSM4120-R3.0-PN	□	3.0					
EPSM4160-R0.5-PN	□	16	0.5	40.0	110	16	B
EPSM4160-R1.0-PN	□		1.0				
EPSM4160-R1.5-PN	□		1.5				
EPSM4160-R2.0-PN	□		2.0				
EPSM4160-R3.0-PN	□	3.0					
EPSM4200-R0.5-PN	□	20	0.5	50.0	125	20	B
EPSM4200-R1.0-PN	□		1.0				
EPSM4200-R1.5-PN	□		1.5				
EPSM4200-R2.0-PN	□		2.0				
EPSM4200-R3.0-PN	□		3.0				
EPSM4200-R5.0-PN	□	5.0					

□ = Stocked items in Japan

EPSM

EPSM4-R-PN 5Dc Neck



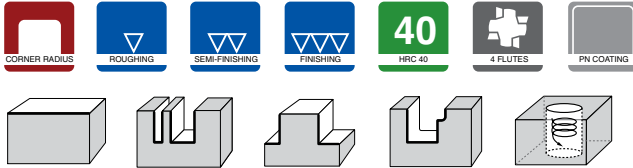
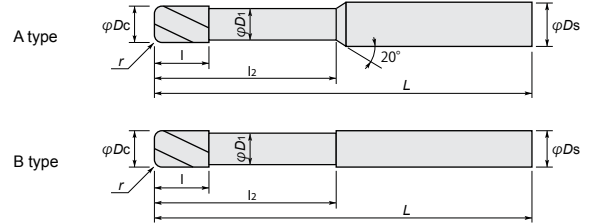
Ds (6-12)	h5	Dc (Ø1-6)	0/-0.015
Ds (16-20)	h6	Dc (Ø7-20)	0/-0.02
Helix Angle	40°		

Part No.	Stock	Size (mm)							Type
		D _c	r	l	l ₂	D ₁	L	D _s	
EPSM4010-5-R0.1-PN	<input type="checkbox"/>	1	0.1	1.5	5	0.96	68	6	A
EPSM4020-10-R0.1-PN	<input type="checkbox"/>	2	0.1	3.0	10	1.92	68	6	A
EPSM4020-10-R0.2-PN	<input type="checkbox"/>		0.2						
EPSM4030-15-R0.2-PN	<input type="checkbox"/>	3	0.2	4.5	15	2.88	68	6	A
EPSM4030-15-R0.5-PN	<input type="checkbox"/>		0.5						
EPSM4040-20-R0.2-PN	<input type="checkbox"/>		0.2						
EPSM4040-20-R0.5-PN	<input type="checkbox"/>	4	0.5	6.0	20	3.70	68	6	A
EPSM4040-20-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4050-25-R0.2-PN	<input type="checkbox"/>		0.2						
EPSM4050-25-R0.5-PN	<input type="checkbox"/>	5	0.5	7.5	25	4.60	68	6	A
EPSM4050-25-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4060-30-R0.3-PN	<input type="checkbox"/>		0.3						
EPSM4060-30-R0.5-PN	<input type="checkbox"/>	6	0.5	9.0	30	5.50	68	6	B
EPSM4060-30-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4060-30-R1.5-PN	<input type="checkbox"/>		1.5						
EPSM4070-35-R0.3-PN	<input type="checkbox"/>	7	0.3	10.5	35	6.40	80	8	A
EPSM4070-35-R0.5-PN	<input type="checkbox"/>		0.5						
EPSM4070-35-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4080-40-R0.3-PN	<input type="checkbox"/>	8	0.3	12.0	40	7.30	80	8	B
EPSM4080-40-R0.5-PN	<input type="checkbox"/>		0.5						
EPSM4080-40-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4080-40-R1.5-PN	<input type="checkbox"/>		1.5						
EPSM4080-40-R2.0-PN	<input type="checkbox"/>		2.0						
EPSM4090-45-R0.3-PN	<input type="checkbox"/>	9	0.3	13.5	45	8.30	94	10	A
EPSM4090-45-R0.5-PN	<input type="checkbox"/>		0.5						
EPSM4090-45-R1.0-PN	<input type="checkbox"/>		1.0						

= Stocked items in Japan

EPSM

EPSM4-R-PN 5Dc Neck



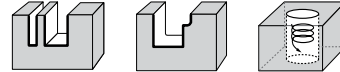
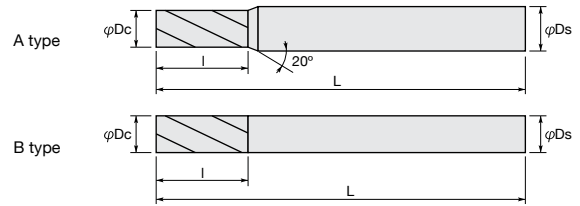
Ds (6-12)	h5	Dc (Ø1-6)	0/-0.015
Ds (16-20)	h6	Dc (Ø7-20)	0/-0.02
Helix Angle	40°		

Part No.	Stock	Size (mm)							Type
		D _c	r	l	l ₂	D ₁	L	D _s	
EPSM4100-50-R0.3-PN	<input type="checkbox"/>	10	0.3	15.0	50	9.10	94	10	B
EPSM4100-50-R0.5-PN	<input type="checkbox"/>		0.5						
EPSM4100-50-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4100-50-R1.5-PN	<input type="checkbox"/>		1.5						
EPSM4100-50-R2.0-PN	<input type="checkbox"/>		2.0						
EPSM4110-55-R0.3-PN	<input type="checkbox"/>	11	0.3	16.5	55	10.20	110	12	A
EPSM4110-55-R0.5-PN	<input type="checkbox"/>		0.5						
EPSM4110-55-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4120-60-R0.3-PN	<input type="checkbox"/>	12	0.3	18.0	60	11.00	110	12	B
EPSM4120-60-R0.5-PN	<input type="checkbox"/>		0.5						
EPSM4120-60-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4120-60-R1.5-PN	<input type="checkbox"/>		1.5						
EPSM4120-60-R2.0-PN	<input type="checkbox"/>		2.0						
EPSM4120-60-R2.5-PN	<input type="checkbox"/>		2.5						
EPSM4120-60-R3.0-PN	<input type="checkbox"/>		3.0						
EPSM4160-80-R0.5-PN	<input type="checkbox"/>		16						
EPSM4160-80-R1.0-PN	<input type="checkbox"/>	1.0							
EPSM4160-80-R1.5-PN	<input type="checkbox"/>	1.5							
EPSM4160-80-R2.0-PN	<input type="checkbox"/>	2.0							
EPSM4160-80-R3.0-PN	<input type="checkbox"/>	3.0							
EPSM4200-100-R0.5-PN	<input type="checkbox"/>	20	0.5	30.0	100	18.20	155	20	B
EPSM4200-100-R1.0-PN	<input type="checkbox"/>		1.0						
EPSM4200-100-R1.5-PN	<input type="checkbox"/>		1.5						
EPSM4200-100-R2.0-PN	<input type="checkbox"/>		2.0						
EPSM4200-100-R3.0-PN	<input type="checkbox"/>		3.0						
EPSM4200-100-R5.0-PN	<input type="checkbox"/>		5.0						

= Stocked items in Japan

EPSW

EPSW-PN Regular Length



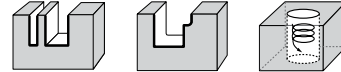
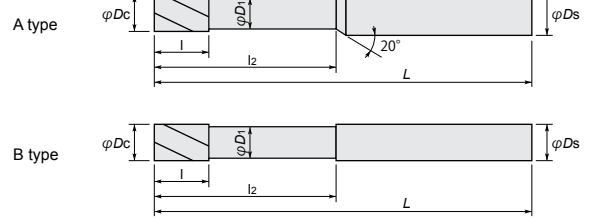
Ds (6-12)	h5	Dc	0/-0.05
Ds (16-20)	h6		
Helix Angle	30°		

Part No.	Stock	Size (mm)				Chamfer Width	Flutes	Type
		D _c	l	L	D _s			
EPSW3040-PN	●	4.0	10.0	56	6	0.3	3	A
EPSW3050-PN	□	5.0	12.5	56	6	0.3	3	A
EPSW4060-PN	●	6.0	15.0	56	6	0.4	4	B
EPSW4070-PN	□	7.0	17.5	63	8	0.4	4	A
EPSW4080-PN	●	8.0	20.0	63	8	0.5	4	B
EPSW4090-PN	□	9.0	22.5	74	10	0.5	4	A
EPSW4100-PN	●	10.0	25.0	74	10	0.5	4	B
EPSW4110-PN	□	11.0	27.5	86	12	0.5	4	A
EPSW4120-PN	●	12.0	30.0	86	12	0.5	4	B
EPSW4160-PN	□	16.0	40.0	110	16	0.7	4	B
EPSW4200-PN	□	20.0	50.0	125	20	0.7	4	B

□ = Stocked items in Japan

EPSW

EPSW4-PN 3Dc & 5Dc Neck



Ds (6-12)	h5	Dc	0/-0.05
Ds (16-20)	h6		
Helix Angle	30°		

3Dc Neck

Part No.	Stock	Size (mm)					Ds	Chamfer Width	Flutes	Type
		Dc	l	l ₂	D ₁	L				
EPSW3040-12-PN		4	6.0	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	9.0	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	12.0	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	15.0	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	18.0	36	11.0	86	12	0.5	4	B
EPSW4160-48-PN		16	24.0	48	14.5	110	16	0.7	4	B
EPSW4200-60-PN		20	30.0	60	18.2	125	20	0.7	4	B

5Dc Neck

Part No.	Stock	Size (mm)					Ds	Chamfer Width	Flutes	Type
		Dc	l	l ₂	D ₁	L				
EPSW3040-20-PN	<input type="checkbox"/>	4	6.0	20	3.7	68	6	0.3	3	A
EPSW3050-25-PN	<input type="checkbox"/>	5	7.5	25	4.6	68	6	0.3	3	A
EPSW4060-30-PN	<input type="checkbox"/>	6	9.0	30	5.5	68	6	0.4	4	B
EPSW4070-35-PN	<input type="checkbox"/>	7	10.5	35	6.4	80	8	0.4	4	A
EPSW4080-40-PN	<input type="checkbox"/>	8	12.0	40	7.3	80	8	0.5	4	B
EPSW4090-45-PN	<input type="checkbox"/>	9	13.5	45	8.3	94	10	0.5	4	A
EPSW4100-50-PN	<input type="checkbox"/>	10	15.0	50	9.1	94	10	0.5	4	B
EPSW4110-55-PN	<input type="checkbox"/>	11	16.5	55	10.2	110	12	0.5	4	A
EPSW4120-60-PN	<input type="checkbox"/>	12	18.0	60	11.0	110	12	0.5	4	B
EPSW4160-80-PN	<input type="checkbox"/>	16	24.0	80	14.5	135	16	0.7	4	B
EPSW4200-100-PN	<input type="checkbox"/>	20	30.0	100	18.2	155	20	0.7	4	B

= Stocked items in Japan

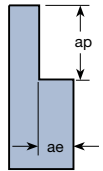
EPSM / EPSW

Recommended Cutting Conditions Side Milling



General Side milling condition

Dc	EPSM		EPSM-CR		EPSM-3Dc		EPSW		EPSW-3Dc	
	Regular		Regular, Corner radius		Under neck 3Dc		Regular, Roughing		Under neck 3Dc, Roughing	
	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min
	Cast Iron · Carbon Steel · Alloy Steel (~30HRC)		Pre-hardened Steel · Tool Steel (30~40HRC)		Stainless Steel		Titanium Alloy		Super Heat-Resistant Steel	
	$a_p=1Dc, a_e=0.5Dc$		$a_p=1Dc, a_e=0.5Dc$		$a_p=1Dc, a_e=0.5Dc$		$a_p=1Dc, a_e=0.1Dc$		$a_p=1Dc, a_e=0.05Dc$	
1.0	31,800	760	22,300	360	19,100	310	12,700	150	9,500	76
2.0	15,900	810	11,100	380	9,500	320	6,400	160	4,800	82
3.0	10,600	860	7,400	400	6,400	350	4,200	170	3,200	86
4.0	8,000	910•	5,600	430•	4,800	360•	3,200	180•	2,400	91•
5.0	6,400	960•	4,500	450•	3,800	380•	2,500	190•	1,900	95•
6.0	5,300	950	3,700	440	3,200	380	2,100	190	1,600	96
7.0	4,500	940	3,200	450	2,700	380	1,800	190	1,400	98
8.0	4,000	960	2,800	450	2,400	380	1,600	190	1,200	96
9.0	3,500	940	2,500	450	2,100	380	1,400	190	1,100	99
10.0	3,200	960	2,200	440	1,900	380	1,300	200	1,000	100
11.0	2,900	910	2,000	420	1,700	360	1,200	190	900	94
12.0	2,700	870	1,900	410	1,600	350	1,100	180	800	86
16.0	2,000	820	1,400	380	1,200	330	800	160	600	82
20.0	1,600	770	1,100	350	1,000	320	600	140	500	80



Side finishing condition

Dc	EPSM		EPSM-CR		EPSM-3Dc		EPSM-5Dc ₃			
	Regular		Regular, Corner radius		Under neck 3Dc		Under neck 5Dc			
	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min
	Cast Iron · Carbon Steel · Alloy Steel (~30HRC)		Pre-hardened Steel · Tool Steel (30~40HRC)		Stainless Steel		Titanium Alloy		Super Heat-Resistant Steel	
	$a_p=1Dc, a_e=0.001\sim0.02Dc$		$a_p=1Dc, a_e=0.001\sim0.02Dc$		$a_p=1Dc, a_e=0.001\sim0.02Dc$		$a_p=1Dc, a_e=0.001\sim0.02Dc$		$a_p=1Dc, a_e=0.001\sim0.02Dc$	
1.0	45,500	980	35,000	500	31,500	450	21,000	230	17,500	130
2.0	22,800	1,050	17,500	540	15,800	480	10,500	240	8,800	130
3.0	15,200	1,110	11,700	570	10,500	510	7,000	260	5,800	140
4.0	11,400	1,170	8,800	600	7,900	540	5,300	270	4,400	150
5.0	9,100	1,230	7,000	630	6,300	570	4,200	280	3,500	160
6.0	7,600	1,230	5,800	630	5,300	570	3,500	280	2,900	160
7.0	6,500	1,230	5,000	630	4,500	570	3,000	280	2,500	160
8.0	5,700	1,230	4,400	630	3,900	560	2,600	280	2,200	160
9.0	5,100	1,240	3,900	630	3,500	570	2,300	280	1,900	150
10.0	4,600	1,240	3,500	630	3,200	580	2,100	280	1,800	160
11.0	4,100	1,160	3,200	600	2,900	550	1,900	270	1,600	150
12.0	3,800	1,110	2,900	560	2,600	510	1,800	260	1,500	150
16.0	2,800	1,030	2,200	540	2,000	490	1,300	240	1,100	130
20.0	2,300	990	1,800	520	1,600	460	1,100	240	900	130

- 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 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.

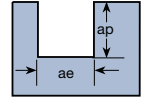
EPSM / EPSW

Recommended Cutting Conditions Slotting



General Slotting condition

EPSM	EPSM-CR	EPSM-3Dc	EPSW	EPSW-3Dc
Regular	Regular, Corner radius	Under neck 3Dc	Regular, Roughing	Under neck 3Dc, Roughing



Dc	Cast Iron • Carbon Steel • Alloy Steel (~30HRC)		Pre-hardened Steel • Tool Steel (30~40HRC)		Stainless Steel		Titanium Alloy		Super Heat-Resistant Steel	
	ap=1Dc		ap=1Dc		ap=1Dc		ap=0.5Dc		ap=0.5Dc	
	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min	revolution min ⁻¹	feed rate mm/min
1.0	28,600	360	19,100	190	17,500	130	11,100	60	6,400	19
2.0	14,300	430	9,500	230	8,800	160	5,600	70	3,200	23
3.0	9,500	500	6,400	270	5,800	180	3,700	80	2,100	26
4.0	7,200	580•	4,800	310•	4,400	210•	2,800	90•	1,600	31•
5.0	5,700	640•	3,800	340•	3,500	240•	2,200	100•	1,300	35•
6.0	4,800	720	3,200	380	2,900	260	1,900	110	1,100	40
7.0	4,100	720	2,700	380	2,500	260	1,600	110	900	38
8.0	3,600	720	2,400	380	2,200	260	1,400	110	800	38
9.0	3,200	720	2,100	380	1,900	260	1,200	110	700	38
10.0	2,900	730	1,900	380	1,800	270	1,100	110	600	36
11.0	2,600	680	1,700	360	1,600	250	1,000	100	600	38
12.0	2,400	650	1,600	350	1,500	240	900	100	500	32
16.0	1,800	610	1,200	330	1,100	220	700	100	400	33
20.0	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.
- 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 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.