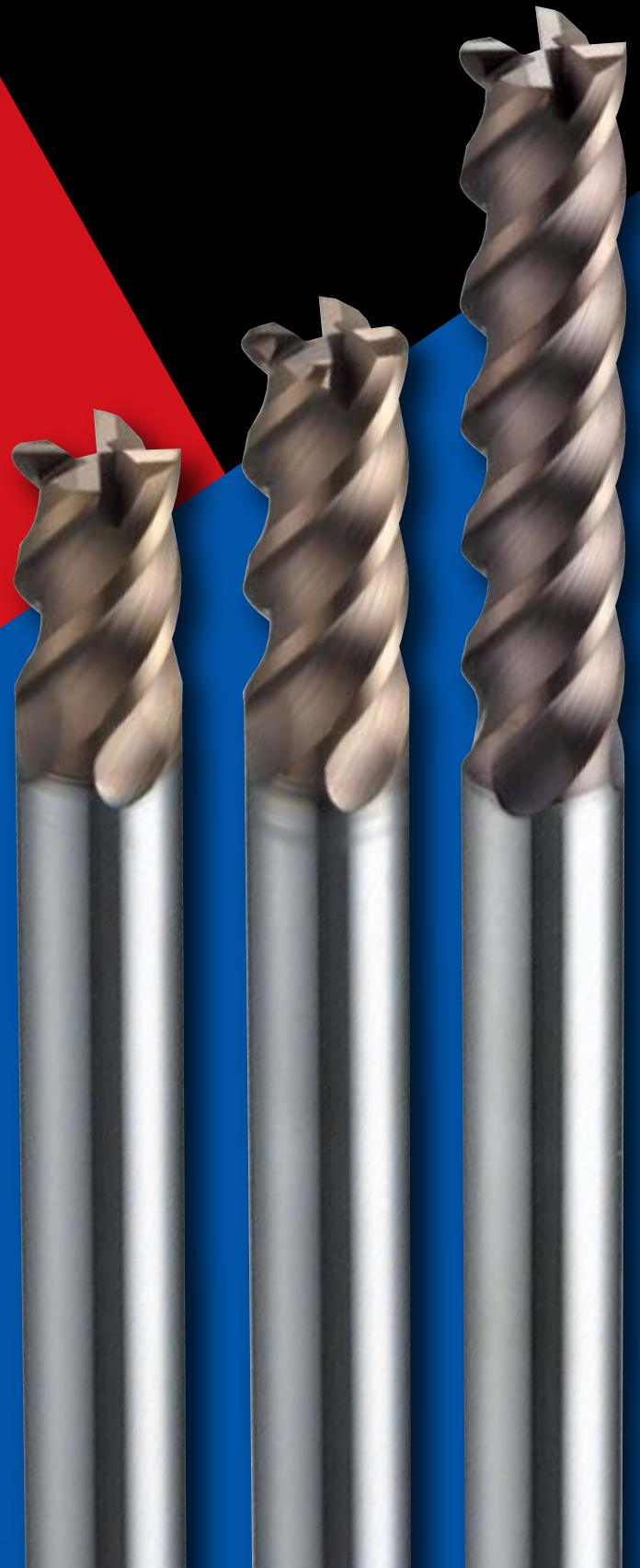


Epoch TH series for High hardened steels

EPP-TH

Epoch TH Power Mill



MOLDINO Tool Engineering, Ltd.

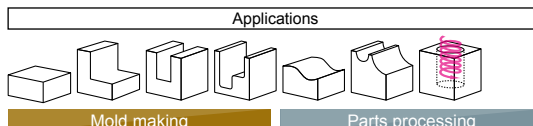
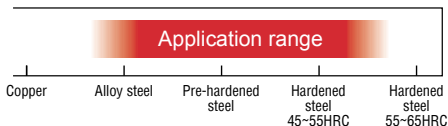
New Product News | No.708E-11 | 2026-2

Added TH Power Mill series

Short, medium, long flute and corner radius are added into new line-up, and appropriate to cut all hardened steels.

Features of EPP-TH

- 01** Abundant variations!
 18 short flute, 9 medium flute, 6 long flute and 35 corner radius new items are added into new line-up, and can handle all demands in slotting, side cutting and plunging.
- 02** High speed cutting of hardened steel is achievable!
 The tool shows its performance in various materials especially from pre-hardened steels (35HRC) to hardened steels.
- 03** Efficient chip evacuation!
 Power Mill design gives efficient chip evacuation.
- 04** Highly accurate finish cutting is achievable!
 With the highly rigid design and coating layer highly accurate finish machining is achievable.



EPPS-TH	φ3~φ20	[18 Items]
EPP-TH	φ3~φ20	[18 Items]
EPPM-TH	φ3~φ20	[9 Items]
EPPL-TH	φ6~φ20	[6 Items]
EPP-CR-TH	φ3~φ20	[35 Items]

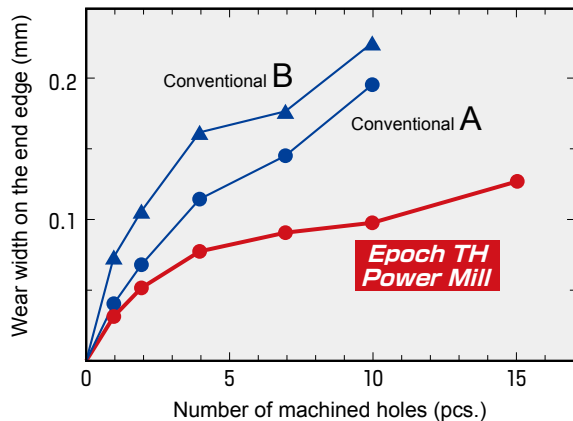
Features Epoch Super Coating TH

- 01** Nano-composite coating
 The new Nano-composite coating material offers extraordinary heat resistance and hardness due to its new composite layer consisting of Nano-crystal material.
- 02** Suitable for hardened steels
 This coating shows extraordinary performance in high speed cutting and high efficient machining of hardened steels.
- 03** Long tool life, High accuracy machining
 Ensures long tool-life and good performance in hardened steel materials (45~60HRC): SKD 11, SKD 61, SKH and SUS 420 type steels. also pre-hardened steels: CENA1, NAK80 etc.
- 04** Excellent for dry machining
 Generates less heat during cutting and is therefore well suited to dry machining conditions.

Cutting Performance

○ Pocket expanding of Hardened Steel (50HRC)

Epoch TH Power Mill -Regular $\phi 8$ EPP4-TH

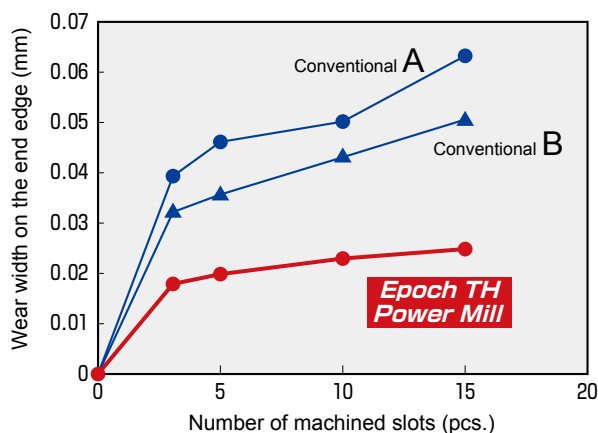


Tool	Epoch TH Power Mill -Regular $\phi 8$ EPP4080-TH
Work material	SKD61 \oplus (50HRC)
Revolution	$n=2,000\text{min}^{-1}$ ($v_c=50\text{m/min}$)
Feed rate	$v_f=330\text{mm/min}$ ($f_z=0.041\text{mm/t}$) Helical $v_f=450\text{mm/min}$ ($f_z=0.056\text{mm/t}$) Side milling
Depth of cut	$a_p=5\text{mm} \times a_e=0.2\text{mm}$ Depth 10mm
Cutting method	Pocket expanding dia. 40mm (Helical cutting \rightarrow Side milling) OH=30mm, Air blow
Machine	Vertical MC HSK-A63

	Epoch TH Power Mill -Regular	Conventional A	Conventional B
Wear width (when machining 10 holes)	 Wear width : 0.09mm	 Wear width : 0.20mm	 Wear width : 0.23mm

○ Slotting of hardened steel (50HRC)

Epoch Power Mill -Short $\phi 8$ EPPS4-TH



Tool	Epoch TH Power Mill -Short $\phi 8$ EPPS4080-TH
Work material	DAC (50HRC)
Revolution	$n=2,500\text{min}^{-1}$ ($v_c=63\text{m/min}$)
Feed rate	$v_f=410\text{mm/min}$ ($f_z=0.041\text{mm/t}$)
Depth of cut	$a_p=1.6\text{mm} \times a_e=8\text{mm}$
Cutting method	Slotting, OH=20mm, Air-blow
Machine	Vertical MC

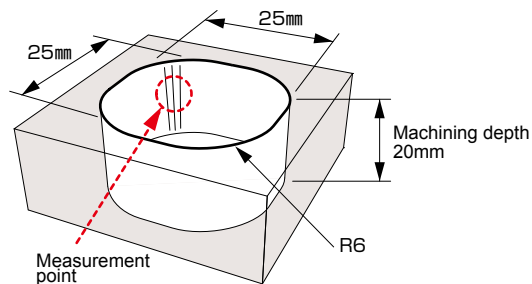
	Epoch TH Power Mill -Short	Conventional A	Conventional B
Wear width (when cutting steel 15m long)	 Wear width : 0.02mm	 Wear width : 0.06mm	 Wear width : 0.05mm

Cutting Performance

○ Inside radius finishing of hardened steel (50HRC)

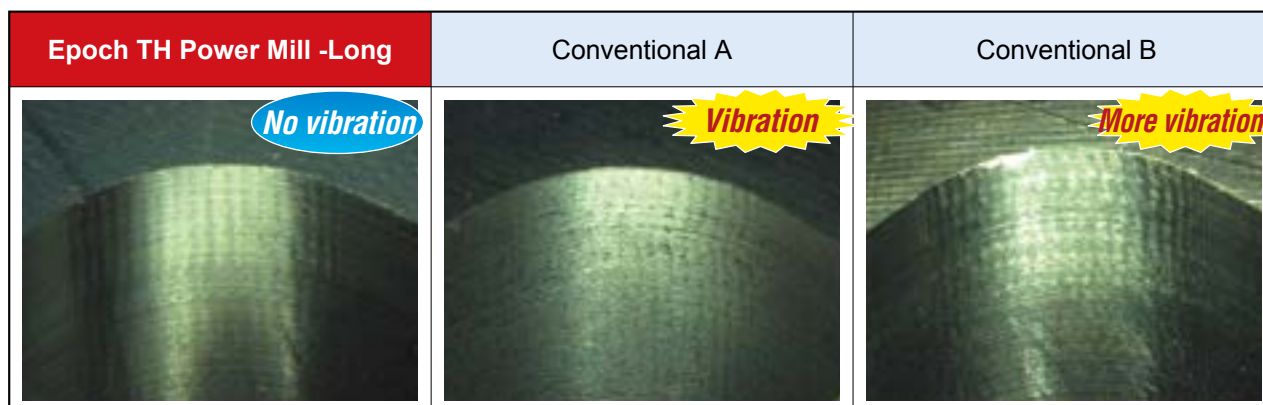
Epoch TH Power Mill -Long $\phi 8$ EPPL4-TH

Machining shape






Tool	Epoch TH Power Mill -Long $\phi 8$ EPPL4080-TH
Work material	DAC (50HRC)
Revolution	$n=1,400\text{min}^{-1}$ ($v_c=35\text{m/min}$)
Feed rate	$v_f=210\text{mm/min}$ ($f_z=0.038\text{mm/t}$)
Depth of cut	$a_p 20\text{mm} \times a_e 0.08\text{mm}$
Cutting method	Side Milling, OH=30mm, Air-blow
Machine	Vertical MC

◆ Cutting surface in corner radius



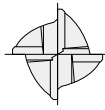
◆ Comparison of cutting surface roughness in corner radius

Epoch TH Power Mill -Long	Conventional A	Conventional B
		
Maximum hight : Rz 4.7μm	Maximum hight : Rz 11.1μm	Maximum hight : Rz 5.6μm

Epoch TH Power Mill can greatly suppress the vibration in inside corner finishing machining.

Line Up

Short



Tolerance on tool dia. : Below table

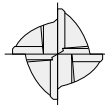
Tolerance on shank dia. : h6

EPPS4⁰⁰⁰⁰-TH

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPPS4030-TH	●	3	4.5	60	6
EPPS4035-TH	●	3.5	5.3	60	6
EPPS4040-TH	●	4	6	60	6
EPPS4045-TH	●	4.5	6.8	60	6
EPPS4050-TH	●	5	7.5	60	6
EPPS4055-TH	●	5.5	8.3	60	6
EPPS4060-TH	●	6	9	60	6
EPPS4065-TH	●	6.5	9.8	70	8
EPPS4070-TH	●	7	10.5	70	8

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPPS4075-TH	●	7.5	11.3	75	8
EPPS4080-TH	●	8	12	75	8
EPPS4085-TH	●	8.5	12.8	80	10
EPPS4090-TH	●	9	13.5	80	10
EPPS4095-TH	●	9.5	14.3	80	10
EPPS4100-TH	●	10	15	80	10
EPPS4120-TH	●	12	18	100	12
EPPS4160-TH	●	16	24	110	16
EPPS4200-TH	●	20	30	125	20

Regular



Tolerance on tool dia. : Below table

Tolerance on shank dia. : h6

EPP4⁰⁰⁰⁰-TH

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPP4030-TH	●	3	8	60	6
EPP4040-TH	●	4	11	60	6
EPP4050-TH	●	5	13	60	6
EPP4060-TH	●	6	13	60	6
EPP4070-TH	●	7	16	70	8
EPP4080-TH	●	8	19	75	8
EPP4090-TH	●	9	19	80	10
EPP4100-TH	●	10	22	80	10
EPP4110-TH	●	11	22	100	12

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPP4120-TH	●	12	26	100	12
EPP4130-TH	●	13	26	100	12
EPP4140-TH	●	14	26	110	16
EPP4150-TH	●	15	26	110	16
EPP4160-TH	●	16	32	110	16
EPP4170-TH	●	17	32	110	16
EPP4180-TH	●	18	32	125	20
EPP4190-TH	●	19	32	125	20
EPP4200-TH	●	20	38	125	20

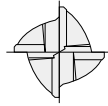
■ Tolerance on tool dia. - Epoch TH Power Mill

Tool dia. (DC)	Tolerance on tool dia.
$3 \leq DC \leq 6$	$\begin{matrix} 0 \\ -0.015 \end{matrix}$
$6 < DC \leq 20$	$\begin{matrix} 0 \\ -0.02 \end{matrix}$

● : Stocked items.

Line Up

Medium



Tolerance on tool dia. :Next page

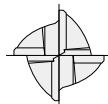
Tolerance on shank dia. : h6

EPPM4⁰⁰⁰⁰-TH

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPPM4030-TH	●	3	15	60	6
EPPM4040-TH	●	4	17	60	6
EPPM4050-TH	●	5	20	60	6
EPPM4060-TH	●	6	20	60	6
EPPM4080-TH	●	8	25	75	8

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPPM4100-TH	●	10	33	80	10
EPPM4120-TH	●	12	37	100	12
EPPM4160-TH	●	16	47	110	16
EPPM4200-TH	●	20	55	125	20

Long



Tolerance on tool dia. :Next page

Tolerance on shank dia. : h6

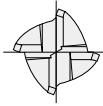
EPPL4⁰⁰⁰⁰-TH

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPPL4060-TH	●	6	25	70	6
EPPL4080-TH	●	8	35	90	8
EPPL4100-TH	●	10	45	100	10

Item code	Stock	Size(mm)			
		Tool dia.	Flute length	Overall length	Shank dia.
EPPL4120-TH	●	12	55	120	12
EPPL4160-TH	●	16	65	135	16
EPPL4200-TH	●	20	75	155	20

● : Stocked items.

Corner Radius



Tolerance on tool dia. : Below table

Tolerance on shank dia. : h6

EPP4000-00-TH

Item code	Stock	Size(mm)				
		Corner radius	Tool dia.	Flute length	Overall length	Shank dia.
EPP4030-02-TH	●	0.2	3	8	60	6
EPP4030-05-TH	●	0.5	3	8	60	6
EPP4040-02-TH	●	0.2	4	11	60	6
EPP4040-05-TH	●	0.5	4	11	60	6
EPP4040-10-TH	●	1.0	4	11	60	6
EPP4050-02-TH	●	0.2	5	13	60	6
EPP4050-05-TH	●	0.5	5	13	60	6
EPP4050-10-TH	●	1.0	5	13	60	6
EPP4060-03-TH	●	0.3	6	13	60	6
EPP4060-05-TH	●	0.5	6	13	60	6
EPP4060-10-TH	●	1.0	6	13	60	6
EPP4060-15-TH	●	1.5	6	13	60	6
EPP4080-03-TH	●	0.3	8	19	75	8
EPP4080-05-TH	●	0.5	8	19	75	8
EPP4080-10-TH	●	1.0	8	19	75	8
EPP4080-15-TH	●	1.5	8	19	75	8
EPP4080-20-TH	●	2.0	8	19	75	8
EPP4100-03-TH	●	0.3	10	22	80	10

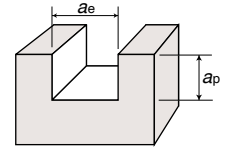
Item code	Stock	Size(mm)				
		Corner radius	Tool dia.	Flute length	Overall length	Shank dia.
EPP4100-05-TH	●	0.5	10	22	80	10
EPP4100-10-TH	●	1.0	10	22	80	10
EPP4100-15-TH	●	1.5	10	22	80	10
EPP4100-20-TH	●	2.0	10	22	80	10
EPP4120-05-TH	●	0.5	12	26	100	12
EPP4120-10-TH	●	1.0	12	26	100	12
EPP4120-15-TH	●	1.5	12	26	100	12
EPP4120-20-TH	●	2.0	12	26	100	12
EPP4120-30-TH	●	3.0	12	26	100	12
EPP4160-10-TH	●	1.0	16	32	110	16
EPP4160-15-TH	●	1.5	16	32	110	16
EPP4160-20-TH	●	2.0	16	32	110	16
EPP4160-30-TH	●	3.0	16	32	110	16
EPP4200-10-TH	●	1.0	20	38	125	20
EPP4200-15-TH	●	1.5	20	38	125	20
EPP4200-20-TH	●	2.0	20	38	125	20
EPP4200-30-TH	●	3.0	20	38	125	20

Tolerance on tool dia. - Epoch TH Power Mill

Tool dia. (DC)	Tolerance on tool dia.
$3 \leq DC \leq 6$	$\begin{matrix} 0 \\ -0.015 \end{matrix}$
$6 < DC \leq 20$	$\begin{matrix} 0 \\ -0.02 \end{matrix}$

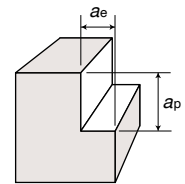
Recommended Cutting Conditions

Epoch TH Power Mill -Short **EPPS4-TH**



<Slotting>

Work material	Alloy steels (200~250HB) SKD61,SKD11				Alloy steels (25~35HRC) SCM440				Pre-hardened steels (35~45HRC) NAK80				Hardened steels (45~55HRC) SKD61,SKT4				
	Cutting range		High speed		General		High speed		General		High speed		General		High speed		General
Depth of cut (mm)	$a_p \leq 0.5DC$ $a_e = 1DC$		$a_p \leq 1DC$ $a_e = 1DC$		$a_p \leq 0.2DC$ $a_e = 1DC$		$a_p \leq 0.5DC$ $a_e = 1DC$		$a_p \leq 0.2DC$ $a_e = 1DC$		$a_p \leq 0.5DC$ $a_e = 1DC$				$a_p \leq 0.2DC$ $a_e = 1DC$		
Tool dia. DC (mm)	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)	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)	
φ3	15,900	1,260	11,100	900	9,600	570	7,950	480	9,280	550	7,690	460			3,990	200	
φ4	11,940	1,440	8,250	1,005	7,200	720	6,000	600	6,960	700	5,800	580			3,000	240	
φ5	9,540	1,530	6,840	1,050	5,700	810	4,800	690	5,510	780	4,640	670			2,430	300	
φ6	7,980	1,590	5,760	1,110	4,800	750	3,900	630	4,640	730	3,770	610			1,950	330	
φ8	5,940	1,650	4,320	1,170	3,600	720	3,000	600	3,480	700	2,900	580			1,500	300	
φ10	4,800	1,530	3,420	1,050	2,850	690	2,400	570	2,760	670	2,320	550			1,200	270	
φ12	3,750	1,410	2,850	990	2,400	660	1,950	540	2,320	640	1,890	520			1,020	240	
φ16	3,000	1,200	2,100	840	1,800	600	1,500	510	1,740	580	1,450	490			750	210	
φ20	2,340	1,140	1,650	780	1,500	570	1,200	480	1,450	550	1,160	460			600	180	



<Side milling>

Work material	Alloy steels (200~250HB) SKD61,SKD11				Alloy steels (25~35HRC) SCM440				Pre-hardened steels (35~45HRC) NAK80				Hardened steels (45~55HRC) SKD61,SKT4				
	Cutting range		High speed		General		High speed		General		High speed		General		High speed		General
Depth of cut (mm)	$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.05DC$		$a_p = 1.5DC$ $a_e = 0.05DC$		
Tool dia. DC (mm)	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)	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)	
φ3	19,100	1,530	15,900	1,280	17,400	960	12,500	780	15,900	900	10,400	650	12,700	600	9,560	440	
φ4	14,300	1,730	11,900	1,440	13,000	1,200	9,600	960	12,000	1,140	7,920	740	9,560	810	7,160	570	
φ5	11,500	1,830	9,600	1,530	10,400	1,350	7,500	1,050	9,560	1,280	6,300	780	7,640	920	5,730	690	
φ6	9,560	1,910	7,970	1,590	8,700	1,280	6,600	1,020	7,970	1,190	5,220	800	6,360	890	4,770	680	
φ8	7,160	2,010	5,970	1,650	6,480	1,200	4,950	960	5,970	1,140	3,960	870	4,770	860	3,590	650	
φ10	5,730	1,830	4,770	1,530	5,220	1,140	3,900	900	4,770	1,050	3,240	800	3,830	840	2,870	630	
φ12	4,770	1,710	3,750	1,440	4,320	1,110	3,300	870	3,750	1,020	2,700	720	3,180	770	2,390	570	
φ16	3,590	1,440	2,930	1,260	3,240	1,020	2,550	810	2,930	930	1,980	620	2,390	680	1,790	510	
φ20	2,870	1,380	2,400	1,140	2,520	960	1,950	750	2,400	870	1,620	600	1,910	620	1,500	470	

[Note]

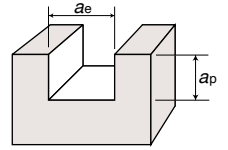
- ① Use a highly rigid and accurate machine as possible.
- ② Use the appropriate coolant for the work material and machining shape.
- ③ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- ④ If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.

Epoch TH Power Mill -Regular

EPP4-TH

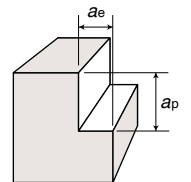
Epoch TH Power Mill -Corner Radius

EPP4-CR-TH



<Slotting>

Work material	Alloy steels (200~250HB) SKD61,SKD11				Alloy steels (25~35HRC) SCM440				Pre-hardened steels (35~45HRC) NAK80				Hardened steels (45~55HRC) SKD61,SKT4			
	High speed		General		High speed		General		High speed		General		High speed		General	
Depth of cut (mm)	$a_p \leq 0.5DC$ $a_e = 1DC$		$a_p \leq 1DC$ $a_e = 1DC$				$a_p \leq 0.5DC$ $a_e = 1DC$				$a_p \leq 0.5DC$ $a_e = 1DC$				$a_p \leq 0.2DC$ $a_e = 1DC$	
Tool dia. DC (mm)	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)	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)
φ3	8,500	820	6,400	490			6,400	440			5,800	360			5,300	240
φ4	6,400	920	4,800	550			4,800	500			4,400	410			4,000	280
φ5	5,100	980	3,800	580			3,800	530			3,500	430			3,200	290
φ6	4,200	1,010	3,200	610			3,200	550			2,900	450			2,700	310
φ8	3,200	1,090	2,400	650			2,400	590			2,200	480			2,000	330
φ10	2,500	950	1,900	580			1,900	520			1,800	440			1,600	290
φ12	2,100	880	1,600	540			1,600	480			1,500	400			1,300	260
φ16	1,600	770	1,200	460			1,200	410			1,100	340			1,000	230
φ20	1,300	750	1,000	460			1,000	420			900	330			800	200

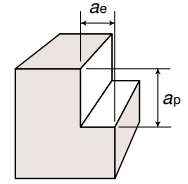


<Side milling>

Work material	Alloy steels (200~250HB) SKD61,SKD11				Alloy steels (25~35HRC) SCM440				Pre-hardened steels (35~45HRC) GENA1,NAK80				Hardened steels (45~55HRC) SKD61,SKT4			
	High speed		General		High speed		General		High speed		General		High speed		General	
Depth of cut (mm)	$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.15DC$		$a_p = 1.5DC$ $a_e = 0.05DC$		$a_p = 1.5DC$ $a_e = 0.1DC$		$a_p = 1.5DC$ $a_e = 0.05DC$		$a_p = 1.5DC$ $a_e = 0.07DC$		$a_p = 1.5DC$ $a_e = 0.02DC$		$a_p = 1.5DC$ $a_e = 0.05DC$	
Tool dia. DC (mm)	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)	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)
φ3	16,000	1,800	9,600	860	14,000	1,400	9,600	770	12,000	1,100	8,500	610	11,000	860	7,400	460
φ4	12,000	1,900	7,200	920	10,000	1,400	7,200	830	8,800	1,100	6,400	660	8,000	900	5,600	500
φ5	9,600	2,100	5,700	1,000	8,300	1,600	5,700	900	7,000	1,200	5,100	720	6,400	990	4,500	550
φ6	8,000	2,200	4,800	1,080	6,900	1,700	4,800	970	5,800	1,300	4,200	750	5,300	1,040	3,700	580
φ8	6,000	2,400	3,600	1,150	5,200	1,900	3,600	1,040	4,400	1,400	3,200	820	4,000	1,120	2,800	630
φ10	4,800	2,200	2,900	1,070	4,100	1,700	2,900	960	3,500	1,300	2,500	740	3,200	1,030	2,200	570
φ12	4,000	2,100	2,400	1,000	3,500	1,600	2,400	900	2,900	1,200	2,100	700	2,700	980	1,900	550
φ16	3,000	1,700	1,800	810	2,600	1,300	1,800	730	2,200	1,000	1,600	570	2,000	780	1,400	440
φ20	2,400	1,400	1,400	670	2,100	1,100	1,400	600	1,800	860	1,300	500	1,590	670	1,110	370

Recommended Cutting Conditions

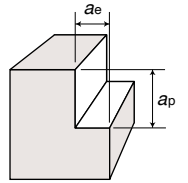
Epoch TH Power Mill -Medium **EPPM4-TH**



<Side milling>

Work material	Alloy steels (200~250HB) SKD61,SKD11		Alloy steels (25~35HRC) SCM440		Pre-hardened steels (35~45HRC) NAK80		Hardened steels (45~55HRC) SKD61,SKT4	
Depth of cut (mm)	$a_p=2.5DC$ $a_e=0.02DC$		$a_p=2.5DC$ $a_e=0.02DC$		$a_p=2.5DC$ $a_e=0.02DC$		$a_p=2.5DC$ $a_e=0.01DC$	
Tool dia. DC (mm)	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)
φ3	8,730	730	7,920	590	6,210	370	3,500	170
φ4	6,480	760	5,940	620	4,680	390	2,950	240
φ5	5,220	850	4,770	690	3,690	420	2,300	300
φ6	4,320	880	3,960	720	3,060	440	1,600	310
φ8	3,240	960	2,970	790	2,340	490	1,450	300
φ10	2,610	890	2,340	710	1,890	450	1,200	300
φ12	2,160	840	1,980	690	1,530	420	900	270
φ16	1,620	680	1,530	580	1,170	350	750	200
φ20	1,260	540	1,170	450	900	270	600	180

Epoch TH Power Mill -Long **EPPL4-TH**



<Side milling>






Work material	Alloy steels (200~250HB) SKD61,SKD11		Alloy steels (25~35HRC) SCM440		Pre-hardened steels (35~45HRC) NAK80		Hardened steels (45~55HRC) SKD61,SKT4	
Depth of cut (mm)	$a_p=3DC$ $a_e=0.02DC$		$a_p=3DC$ $a_e=0.02DC$		$a_p=3DC$ $a_e=0.02DC$		$a_p=3DC$ $a_e=0.01DC$	
Tool dia. DC (mm)	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)
φ6	3,840	740	2,940	530	2,400	380	1,590	230
φ8	2,880	700	2,200	500	1,800	350	1,200	220
φ10	2,280	690	1,750	480	1,400	330	960	210
φ12	1,920	640	1,500	450	1,200	320	800	200
φ16	1,440	550	1,100	420	900	300	600	170
φ20	1,200	500	900	380	700	250	500	150

[Note]

- ① Use a highly rigid and accurate machine as possible.
- ② Use the appropriate coolant for the work material and machining shape.
- ③ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- ④ If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.

Re-grinding

○ Re-grinding compatibility range table

Item code	Product name	Line up tool dia.(mm)	Shape	Re-grinding compatibility range (mm)	
				Outer dia.	End
EPPS-TH	Epoch TH Power Mill -Short	3~20		6~20	3~20
EPP-TH	Epoch TH Power Mill -Regular	3~20		6~20	3~20
EPPM-TH	Epoch TH Power Mill -Medium	3~20		6~20	3~20
EPPL-TH	Epoch TH Power Mill -Long	6~20		6~20	6~20
EPP-CR-TH	Epoch TH Power Mill -Corner radius	3~20		6~20	3~20



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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