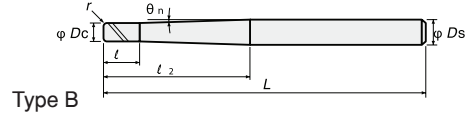
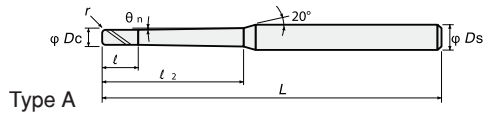




ดอกเอ็นมิลล์

**EPOCH TURBO MILL**

**ETMP4**



Pencil Neck, Corner Radius



Ds ≤ 6 : 0~ -0.005  
6 < Ds ≤ 10 : 0~ -0.006  
10 < Ds ≤ 18 : 0~ -0.008  
18 < Ds : 0~ -0.009

(mm)

Item Code	Stock	Size (mm)							Type
		Dc Tool Dia.	r Corner radius	l2 Under neck length	l Flute length	D1 Neck Dia.	L Overall length	Ds Shank Dia.	
ETMP4020-12-05-TH	●			12					
ETMP4020-16-05-TH	●	2	0.5	16	3	1°	70	6	A
ETMP4020-20-05-TH	●			20					
ETMP4030-18-08-TH	●			18					
ETMP4030-24-08-TH	●	3	0.8	24	4.5	1°	80	6	A
ETMP4030-30-08-TH	●			30					
ETMP4040-24-10-TH	●			24					
ETMP4040-32-10-TH	●	4	1.0	32	6	1°	90	6	A
ETMP4040-40-10-TH	●			40					
ETMP4050-30-12-TH	●			30			90	6	
ETMP4050-40-12-TH	●	5	1.2	40	7.5	1°	100	8	A
ETMP4050-50-12-TH	●			50			110		
ETMP4060-40-15-TH	●			40			100		
ETMP4060-55-15-TH	●	6	1.5	55	9	1°	110	8	A
ETMP4060-67-15-TH	●			67			125		B
ETMP4080-55-20-TH	●			55			110	10	A
ETMP4080-70-20-TH	●	8	2.0	70	12	1°	130	10	B
ETMP4080-90-20-TH	●			90			145	12	A
ETMP4100-73-20-TH	●			73			135	12	B
ETMP4100-95-20-TH	●	10	2.0	95	15	1°	150	16	A
ETMP4100-115-20-TH	●			115			170		
ETMP4120-80-20-TH	●			80			135	16	A
ETMP4120-105-20-TH	●	12	2.0	105	18	1°	160	16	A
ETMP4160-105-30-TH	●			105			160	20	A
ETMP4160-140-30-TH	●	16	3.0	140	24	1°	200	20	B

● : Stocked Items.

Refer to page 609 for Conditions

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing



## Recommended cutting conditions

**ETM-TH**

**ETMLN-TH**

**ETMP-TH**

Select the conditions for use from the five types of cutting conditions below based on the equipment and application. It is recommended that the standard condition be used first.

		Features
Roughing condition	Standard condition	General-purpose condition for low-speed use. Provides stable high-efficiency cutting with the longest tool life.
	High speed condition	Condition for use with high-performance high-speed machines capable of high feed rates. Enables ultra-high-efficiency cutting by enabling higher feed rates due to higher rotation speeds.
	High depth of cutting condition	Condition for machines which are not capable of the feed rates of the standard condition, but which have sufficient rigidity. The reduced feed rate is compensated for by setting a large cutting depth, minimizing reductions in work efficiency.
	Low load condition	Condition which reduces cutting load by reducing the per-flute feed rate. Since cutting resistance can be reduced, it enables use even on machines with low rigidity.
Finish condition		Condition for finish cutting. High-accuracy finishing is possible. (Tolerance on r is $\pm 0.015\text{mm}$ .)

### Standard conditions (Low revolution, High feed)

General-purpose condition for low-speed use. Provides stable high-efficiency cutting with the longest tool life.

Work material (Hardness)	Cutting Conditions	Ratio to standard depth of cut	Dc Tool Dia. (mm)									
			$\phi 2\text{r}0.5$	$\phi 3\text{r}0.8$	$\phi 4\text{r}1$	$\phi 5\text{r}1.2$	$\phi 6\text{r}1.5$	$\phi 8\text{r}2$	$\phi 10\text{r}2$	$\phi 12\text{r}2$	$\phi 16\text{r}3$	$\phi 20\text{r}3$
Cast Iron, Carbon Steels, Alloy Steels (150 ~ 250HB) FC, S50C, SCM	min <sup>-1</sup>	1	12,000	8,000	6,000	4,800	4,000	3,000	2,400	2,000	1,500	1,200
	mm / t		0.11	0.19	0.27	0.33	0.42	0.56	0.70	0.80	0.90	0.91
	mm / min		5,380	6,050	6,380	6,380	6,720	6,720	6,720	6,380	5,380	4,370
Tool Steels (25 ~ 35HRC) SUS304, SKD	min <sup>-1</sup>	1	11,000	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,400	1,100
	mm / t		0.10	0.17	0.24	0.30	0.38	0.51	0.64	0.73	0.82	0.83
	mm / min		4,510	5,110	5,450	5,470	5,680	5,730	5,630	5,540	4,590	3,660
Pre-Harden Steels (35 ~ 45HRC) NAK80, CENA1	min <sup>-1</sup>	1	10,000	6,900	5,200	4,100	3,400	2,600	2,100	1,700	1,300	1,000
	mm / t		0.08	0.14	0.19	0.24	0.30	0.40	0.50	0.57	0.64	0.65
	mm / min		3,200	3,730	3,950	3,900	4,080	4,160	4,200	3,880	3,330	2,600
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	min <sup>-1</sup>	0.7	8,000	5,300	4,000	3,200	2,700	2,000	1,600	1,300	1,000	800
	mm / t		0.08	0.14	0.19	0.24	0.30	0.40	0.50	0.57	0.64	0.65
	mm / min		2,560	2,860	3,040	3,040	3,240	3,200	3,200	2,930	2,560	2,080
Hardened Steels (55 ~ 65HRC) SKD11, SKH51	min <sup>-1</sup>	0.5	8,000	5,300	4,000	3,200	2,700	2,000	1,600	1,300	1,000	800
	mm / t		0.03	0.05	0.08	0.10	0.12	0.16	0.20	0.23	0.26	0.26
	mm / min		1,020	1,140	1,220	1,220	1,300	1,280	1,280	1,190	1,020	830

- [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.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

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Roughing