SUMITOMO
CARBIDE - CBN - DIAMOND

EPMS - High Efficiency Endmill Type

Radius Endmills for Exotic Alloys

EPMS
European Performance Mill

P M K N S H

SUMITOMO ELECTRIC GROUP

EPMS Type

Features

→ Solid endmill EPMS-Series (European Performance Mill) for high-performance milling applications

→ Higher efficiency and tool life due to new technology of latest developed carbide substrate and coating combined with the new optimized tool design

→ Available with 4/5/6 and 9 flutes, different diameters and edge radii

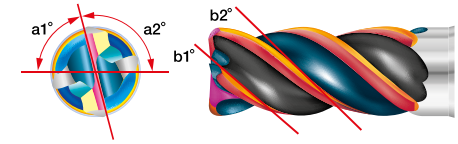
→ Excellent performance in machining of exotic alloys like Ti-alloys, super alloys and heat resistant steels

→ Suitable for Titanium structure parts for airplane

→ Anti-vibration design for reliable and efficient machining in a wide application range

Anti-Vibration design

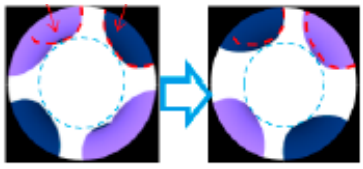
Reduce the vibration dramatically, especially for poor clamping and thin wall work geometry, increase the parts accuracy and parts surface quality for customers.



Irregular Pitch + Irregular Lead

Optimized flute geometry

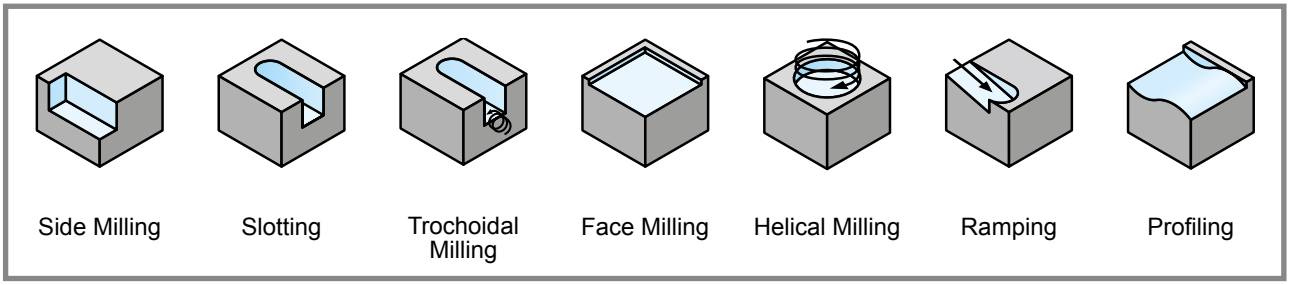
Smooth chip evacuation and high rigidity are realized to ensure stable and efficient milling process.



Comparison with other Milling Cutters

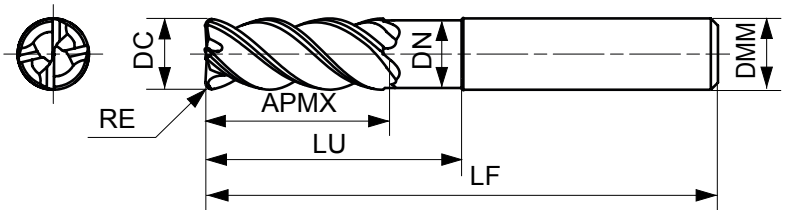
Description	Coating	Diameter	Peripheral Rake	Peripheral Relief	Helix Angle	Core Diameter	No. Edge	Radius Tolerance
GSXVL4000-R	GSX (TiAlCrN)	1–25	3–5	16	40/43	0,6D	4	-0,01/0,01
SSEHVL4000-R	GS Hard (TiAlCrSiCN)	4,5–25	5–7	17	42/45	0,65D	4	-0,01/0,01
EPMS4000-R	TiAlSiN	10–26	5–7	14	42/45	0,7D	4	-0,01/0,01

Suitable Applications



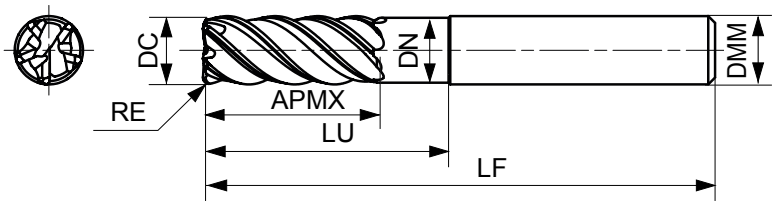
Body

EPMS 4000 Type (Shank DIN 6535 HA)



Cat. No.		Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS	4100U2.5R10	●	10	1,0	25	32	9,5	72	10
	4100U2.5R30	●	10	3,0	25	32	9,5	72	10
EPMS	4120U2.5R10	●	12	1,0	30	38	11,5	83	12
	4120U2.5R30	●	12	3,0	30	38	11,5	83	12
	4120U2.5R40	●	12	4,0	30	38	11,5	83	12
EPMS	4160U2.5R30	●	16	3,0	40	50	15,5	100	16
	4160U2.5R40	●	16	4,0	40	50	15,5	100	16

EPMS 5000 Type (Shank DIN 6535 HA)



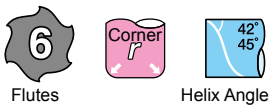
Cat. No.		Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS	5100U2.5R025	●	10	0,25	25	32	9,5	72	10
	5100U2.5R15	●	10	1,5	25	32	9,5	72	10
	5100U2.5R25	●	10	2,5	25	32	9,5	72	10
EPMS	5120U2.5R025	●	12	0,25	30	38	11,5	83	12
	5120U2.5R05	●	12	0,5	30	38	11,5	83	12
	5120U2.5R15	●	12	1,5	30	38	11,5	83	12
	5120U2.5R20	●	12	2,0	30	38	11,5	83	12
	5120U2.5R25	●	12	2,5	30	38	11,5	83	12
EPMS	5160U2.5R30	●	16	3,0	40	50	15,5	100	16
	5160U2.5R40	●	16	4,0	40	50	15,5	100	16
EPMS	5200U2.5R30	●	20	3,0	50	62	19,5	125	20
	5200U2.5R40	●	20	4,0	50	62	19,5	125	20

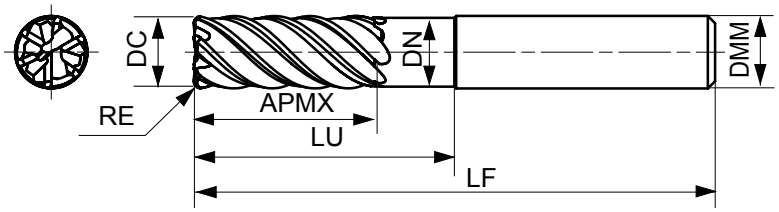
Grade: ECS300 ● Euro stock

EPMS Type

Body

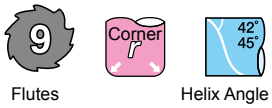
EPMS 6000 Type (Shank DIN 6535 HA)

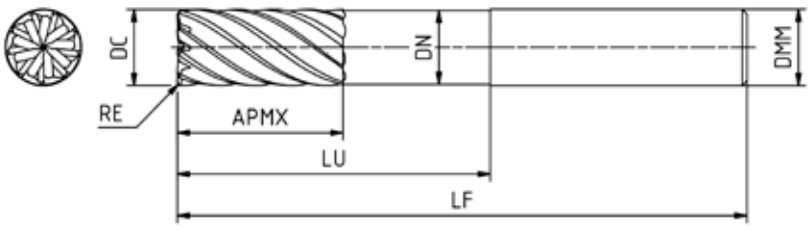




Cat. No.		Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS	6100U2.5R10	●	10	1,0	25	32	9,5	72	10
	6100U2.5R30	●	10	3,0	25	32	9,5	72	10
EPMS	6120U2.5R10	●	12	1,0	30	38	11,5	83	12
	6120U2.5R30	●	12	3,0	30	38	11,5	83	12
	6120U2.5R40	●	12	4,0	30	38	11,5	83	12
EPMS	6160U2.5R15	●	16	1,5	40	50	15,5	100	16
	6160U2.5R30	●	16	3,0	40	50	15,5	100	16
	6160U2.5R40	●	16	4,0	40	50	15,5	100	16
EPMS	6200U2.5R30	●	20	3,0	50	62	19,5	125	20
	6200U2.5R40	●	20	4,0	50	62	19,5	125	20

EPMS 9000 Type U (Shank DIN 6535 HA)



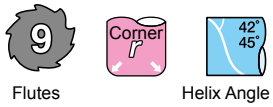


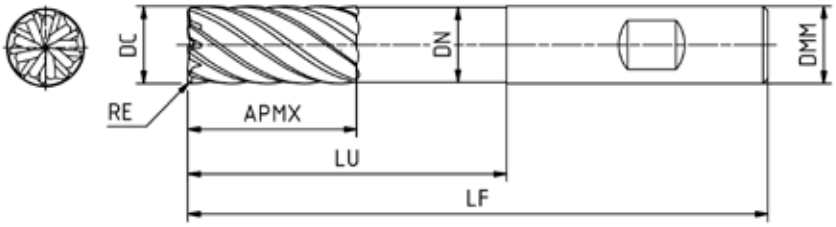
Cat. No.		Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS	9120U2.5R05	●	12	0,5	30	38	11,5	83	12
	9120U2.5R10	●	12	1,0	30	38	11,5	83	12
EPMS	9160U2.2R10	●	16	1,0	35	66	15,5	120	16
	9160U2.2R20	●	16	2,0	35	66	15,5	120	16
	9160U2.2R30	●	16	3,0	35	66	15,5	120	16

Grade: ECS300 ● Euro stock

Body

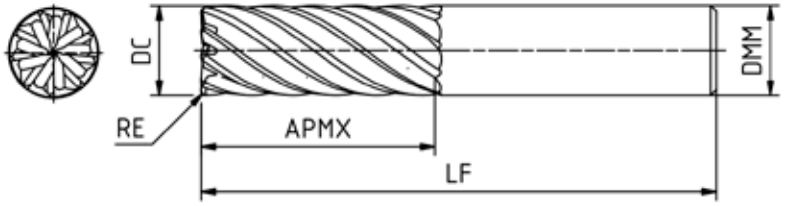
EPMS 9000 Type U (Shank DIN 6535 HB WELDON)





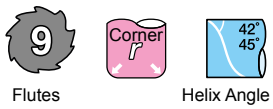
Cat. No.		Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS	9120U2.5WR05	●	12	0,5	30	38	11,5	83	12
	9120U2.5WR10	●	12	1,0	30	38	11,5	83	12
EPMS	9160U2.2WR10	●	16	1,0	35	66	15,5	120	16
	9160U2.2WR20	●	16	2,0	35	66	15,5	120	16
	9160U2.2WR30	●	16	3,0	35	66	15,5	120	16

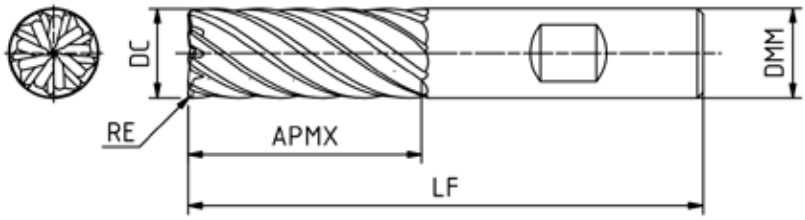
EPMS 9000 Type S (Shank DIN 6535 HA)



Cat. No.		Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS	9160S2.6R10	●	16	1,0	42	-	-	92	16
	9160S2.6R20	●	16	2,0	42	-	-	92	16
	9160S2.6R30	●	16	3,0	42	-	-	92	16
EPMS	9160S4.0R10	●	16	1,0	66	-	-	120	16

EPMS 9000 Type S (Shank DIN 6535 HB WELDON)





Cat. No.		Stock	DC	RE	APMX	LU	DN	LF	DMM
EPMS	9160S2.6WR10	●	16	1,0	42	-	-	92	16
	9160S2.6WR20	●	16	2,0	42	-	-	92	16
	9160S2.6WR30	●	16	3,0	42	-	-	92	16
EPMS	9160S4.0WR10	●	16	1,0	66	-	-	120	16

Grade: ECS300 ● Euro stock

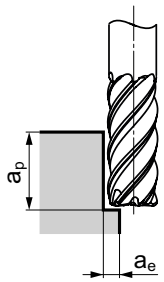
EPMS Type

Cutting Conditions

Side Milling

Work Material	Titanum Alloy, Stainless Steel				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10,0	3.200	1.280	1.920	3.840	4.320
12,0	2.700	1.080	1.620	3.240	3.645
16,0	2.000	800	1.200	2.400	2.700
20,0	1.600	640	960	1.920	2.160
ae (mm), **Standard**–Max.		**0,2**–0,4 DC	**0,1**–0,3 DC	**0,06**–0,1 DC	**0,05**–0,1 DC
ap (mm), **Standard**–Max.		**2,0**–2,5 DC			

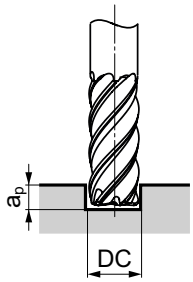
Work Material	Heat-resistant Alloy				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10,0	1.600	384	640	960	1.296
12,0	1.300	312	520	780	1.053
16,0	1.000	240	400	600	810
20,0	800	192	320	480	648
ae (mm), **Standard**–Max.		**0,2**–0,4 DC	**0,1**–0,3 DC	**0,06**–0,1 DC	**0,05**–0,1 DC
ap (mm), **Standard**–Max.		**2,0**–2,5 DC			



Slotting

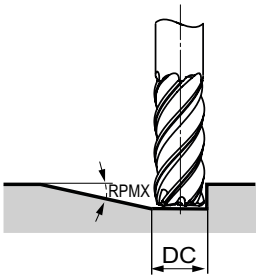
Work Material	Titanum Alloy, Stainless Steel				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10,0	1.900	460	570	Not recommended	Not recommended
12,0	1.600	380	480		
16,0	1.200	290	360		
20,0	960	230	290		
ap (mm), **Standard**–Max.		**1,0**–1,5 DC	**0,5**–1,0 DC		

Work Material	Heat-resistant Alloy				
Cond. / DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)			
		EPMS4000	EPMS5000	EPMS6000	EPMS9000
10,0	960	230	290	Not recommended	Not recommended
12,0	800	190	240		
16,0	600	140	180		
20,0	480	120	140		
ap (mm), **Standard**–Max.		**0,3**–0,5 DC	**0,2**–0,4 DC		



Ramping / Helical Milling

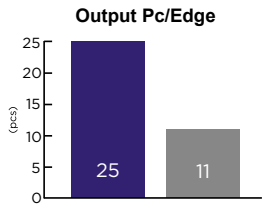
Body Type	EPMS4000	EPMS5000	EPMS6000	EPMS9000
RPMX, **Standard**–Max.	**2,0°**–3,0°	**2,0°**–3,0°	**0,5°**–2,0°	**0,5°**–2,0°

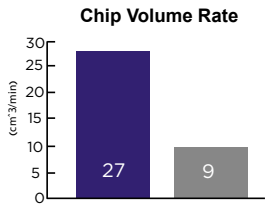


Application Examples

Work Piece	Recess Plate	Parameter		Sumitomo	Competitor
Material description	125 Titanium	Cutter Description		EPMS5120U2.5R025	(4 Teeth)
Material Group	–	Approach Angle		–	–
Customer Target	–	Tool Diameter		12	12
		Number of Teeth		5	4
		Insert Geometry		–	–
		Insert Size		–	–
		Chip Breaker		–	–
		Substarte		ECS300	CARBIDE
		RPM	n = [min¯¹]	3184	1000
		Cutting Speed	Vc = [m/min]	120	38
		Feed Rate (max)	fz = [mm/teeth]	0,17	0,05
		Feed (average)	vf = [mm/min]	2706	200
		Depth of Cut (max)	ap = [mm]	10,00	10,00
		Width of Cut (max)	ae = [mm]	1,00	4,50
		Chip Volume Rate	Q = [cm^3/min]	27,10	9,00
		Output Pc/Edge	[psc]	25,00	11,00
		Tool Life	th = [min]	1692,14	2236,30

127% More Tool Life

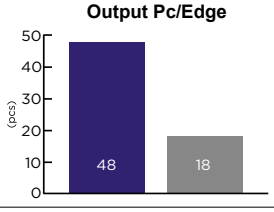


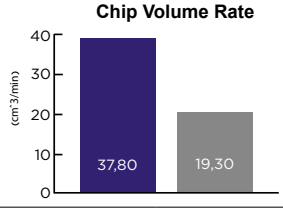


● Sumitomo ● competitor

Work Piece	End Plates	Parameter		Sumitomo	Competitor
Material description	1.4112	Cutter Description		EPMS 4000	(4 Teeth)
Material Group	ISO P / Martensitic Steel	Approach Angle		90	90
Customer Target	Increased tool life	Tool Diameter		10	10
		Number of Teeth		4	4
		Insert Geometry		–	–
		Insert Size		–	–
		Chip Breaker		–	–
		Substarte		ECS300	CARBIDE
		RPM	n = [min¯¹]	2865	2400
		Cutting Speed	Vc = [m/min]	90	76
		Feed Rate (max)	fz = [mm/teeth]	0,07	0,05
		Feed (average)	vf = [mm/min]	688	500
		Depth of Cut (max)	ap = [mm]	22,00	22,00
		Width of Cut (max)	ae = [mm]	2,50	2,50
		Chip Volume Rate	Q = [cm^3/min]	37,80	19,30
		Output Pc/Edge	[psc]	48,00	18,00
		Tool Life	th = [min]	230,23	237,60

167% More Tool Life





● Sumitomo ● competitor

EPMS Type

Identification Details

EPMS	4	100	U2.5		R10	ECS300
Series Code * On request	Number of Teeth	Diameter	Neck Type U: Underneck type S: Straigh +L/D 2.5:Length of cutting edge, 2,5 x DC	Other Options* W: Weldon B: Chip Breaker	Corner Radius R10: = 1 mm	Grade

Shank diameter tolerance h_5 / Radius tolerance RE: ± 0,01 mm

SUMITOMO
CARBIDE - CBN - DIAMOND

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