

CUTTING TOOLS

END MILLS

DEEP SERIES

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(CARBIDE - SQUARE)

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CBN END MILL

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END MILLS

(CARBIDE - BALL)

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(CARBIDE - SQUARE)

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END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH DEEP BALL EVOLUTION

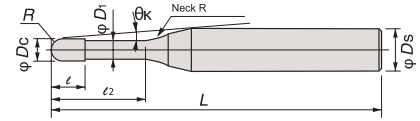
EPDBE2 000-00.00-PN/ATH

2 Flutes



PN Coated

ATH Coated



Straight Neck



$R \leq 0.25 : \pm 0.003$
 $0.25 < R : \pm 0.005$



0 ~ -0.005

(mm)

Improved flute tip shape and neck shape suppresses warping to enable high-accuracy cutting. Use of ATH and PN coatings further extends tool life.

Order No.	Stock	Size (mm)								θ_k Interference Angle	The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool Dia.	l_2 Under Neck Length	l Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R		0.5°	1°	1.5°	2°	3°
EPDBE2001-0.2-PN/ATH	●			0.2						11.76	0.35	0.37	0.39	0.41	0.44
EPDBE2001-0.3-PN/ATH	●	0.05	0.1	0.3	0.08	0.08	45	4	1	11.64	0.46	0.48	0.50	0.52	0.57
EPDBE2001-0.5-PN/ATH	●			0.5						11.40	0.67	0.70	0.73	0.76	0.81
EPDBE2002-0.5-PN/ATH	●			0.5						11.42	0.70	0.72	0.75	0.77	0.82
EPDBE2002-0.75-PN/ATH	●			0.75						11.13	0.96	0.99	1.02	1.05	1.11
EPDBE2002-1-PN/ATH	●			1						10.86	1.22	1.26	1.30	1.33	1.39
EPDBE2002-1.25-PN/ATH	●			1.25						10.60	1.48	1.52	1.57	1.61	1.72
EPDBE2002-1.5-PN/ATH	●	0.1	0.2	1.5	0.15	0.17	50	4	1	10.35	1.74	1.79	1.84	1.88	2.05
EPDBE2002-2-PN/ATH	●			2						9.88	2.25	2.32	2.37	2.45	2.71
EPDBE2002-2.5-PN/ATH	●			2.5						9.46	2.77	2.84	2.91	3.05	3.37
EPDBE2002-3-PN/ATH	●			3						9.07	3.28	3.37	3.48	3.65	4.04
EPDBE2003-0.5-PN/ATH	●			0.5						11.47	0.78	0.82	0.86	0.90	0.98
EPDBE2003-0.75-PN/ATH	●			0.75						11.17	1.05	1.10	1.15	1.20	1.29
EPDBE2003-1-PN/ATH	●			1						10.89	1.31	1.38	1.43	1.49	1.59
EPDBE2003-1.25-PN/ATH	●			1.25						10.62	1.58	1.65	1.72	1.78	1.89
EPDBE2003-1.5-PN/ATH	●	0.15	0.3	1.5	0.25	0.27	50	4	2	10.36	1.84	1.92	1.99	2.06	2.18
EPDBE2003-2-PN/ATH	●			2						9.88	2.36	2.46	2.55	2.62	2.76
EPDBE2003-2.5-PN/ATH	●			2.5						9.45	2.89	3.00	3.10	3.18	3.36
EPDBE2003-3-PN/ATH	●			3						9.05	3.41	3.53	3.64	3.73	4.02
EPDBE2004-0.75-PN/ATH	●			0.75						11.21	1.04	1.09	1.14	1.19	1.28
EPDBE2004-1-PN/ATH	●			1						10.91	1.31	1.37	1.43	1.48	1.58
EPDBE2004-1.5-PN/ATH	●			1.5						10.37	1.84	1.92	1.99	2.06	2.17
EPDBE2004-2-PN/ATH	●			2						9.88	2.36	2.46	2.54	2.62	2.75
EPDBE2004-2.5-PN/ATH	●	0.2	0.4	2.5	0.3	0.37	50	4	2	9.43	2.89	3.00	3.09	3.18	3.34
EPDBE2004-3-PN/ATH	●			3						9.03	3.41	3.53	3.63	3.73	4.01
EPDBE2004-3.5-PN/ATH	●			3.5						8.65	3.93	4.06	4.18	4.27	4.67
EPDBE2004-4-PN/ATH	●			4						8.30	4.45	4.59	4.71	4.83	5.33
EPDBE2004-4.5-PN/ATH	●			4.5						7.99	4.97	5.12	5.25	5.43	6.00
EPDBE2005-1-PN/ATH	●			1						10.94	1.31	1.37	1.42	1.47	1.57
EPDBE2005-1.5-PN/ATH	●			1.5						10.39	1.83	1.91	1.98	2.05	2.17
EPDBE2005-2-PN/ATH	●			2						9.88	2.36	2.45	2.54	2.61	2.75
EPDBE2005-2.5-PN/ATH	●			2.5						9.42	2.88	2.99	3.09	3.17	3.33
EPDBE2005-3-PN/ATH	●	0.25	0.5	3	0.35	0.47	50	4	2	9.00	3.41	3.53	3.63	3.72	3.99
EPDBE2005-4-PN/ATH	●			4						8.27	4.45	4.59	4.71	4.82	5.32
EPDBE2005-5-PN/ATH	●			5						7.64	5.48	5.65	5.78	6.01	6.65
EPDBE2005-5.5-PN/ATH	●			5.5						7.36	6.00	6.17	6.31	6.61	7.31
EPDBE2005-6-PN/ATH	●			6						7.10	6.52	6.70	6.88	7.21	7.97
EPDBE2005-8-PN/ATH	●			8						6.23	8.58	8.79	9.16	9.60	10.63
EPDBE2006-1-PN/ATH	●			1						10.98	1.44	1.54	1.63	1.71	1.88
EPDBE2006-2-PN/ATH	●			2						9.88	2.52	2.66	2.79	2.91	3.13
EPDBE2006-2.5-PN/ATH	●			2.5						9.41	3.05	3.22	3.36	3.49	3.73
EPDBE2006-3-PN/ATH	●	0.3	0.6	3	0.4	0.57	50	4	4	8.98	3.58	3.77	3.93	4.07	4.32
EPDBE2006-3.5-PN/ATH	●			3.5						8.58	4.12	4.32	4.49	4.64	4.91
EPDBE2006-4-PN/ATH	●			4						8.22	4.64	4.86	5.04	5.20	5.48
EPDBE2006-4.5-PN/ATH	●			4.5						7.89	5.17	5.40	5.59	5.76	6.06

● : Stocked item



Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool Dia.	ℓ ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ _k Interference Angle	0.5°	1°	1.5°	2°	3°
EPDBE2006-5-PN/ATH	●			5						7.59	5.70	5.94	6.14	6.32	6.63
EPDBE2006-5.5-PN/ATH	●			5.5						7.31	6.22	6.48	6.69	6.87	7.29
EPDBE2006-6-PN/ATH	●			6						7.04	6.75	7.02	7.23	7.42	7.96
EPDBE2006-7-PN/ATH	●	0.3	0.6	7	0.4	0.57	50	4	4	6.57	7.79	8.08	8.32	8.52	9.28
EPDBE2006-8-PN/ATH	●			8						6.16	8.84	9.15	9.40	9.61	10.61
EPDBE2006-9-PN/ATH	●			9						5.79	9.88	10.21	10.47	10.79	11.94
EPDBE2006-10-PN/ATH	●			10						5.47	10.92	11.26	11.54	11.99	13.27
EPDBE2006-12-PN/ATH	●			12						4.92	12.99	13.37	13.72	14.38	15.92
EPDBE2007-2-PN/ATH	●			2						9.88	2.52	2.66	2.79	2.90	3.12
EPDBE2007-4-PN/ATH	●	0.35	0.7	4	0.45	0.67	50	4	4	8.18	4.64	4.86	5.04	5.20	5.48
EPDBE2007-6-PN/ATH	●			6						6.98	6.74	7.01	7.23	7.42	7.94
EPDBE2007-8-PN/ATH	●			8						6.09	8.83	9.14	9.39	9.61	10.60
EPDBE2008-2-PN/ATH	●			2						9.87	2.51	2.65	2.78	2.89	3.11
EPDBE2008-4-PN/ATH	●			4						8.14	4.64	4.85	5.03	5.19	5.47
EPDBE2008-5-PN/ATH	●	0.4	0.8	5	0.5	0.77	50	4	4	7.48	5.69	5.93	6.13	6.31	6.61
EPDBE2008-6-PN/ATH	●			6						6.92	6.74	7.01	7.23	7.41	7.92
EPDBE2008-8-PN/ATH	●			8						6.01	8.83	9.14	9.39	9.60	10.58
EPDBE2008-10-PN/ATH	●			10						5.32	10.91	11.26	11.53	11.97	13.23
EPDBE2009-2-PN/ATH	●			2						9.87	2.51	2.65	2.77	2.89	3.10
EPDBE2009-4-PN/ATH	●	0.45	0.9	4	0.6	0.87	50	4	4	8.09	4.64	4.85	5.03	5.18	5.46
EPDBE2009-6-PN/ATH	●			6						6.85	6.74	7.00	7.22	7.41	7.91
EPDBE2009-8-PN/ATH	●			8						5.94	8.83	9.14	9.38	9.60	10.56
EPDBE2010-2-PN/ATH	●			2						9.84	2.54	2.67	2.79	2.90	3.11
EPDBE2010-3-PN/ATH	●			3						8.84	3.61	3.78	3.93	4.06	4.30
EPDBE2010-4-PN/ATH	●			4						8.02	4.66	4.87	5.04	5.20	5.47
EPDBE2010-5-PN/ATH	●			5						7.34	5.72	5.95	6.14	6.31	6.61
EPDBE2010-6-PN/ATH	●			6			50			6.77	6.76	7.02	7.23	7.42	7.92
EPDBE2010-7-PN/ATH	●			7						6.28	7.81	8.09	8.32	8.52	9.25
EPDBE2010-8-PN/ATH	●			8						5.85	8.85	9.15	9.40	9.61	10.58
EPDBE2010-9-PN/ATH	●	0.5	1	9	0.8	0.96		4	4	5.48	9.89	10.21	10.47	10.78	11.91
EPDBE2010-10-PN/ATH	●			10						5.15	10.93	11.27	11.54	11.98	13.23
EPDBE2010-12-PN/ATH	●			12						4.60	13.00	13.37	13.72	14.37	15.89
EPDBE2010-13-PN/ATH	●			13						4.37	14.04	14.42	14.86	15.57	17.21
EPDBE2010-14-PN/ATH	●			14						4.16	15.07	15.47	16.00	16.76	18.54
EPDBE2010-16-PN/ATH	●			16						3.79	1.13	17.56	18.28	19.16	21.20
EPDBE2010-18-PN/ATH	●			18						3.49	19.19	19.66	20.56	21.55	23.85
EPDBE2010-20-PN/ATH	●			20			60			3.23	21.25	21.84	22.84	23.94	26.51
EPDBE2011-2-PN/ATH	●			2						9.81	2.58	2.70	2.81	2.92	3.12
EPDBE2011-4-PN/ATH	●			4						7.95	4.69	4.89	5.06	5.21	5.48
EPDBE2011-6-PN/ATH	●	0.55	1.1	6	1	1.05	50	4	4	6.68	6.79	7.04	7.25	7.43	7.94
EPDBE2011-8-PN/ATH	●			8						5.76	8.87	9.17	9.41	9.61	10.59
EPDBE2011-10-PN/ATH	●			10						5.06	10.95	11.28	11.55	12.00	13.25
EPDBE2012-4-PN/ATH	●			4						7.89	4.69	4.88	5.05	5.20	5.47
EPDBE2012-6-PN/ATH	●			6						6.60	6.79	7.03	7.24	7.42	7.92
EPDBE2012-8-PN/ATH	●	0.6	1.2	8	1.1	1.15	50	4	4	5.67	8.87	9.16	9.40	9.61	10.58
EPDBE2012-10-PN/ATH	●			10						4.97	10.95	11.28	11.54	11.99	13.23
EPDBE2012-12-PN/ATH	●			12			55			4.43	13.02	13.38	13.73	14.38	15.89
EPDBE2014-8-PN/ATH	●			8			50			5.48	8.89	9.18	9.41	9.61	10.58
EPDBE2014-12-PN/ATH	●	0.7	1.4	12	1.3	1.34	55	4	4	4.24	13.04	13.39	13.74	14.39	15.89
EPDBE2014-16-PN/ATH	●			16						3.46	17.16	17.57	18.31	19.17	21.20
EPDBE2015-4-PN/ATH	●			4						7.68	4.71	4.89	5.06	5.20	5.46
EPDBE2015-6-PN/ATH	●			6						6.33	6.81	7.04	7.25	7.42	7.91
EPDBE2015-8-PN/ATH	●			8			50			5.39	8.89	9.17	9.41	9.61	10.56
EPDBE2015-10-PN/ATH	●			10						4.68	10.96	11.29	11.55	11.98	13.22
EPDBE2015-12-PN/ATH	●	0.75	1.5	12	1.35	1.44		4	4	4.14	13.03	13.39	13.74	14.38	15.87
EPDBE2015-14-PN/ATH	●			14			55			3.72	15.10	15.48	16.02	16.77	18.52
EPDBE2015-16-PN/ATH	●			16						3.77	17.16	17.57	18.30	19.16	21.18
EPDBE2015-18-PN/ATH	●			18						3.08	19.22	19.69	20.58	21.56	23.83
EPDBE2015-20-PN/ATH	●			20			60			2.84	21.27	21.87	22.86	23.95	No interference
EPDBE2016-8-PN/ATH	●			8			50			5.28	8.89	9.17	9.40	9.60	10.55
EPDBE2016-12-PN/ATH	●	0.8	1.6	12	1.4	1.54	55	4	4	4.05	13.03	13.39	13.73	14.37	15.85
EPDBE2016-16-PN/ATH	●			16						3.28	17.16	17.57	18.29	19.15	21.16
EPDBE2016-20-PN/ATH	●			20			60			2.75	21.27	21.87	22.86	23.94	No interference

● : Stocked items

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

DEEP SERIES
ตระกูลดีฟ

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool Dia.	ℓ ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ _k Interference Angle	0.5°	1°	1.5°	2°	3°
EPDBE2018-8-PN/ATH	●			8			50			5.06	8.91	9.18	9.41	9.61	10.54
EPDBE2018-12-PN/ATH	●			12						3.83	13.05	13.40	13.74	14.38	15.85
EPDBE2018-16-PN/ATH	●	0.9	1.8	16	1.6	1.73	55	4	4	3.09	17.17	17.58	18.31	19.16	21.16
EPDBE2018-20-PN/ATH	●			20			60			2.58	21.28	21.88	22.87	23.95	No interference
EPDBE2020-3-PN/ATH	●			3						8.26	3.71	3.84	3.96	4.07	4.29
EPDBE2020-4-PN/ATH	●			4						7.23	4.75	4.92	5.07	5.21	5.45
EPDBE2020-6-PN/ATH	●			6			50			5.78	6.84	7.07	7.26	7.43	7.89
EPDBE2020-8-PN/ATH	●			8						4.81	8.92	9.19	9.42	9.61	10.54
EPDBE2020-10-PN/ATH	●			10						4.12	11.00	11.30	11.56	11.99	13.20
EPDBE2020-12-PN/ATH	●			12						3.61	13.06	13.41	13.76	14.39	15.85
EPDBE2020-13-PN/ATH	●			13			55			3.39	14.10	14.45	14.90	15.58	17.18
EPDBE2020-14-PN/ATH	●			14						3.20	15.13	15.50	16.04	16.78	18.51
EPDBE2020-16-PN/ATH	●	1	2	16	1.7	1.92		4	4	2.88	17.19	17.59	18.32	19.17	No interference
EPDBE2020-18-PN/ATH	●			18						2.62	19.24	19.72	20.60	21.57	No interference
EPDBE2020-20-PN/ATH	●			20			60			2.40	21.30	21.90	22.88	23.96	No interference
EPDBE2020-22-PN/ATH	●			22						2.22	23.35	24.08	25.16	26.35	No interference
EPDBE2020-25-PN/ATH	●			25			65			1.99	26.42	27.35	28.58	No interference	No interference
EPDBE2020-30-PN/ATH	●			30			70			1.70	31.53	32.80	34.29	No interference	No interference
EPDBE2020-35-PN/ATH	●			35			75			1.48	36.65	38.24	No interference	No interference	No interference
EPDBE2020-40-PN/ATH	●			40			80			1.31	41.86	43.69	No interference	No interference	No interference
EPDBE2025-6-PN/ATH	●			6			50			5.04	6.88	7.09	7.27	7.43	7.87
EPDBE2025-10-PN/ATH	●			10						3.43	11.03	11.32	11.56	12.00	13.18
EPDBE2025-15-PN/ATH	●	1.25	2.5	15	2	2.4	55	4	4	2.46	16.18	16.56	17.20	17.98	No interference
EPDBE2025-20-PN/ATH	●			20			60			1.91	21.32	21.93	22.90	No interference	No interference
EPDBE2025-25-PN/ATH	●			25			65			1.57	26.44	27.38	28.60	No interference	No interference
EPDBE2025-30-PN/ATH	●			30			70			1.33	31.55	32.82	No interference	No interference	No interference
EPDBE2030-8-PN/ATH	●			8			55			6.19	8.99	9.23	9.44	9.62	10.51
EPDBE2030-10-PN/ATH	●			10						5.41	11.06	11.34	11.57	12.01	13.16
EPDBE2030-13-PN/ATH	●			13						4.56	14.15	14.48	14.94	15.60	17.15
EPDBE2030-16-PN/ATH	●	1.5	3	16	2.5	2.88	60	6	4	3.93	17.24	17.61	18.36	19.19	21.13
EPDBE2030-20-PN/ATH	●			20			65			3.33	21.34	21.96	22.92	23.97	26.44
EPDBE2030-25-PN/ATH	●			25			70			2.79	26.46	27.41	28.62	29.96	No interference
EPDBE2030-30-PN/ATH	●			30			75			2.40	31.57	32.85	34.32	35.94	No interference
EPDBE2030-35-PN/ATH	●			35			80			2.11	36.72	38.30	40.03	41.92	No interference
EPDBE2035-15-PN/ATH	●			15			60			3.68	16.25	16.60	17.26	18.03	19.81
EPDBE2035-25-PN/ATH	●	1.75	3.5	25	2.75	3.35	70	6	4	2.43	26.49	27.46	28.67	29.99	No interference
EPDBE2035-35-PN/ATH	●			35			80			1.82	36.79	38.36	40.07	No interference	No interference
EPDBE2035-45-PN/ATH	●			45			90			1.45	47.22	49.25	No interference	No interference	No interference
EPDBE2040-10-PN/ATH	●			10			55			4.38	11.10	11.36	11.58	12.00	13.10
EPDBE2040-13-PN/ATH	●			13			60			3.57	14.19	14.50	14.95	15.59	17.08
EPDBE2040-16-PN/ATH	●			16						3.01	17.27	17.63	18.37	19.18	No interference
EPDBE2040-20-PN/ATH	●			20			65			2.49	21.37	21.99	22.93	23.96	No interference
EPDBE2040-25-PN/ATH	●	2	4	25	3	3.85	70	6	4	2.05	26.49	27.44	28.63	29.95	No interference
EPDBE2040-30-PN/ATH	●			30			75			1.74	31.59	32.89	34.34	No interference	No interference
EPDBE2040-35-PN/ATH	●			35			80			1.51	36.78	38.33	40.04	No interference	No interference
EPDBE2040-40-PN/ATH	●			40						1.34	41.99	43.78	No interference	No interference	No interference
EPDBE2040-45-PN/ATH	●			45			90			1.20	47.20	49.23	No interference	No interference	No interference
EPDBE2040-50-PN/ATH	●			50			100			1.08	52.42	54.68	No interference	No interference	No interference
EPDBE2050-20-PN/ATH	●			20			65			1.42	21.36	21.95	No interference	No interference	No interference
EPDBE2050-25-PN/ATH	●	2.5	5	25	3.5	4.85	70	6	4	1.14	26.48	27.39	No interference	No interference	No interference
EPDBE2050-30-PN/ATH	●			30			75			0.95	31.58	No interference	No interference	No interference	No interference
EPDBE2050-40-PN/ATH	●			40			80			0.72	41.97	No interference	No interference	No interference	No interference
EPDBE2060-12-PN/ATH	●			12			60			0	No interference	No interference	No interference	No interference	No interference
EPDBE2060-20-PN/ATH	●	3	6	20	6	5.85	65	6	-	0	No interference	No interference	No interference	No interference	No interference
EPDBE2060-30-PN/ATH	●			30			70			0	No interference	No interference	No interference	No interference	No interference
EPDBE2060-50-PN/ATH	●			50			100			0	No interference	No interference	No interference	No interference	No interference

● : Stocked item



Recommended cutting conditions

EPDBE-PN

EPDBE-ATH

High efficiency cutting condition

High accuracy cutting condition

Recommended range				PN series											
				ATH series											
Work material				1		2		3		4		5		6	
				Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut				120%		100%		90%		80%		65%		60%	
Ball Radius R (mm)	Tool Dia. (mm)	Under neck Length (mm)	a_p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
0.05	0.1	0.2	0.008	50,000	300	50,000	250	50,000	250	50,000	225	50,000	200	50,000	188
		0.3	0.006	50,000	300	50,000	250	50,000	250	50,000	225	50,000	200	50,000	188
		0.5	0.004	50,000	300	50,000	250	50,000	250	50,000	225	50,000	200	50,000	188
0.1	0.2	0.5	0.02	50,000	420	50,000	350	50,000	350	50,000	325	45,500	273	42,000	210
		0.75	0.017	50,000	420	50,000	350	50,000	350	50,000	325	45,500	273	42,000	210
		1	0.014	50,000	420	50,000	350	50,000	350	50,000	325	45,500	273	42,000	210
		1.25	0.011	50,000	378	50,000	315	48,600	306	45,900	269	40,500	219	37,800	170
		1.5	0.008	50,000	378	50,000	315	48,600	306	45,900	269	40,500	219	37,800	170
		2	0.008	50,000	378	50,000	315	48,600	306	45,900	269	40,500	219	37,800	170
		2.5	0.006	48,000	323	48,000	269	43,200	242	40,800	212	36,000	173	33,600	134
		3	0.004	48,000	323	48,000	269	43,200	242	40,800	212	36,000	173	33,600	134
		0.5	0.027	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336
0.15	0.3	0.75	0.024	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336
		1	0.021	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336
		1.25	0.019	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336
		1.5	0.016	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336
		2	0.012	50,000	540	50,000	450	48,600	437	45,900	372	40,500	310	37,800	272
		2.5	0.01	50,000	540	50,000	450	48,600	437	45,900	372	40,500	310	37,800	272
		3	0.008	50,000	540	50,000	450	48,600	437	45,900	372	40,500	310	37,800	272
		0.75	0.043	50,000	967	50,000	840	50,000	839	50,000	770	46,800	655	43,680	612
		1	0.04	50,000	967	50,000	840	50,000	839	50,000	770	46,800	655	43,680	612
0.2	0.4	1.5	0.034	50,000	829	50,000	720	50,000	719	50,000	660	46,800	468	43,680	437
		2	0.028	50,000	691	50,000	600	50,000	600	50,000	550	46,800	468	43,680	437
		2.5	0.022	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	36,288	272
		3	0.016	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	36,288	272
		3.5	0.012	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	36,288	272
		4	0.01	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	36,288	272
		4.5	0.008	46,080	470	38,400	392	34,560	353	32,640	305	28,800	245	26,880	228
		1	0.045	50,000	1,500	50,000	1,500	46,800	1,404	44,200	1,193	39,000	1,053	36,400	743
		1.5	0.04	50,000	1,500	50,000	1,500	46,800	1,404	44,200	1,193	39,000	1,053	36,400	681
0.25	0.5	2	0.035	50,000	1,200	50,000	1,200	46,800	1,123	44,200	955	39,000	842	36,400	681
		2.5	0.033	50,000	1,081	50,000	1,000	42,120	758	39,780	645	35,100	568	32,760	502
		3	0.03	50,000	900	46,800	842	42,120	758	39,780	645	35,100	568	25,200	386
		4	0.02	43,200	778	36,000	648	32,400	583	30,600	496	32,400	524	25,200	386
		5	0.018	43,200	778	36,000	648	32,400	583	30,600	496	32,400	524	25,200	386
		5.5	0.015	38,400	653	32,000	544	28,800	490	27,200	416	24,000	367	22,400	324
		6	0.013	38,400	653	32,000	544	28,800	490	27,200	416	24,000	367	22,400	324
		8	0.008	38,400	653	32,000	544	28,800	490	27,200	416	24,000	367	22,400	324
		1	0.075	50,000	2,250	50,000	2,250	50,000	2,250	50,000	1,950	48,000	1,728	44,800	1,344
0.3	0.6	2	0.063	50,000	2,250	50,000	2,250	50,000	2,250	50,000	1,950	48,000	1,728	44,800	1,344
		2.5	0.046	50,000	1,800	50,000	1,800	50,000	1,800	50,000	1,560	48,000	1,382	44,800	986
		3	0.041	50,000	1,800	50,000	1,800	50,000	1,800	50,000	1,560	48,000	1,382	44,800	986
		3.5	0.035	50,000	1,710	50,000	1,710	50,000	1,709	48,960	1,452	43,200	1,183	40,320	843
		4	0.026	50,000	1,710	50,000	1,710	50,000	1,709	48,960	1,452	43,200	1,183	40,320	766
		4.5	0.022	50,000	1,350	50,000	1,350	48,600	1,313	45,900	1,074	40,500	875	37,800	681
		5	0.02	50,000	1,350	46,800	1,264	42,120	1,138	39,780	931	35,100	758	32,760	590
		5.5	0.017	50,000	1,350	46,800	1,264	42,120	1,138	39,780	931	35,100	758	32,760	590
		6	0.015	50,000	1,350	46,800	1,264	42,120	1,138	39,780	931	35,100	758	32,760	590
		7	0.015	38,400	979	32,000	816	28,800	881	27,200	601	24,000	490	22,400	495
		8	0.015	38,400	979	32,000	816	28,800	734	27,200	601	24,000	490	22,400	381
		9	0.012	38,400	979	32,000	816	28,800	734	27,200	601	24,000	490	22,400	381
		10	0.009	33,600	857	28,000	714	25,200	643	23,800	526	21,000	428	19,600	333
		12	0.007	28,800	691	24,000	576	21,600	518	20,400	424	18,000	346	16,800	269
0.35	0.7	2	0.092	50,000	2,475	50,000	2,475	50,000	2,475	50,000	2,155	48,000	1,932	42,000	1,188
		4	0.041	50,000	1,880	50,000	1,880	50,000	1,880	48,960	1,609	43,200	1,321	37,800	846
		6	0.027	50,000	1,485	46,800	1,390	42,120	1,251	39,780	1,028	35,100	848	30,240	641
		8	0.02	38,400	1,013	32,000	844	28,800	760	27,200	625	24,000	515	22,400	422
0.4	0.8	2	0.12	50,000	2,700	50,000	2,700	50,000	2,700	50,000	2,400	48,000	2,592	44,800	1,882
		4	0.078	50,000	2,700	50,000	2,700	50,000	2,700	50,000	2,400	48,000	2,592	44,800	1,882
		5	0.059	50,000	2,431	50,000	2,429	50,000	2,431	48,960	2,114	43,200	2,123	40,320	1,524
		6	0.042	50,000	2,269	50,000	2,267	45,360	2,058	42,840	1,727	37,800	1,429	35,280	1,245
		8	0.02	49,920	1,617	41,600	1,348	37,440	1,213	35,360	1,018	31,200	842	29,120	733
		10	0.02	38,400	1,175	32,000	979	28,800	881	27,200	740	24,000	612	22,400	533

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Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกลึงมุม R

Square

หัวตัด

Taper Ball

หัวตัดแป้นบอล

Roughing

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Carbide Endmill
เอ็นมิลล์คาร์ไบด์

HSS Endmill
เอ็นมิลล์ไฮสปีด

Ball
หัวบอล

Radius
หัวก้นมุม R

Square
หัวสี่

Taper Ball
หัวตเปอวอล

Roughing

Recommended range				PN series											
				ATH series											
Work material				1		2		3		4		5		6	
				Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut				120%		100%		90%		80%		65%		60%	
Ball Radius R (mm)	Tool Dia. (mm)	Under neck Length (mm)	a _p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
0.45	0.9	2	0.135	50,000	3,197	50,000	3,197	50,000	3,197	50,000	2,821	45,600	2,411	42,560	2,138
		4	0.081	50,000	2,771	50,000	2,771	50,000	2,771	48,450	2,369	42,750	1,959	39,900	1,737
		6	0.05	50,000	2,302	47,880	2,020	43,092	1,818	40,698	1,515	35,910	1,253	33,516	1,111
		8	0.036	43,776	1,679	36,480	1,399	32,832	1,259	31,008	1,049	27,360	868	25,536	770
0.5	1	2	0.2	50,000	3,750	50,000	3,750	48,600	3,645	45,900	3,098	43,200	2,722	37,800	2,268
		3	0.2	50,000	3,750	50,000	3,750	48,600	3,645	45,900	3,098	43,200	2,722	37,800	2,268
		4	0.14	50,000	3,750	50,000	3,750	48,600	3,645	45,900	3,098	43,200	2,722	37,800	2,268
		5	0.09	50,000	3,500	46,800	3,276	42,120	2,948	39,780	2,596	43,200	2,540	32,760	1,835
		6	0.06	50,000	3,151	42,120	2,654	40,824	2,558	38,556	2,319	38,880	2,353	29,484	1,379
		7	0.06	46,656	2,100	38,880	1,750	34,992	1,574	33,048	1,338	31,590	1,323	27,216	1,061
		8	0.06	46,656	2,100	38,880	1,750	34,992	1,574	33,048	1,338	31,590	1,323	27,216	979
		9	0.045	46,656	2,100	38,880	1,750	34,992	1,574	33,048	1,338	31,590	1,323	27,216	979
		10	0.038	46,656	2,100	38,880	1,750	34,992	1,574	33,048	1,338	31,590	1,323	27,216	979
		12	0.025	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		13	0.023	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		14	0.02	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		16	0.015	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		18	0.012	30,240	1,210	25,200	1,008	22,680	907	21,420	771	18,900	635	17,640	564
		20	0.01	25,920	1,037	21,600	864	19,440	778	18,360	661	16,200	544	15,120	484
0.55	1.1	2	0.2	50,000	3,924	50,000	3,924	45,360	3,560	42,840	2,927	37,800	2,452	35,280	2,176
		4	0.14	50,000	3,924	50,000	3,924	45,360	3,560	42,840	2,927	37,800	2,452	35,280	2,176
		6	0.06	47,736	2,767	39,780	2,306	35,802	2,075	33,813	1,706	29,835	1,430	27,846	1,268
		8	0.06	47,736	2,306	39,780	2,306	35,802	1,729	31,212	1,312	27,540	1,100	25,704	975
		10	0.038	47,736	2,306	39,780	1,774	35,802	1,729	31,212	1,312	27,540	1,100	25,704	975
0.6	1.2	4	0.16	50,000	3,924	46,154	3,743	41,538	3,260	39,230	2,717	36,923	2,555	32,307	1,860
		6	0.11	44,928	2,570	37,440	2,142	33,696	2,103	31,824	2,069	30,240	2,062	26,208	1,048
		8	0.06	44,928	2,570	37,440	2,142	33,696	2,103	31,824	2,069	30,240	2,062	26,208	1,048
		10	0.053	41,472	1,940	34,560	1,708	31,104	1,456	29,376	1,322	27,000	1,069	24,192	871
		12	0.045	41,472	1,940	34,560	1,618	31,104	1,456	29,376	1,322	25,920	1,026	24,192	871
0.7	1.4	8	0.11	39,312	2,830	32,760	2,359	29,484	2,123	27,846	1,805	24,570	1,533	22,932	1,376
		12	0.053	36,288	1,960	30,240	1,633	27,216	1,470	25,704	1,249	22,680	1,062	21,168	953
		16	0.035	26,880	1,371	22,400	1,142	20,160	1,028	19,040	874	16,800	743	15,680	666
0.75	1.5	4	0.2	50,000	4,951	42,000	4,158	37,800	3,742	35,700	3,213	31,500	2,552	29,400	2,205
		6	0.2	50,000	4,951	42,000	4,158	37,800	3,742	35,700	3,213	31,500	2,552	29,400	2,205
		8	0.09	39,312	2,802	32,760	2,627	29,484	2,101	27,846	1,805	24,570	1,434	22,932	1,239
		10	0.09	36,288	2,586	30,240	2,156	27,216	1,940	25,704	1,666	22,680	1,323	21,168	1,143
		12	0.09	36,288	2,155	30,240	1,796	27,216	1,616	25,704	1,388	22,680	1,103	21,168	953
		14	0.075	32,256	1,810	30,240	1,796	24,192	1,357	22,848	1,165	20,160	925	18,816	799
		16	0.038	26,880	1,508	22,400	1,257	20,160	1,131	19,040	971	16,800	771	15,680	666
		18	0.038	26,880	1,508	22,400	1,257	20,160	1,131	19,040	971	16,800	771	15,680	666
0.8	1.6	20	0.038	26,880	1,508	22,400	1,257	20,160	1,131	19,040	971	16,800	771	15,680	666
		8	0.22	43,680	3,669	36,400	3,058	32,760	2,752	30,940	2,493	27,300	2,129	23,660	1,590
		12	0.098	39,312	3,467	32,760	2,889	29,484	2,601	27,846	2,176	24,570	1,858	21,294	1,289
		16	0.06	33,696	2,123	28,080	1,769	25,272	1,592	23,868	1,332	21,060	1,138	19,656	991
0.9	1.8	20	0.04	24,960	1,485	20,800	1,238	18,720	1,114	17,680	932	15,600	796	14,560	693
		8	0.26	40,560	3,894	33,800	3,245	30,420	2,920	28,730	2,413	25,350	2,008	23,660	1,704
		12	0.105	33,696	2,426	28,080	2,022	25,272	1,819	23,868	1,504	21,060	1,250	19,565	1,062
		16	0.068	33,696	2,426	28,080	2,022	25,272	1,819	23,868	1,504	21,060	1,250	19,565	1,062
1	2	20	0.045	24,960	1,697	20,800	1,414	18,720	1,273	17,680	1,052	15,600	875	14,560	743
		3	0.4	37,800	5,670	31,500	4,725	28,350	4,253	26,775	3,616	23,625	3,049	22,050	2,646
		4	0.4	37,800	5,670	31,500	4,725	28,350	4,253	26,775	3,616	23,625	3,049	22,050	2,646
		6	0.4	37,800	5,103	31,500	4,253	28,350	3,827	26,775	3,213	23,625	2,693	22,050	2,381
		8	0.28	37,800	5,103	31,500	4,253	28,350	3,827	26,775	3,213	23,625	2,693	22,050	2,381
		10	0.21	35,280	4,234	29,400	3,528	26,460	3,175	24,990	2,699	22,050	2,249	19,110	1,468
		12	0.12	31,752	3,809	26,460	3,175	23,814	2,858	22,491	2,430	19,845	2,051	17,199	1,321
		13	0.12	31,752	3,809	26,460	3,175	23,814	2,858	22,491	2,430	19,845	2,024	15,876	1,016
		14	0.12	31,752	3,301	26,460	2,752	23,814	2,477	22,491	2,106	18,428	1,629	15,876	1,016
		16	0.12	29,484	2,123	24,570	1,769	22,113	1,593	20,885	1,353	18,428	1,467	15,876	914
		18	0.09	27,216	1,960	22,680	1,633	20,412	1,470	19,278	1,249	18,428	1,354	15,876	914
		20	0.075	27,216	1,960	22,680	1,633	20,412	1,470	19,278	1,249	18,428	1,128	15,876	914
		22	0.05	21,420	1,457	17,850	1,214	16,065	1,092	15,173	929	13,388	774	14,994	816
		25	0.05	20,160	1,371	16,800	1,142	15,120	1,028	14,280	874	12,600	728	14,112	768
		30	0.03	20,160	1,371	16,800	1,142	15,120	1,028	14,280	874	12,600	728	14,112	768
		35	0.025	17,640	1,129	14,700	941	13,230	847	12,495	720	11,025	600	10,290	527



Recommended range				PN series											
				ATH series											
Work material				1		2		3		4		5		6	
				Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut				120%		100%		90%		80%		65%		60%	
Ball Radius R (mm)	Tool Dia. (mm)	Under neck Length (mm)	a_p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
1.25	2.5	6	0.5	33,300	6,075	27,750	5,063	24,975	4,556	23,588	3,797	20,813	3,088	19,425	2,531
		10	0.34	33,300	6,075	27,750	5,063	24,975	4,556	23,588	3,797	20,813	3,088	19,425	2,531
		15	0.15	25,974	3,411	21,645	2,842	19,481	2,558	18,398	2,132	16,234	2,023	15,152	1,421
		20	0.12	23,976	2,624	19,980	2,186	17,982	1,968	16,983	1,640	16,234	1,445	13,986	1,093
		25	0.098	23,976	2,360	19,980	1,967	17,982	1,770	16,983	1,475	14,985	1,200	13,986	983
		30	0.055	17,760	1,836	14,800	1,530	13,320	1,377	12,580	1,148	11,100	933	10,360	765
1.5	3	8	0.6	28,800	6,480	24,000	5,400	21,600	4,860	20,400	4,100	18,000	3,402	16,800	3,024
		10	0.42	28,800	6,480	24,000	5,400	21,600	4,860	20,400	4,100	18,000	3,402	16,800	3,024
		13	0.315	26,880	4,838	22,400	4,032	20,160	3,629	19,040	3,061	16,800	2,540	15,680	2,258
		16	0.315	26,880	4,355	22,400	3,629	20,160	3,266	19,040	2,755	16,800	2,286	14,560	1,888
		20	0.18	22,464	3,033	18,720	2,527	16,848	2,275	15,912	1,919	14,040	1,593	12,096	1,307
		25	0.12	22,464	3,033	18,720	2,527	16,848	2,275	15,912	1,919	14,040	1,593	12,096	1,307
		30	0.12	20,736	2,800	17,280	2,333	15,552	2,100	14,688	1,771	12,960	1,470	12,096	1,307
		35	0.08	15,360	1,958	12,800	1,632	11,520	1,469	10,880	1,239	9,600	1,028	10,752	1,097
1.75	3.5	15	0.36	21,450	4,399	17,875	3,666	16,088	3,299	15,194	2,750	13,406	2,236	12,513	1,833
		25	0.21	17,820	2,736	14,850	2,280	13,365	2,052	12,623	1,710	11,138	1,391	10,395	1,140
		35	0.09	17,820	2,736	14,850	2,280	13,365	2,052	12,623	1,710	11,138	1,391	10,395	1,140
		45	0.09	13,200	1,918	11,000	1,598	9,900	1,438	9,350	1,199	8,250	975	7,700	799
2	4	10	0.6	20,700	6,210	17,250	5,175	15,525	4,658	14,663	3,960	12,938	3,299	12,075	2,898
		13	0.48	20,700	6,210	17,250	5,175	15,525	4,658	14,663	3,960	12,938	3,299	12,075	2,898
		16	0.42	20,700	6,210	17,250	5,175	15,525	4,658	14,663	3,960	12,938	3,299	12,075	2,898
		20	0.42	17,940	4,306	14,950	3,588	13,455	3,299	12,708	2,746	11,213	2,287	10,465	2,009
		25	0.24	16,146	3,488	13,455	2,906	12,110	2,616	11,437	2,223	10,092	2,162	9,419	1,627
		30	0.16	14,904	2,683	12,420	2,236	11,178	2,012	10,558	1,710	9,316	1,426	8,694	1,252
		35	0.1	14,904	2,683	12,420	2,236	11,178	2,012	10,558	1,710	9,316	1,426	8,694	1,252
		40	0.1	14,904	2,683	12,420	2,236	11,178	2,012	10,558	1,710	9,316	1,426	8,694	1,252
		45	0.1	11,040	1,877	9,200	1,564	8,280	1,408	7,820	1,196	6,900	997	6,440	876
		50	0.1	11,040	1,877	9,200	1,564	8,280	1,408	7,820	1,196	6,900	997	6,440	876
2.5	5	20	0.525	15,120	5,443	12,600	4,536	11,340	4,082	10,710	3,213	9,450	2,835	8,820	2,381
		25	0.525	14,040	5,054	11,700	3,650	10,530	3,791	9,945	2,984	8,775	2,633	8,190	2,211
		30	0.3	12,636	4,549	10,530	2,780	9,477	3,413	8,951	2,685	7,898	2,369	7,371	1,991
		40	0.2	11,664	2,520	9,720	2,100	7,748	1,890	8,262	1,487	7,290	1,313	6,804	1,103
3	6	12	0.6	16,200	6,804	13,500	5,670	12,150	5,103	11,475	4,253	10,125	3,459	9,450	2,835
		20	0.5	15,300	5,967	12,750	4,973	11,475	4,475	10,838	3,729	9,563	3,033	8,925	2,486
		30	0.42	12,480	3,594	10,400	2,995	9,360	2,696	8,840	2,122	7,800	2,028	7,280	1,572
		50	0.15	10,368	2,687	8,640	2,239	7,776	2,016	7,344	1,587	6,480	1,400	6,048	1,175

※ (1) a_p is shown as the criteria for Group 2 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.

※ (2) When performing cutting where cutting chips may cause clogging, such as for rib cutting, blind grooves, etc., cutting depth setting should be set by multiplying a cutting depth factor to calculate the cutting depth amount, and this amount should then be reduced to 80% of the calculated value.

※ (3) Adjust by setting a_e to (3 to 5) x (a_p) x (cutting depth ratio). When performing finishing processing, calculate the theoretical cusp height and set accordingly.

Cutting depth setting example: When cutting rib groove contours in hardened steel (50HRC) using an EPDBE2020-10-ATH tool:

Cutting depth = 0.21 (a_p) x 0.65 (cutting depth factor for Group 5 hardened steel) x 0.8 (for closed-area cutting) = 0.11mm

[Note]

1. PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
2. Use the appropriate coolant for the work material and machining shape.
3. 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.
4. If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.

END MILL

ดอกเอ็นมิลล์



Recommended cutting conditions

EPDBE-PN

EPDBE-ATH

High efficiency cutting condition

High accuracy cutting condition

DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	Recommended range				PN series											
CBN END MILL CBN เอ็นมิลล์	Work material				ATH series											
					1		2		3		4		5		6	
					Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Carbide Endmill เอ็นมิลล์คาร์ไบด์	Ratio to standard depth of cut				120%		100%		90%		80%		65%		60%	
HSS Endmill เอ็นมิลล์ไฮสปีด	Ball Radius R (mm)	Tool Dia. (mm)	Under neck Length (mm)	ap (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
Ball หัวบอล	0.05	0.1	0.2	0.004	50,000	300	50,000	250	50,000	250	50,000	225	50,000	200	50,000	188
0.3			0.003	50,000	300	50,000	250	50,000	250	50,000	225	50,000	200	50,000	188	
0.5			0.002	50,000	300	50,000	250	50,000	250	50,000	225	50,000	200	50,000	188	
Radius หัวก้นมุม R	0.1	0.2	0.5	0.015	50,000	420	50,000	350	50,000	350	50,000	325	45,500	273	42,000	210
0.75			0.013	50,000	420	50,000	350	50,000	350	50,000	325	45,500	273	42,000	210	
1			0.011	50,000	420	50,000	350	50,000	350	50,000	325	45,500	273	42,000	210	
1.25			0.008	50,000	378	50,000	315	48,600	306	45,900	269	40,500	219	37,800	170	
1.5			0.007	50,000	378	50,000	315	48,600	306	45,900	269	40,500	219	37,800	170	
2			0.006	50,000	378	50,000	315	48,600	306	45,900	269	40,500	219	37,800	170	
Square หัวสี่	0.1	0.2	2.5	0.005	48,000	323	48,000	269	43,200	242	40,800	212	36,000	173	33,600	134
3			0.003	48,000	323	48,000	269	43,200	242	40,800	212	36,000	173	33,600	134	
0.5			0.02	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336	
Taper Ball หัวตลับเปอร์บอล	0.15	0.3	0.75	0.018	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336
1			0.016	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336	
1.25			0.014	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336	
1.5			0.012	50,000	600	50,000	500	50,000	500	50,000	450	45,000	383	42,000	336	
2			0.009	50,000	540	50,000	450	48,600	437	45,900	372	40,500	310	37,800	272	
2.5			0.008	50,000	540	50,000	450	48,600	437	45,900	372	40,500	310	37,800	272	
Roughing	0.15	0.3	3	0.006	50,000	540	50,000	450	43,200	437	45,900	372	40,500	310	37,800	272
			0.75	0.043	50,000	691	48,000	576	43,200	518	40,800	449	36,000	360	33,600	336
			1	0.04	50,000	691	48,000	576	43,200	518	40,800	449	36,000	360	33,600	336
0.2	0.4	1.5	0.034	50,000	691	48,000	576	43,200	518	40,800	449	36,000	360	33,600	336	
		2	0.028	50,000	691	48,000	576	38,880	518	40,800	449	36,000	360	33,600	336	
		2.5	0.016	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	30,240	272	
		3	0.011	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	30,240	272	
		3.5	0.008	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	30,240	272	
		4	0.005	50,000	560	43,200	467	38,880	420	36,720	364	32,400	292	30,240	272	
0.25	0.5	4.5	0.004	46,080	470	38,400	392	34,560	353	32,640	305	28,800	245	26,880	228	
		1	0.045	48,000	960	40,000	800	36,000	720	34,000	612	30,000	540	28,000	476	
		1.5	0.04	48,000	960	40,000	800	36,000	720	34,000	612	30,000	540	28,000	476	
		2	0.035	48,000	960	40,000	800	36,000	720	34,000	612	30,000	540	28,000	476	
		2.5	0.033	43,200	778	40,000	800	32,400	583	30,600	496	27,000	437	25,200	386	
		3	0.03	43,200	778	36,000	648	32,400	583	30,600	496	27,000	437	25,200	386	
		4	0.02	43,200	778	36,000	648	32,400	583	30,600	496	27,000	437	25,200	386	
		5	0.018	43,200	778	36,000	648	32,400	583	30,600	496	27,000	437	25,200	386	
		5.5	0.008	38,400	653	32,000	544	28,800	490	27,200	416	24,000	367	22,400	324	
0.3	0.6	6	0.007	38,400	653	32,000	544	28,800	490	27,200	416	24,000	367	22,400	324	
		8	0.044	38,400	653	32,000	544	28,800	490	27,200	416	24,000	367	22,400	324	
		1	0.05	48,000	1,440	40,000	1,200	36,000	1,080	34,000	884	30,000	720	28,000	560	
		2	0.042	48,000	1,440	40,000	1,200	36,000	1,080	34,000	884	30,000	720	28,000	560	
		2.5	0.038	48,000	1,440	40,000	1,200	36,000	1,080	34,000	884	30,000	720	28,000	560	
		3	0.034	48,000	1,440	40,000	1,200	36,000	1,080	34,000	884	30,000	720	28,000	560	
		3.5	0.029	43,200	1,231	36,000	1,026	32,400	923	30,600	756	27,000	616	25,200	479	
		4	0.024	43,200	1,231	36,000	1,026	32,400	923	30,600	756	27,000	616	25,200	479	
		4.5	0.022	43,200	1,166	36,000	972	32,400	875	30,600	716	27,000	583	25,200	454	
		5	0.02	43,200	1,166	36,000	972	32,400	875	30,600	716	27,000	583	25,200	454	
		5.5	0.017	43,200	1,166	36,000	972	32,400	875	30,600	716	27,000	583	25,200	454	
		6	0.015	43,200	1,166	36,000	972	32,400	875	30,600	716	27,000	583	25,200	454	
0.35	0.7	7	0.008	38,400	979	32,000	816	28,800	734	27,200	601	24,000	490	22,400	381	
		8	0.008	38,400	979	32,000	816	28,800	734	27,200	601	24,000	490	22,400	381	
		9	0.006	38,400	979	32,000	816	28,800	734	27,200	601	24,000	490	22,400	381	
		10	0.005	33,600	857	28,000	714	25,200	643	23,800	526	21,000	428	19,600	333	
		12	0.004	28,800	691	24,000	576	21,600	518	20,400	424	18,000	346	16,800	269	
		2	0.061	48,000	1,584	40,000	1,320	36,000	1,188	34,000	977	30,000	805	28,000	660	
0.4	0.8	4	0.034	43,200	1,354	36,000	1,128	32,400	1,015	30,600	835	27,000	688	25,200	564	
		6	0.027	43,200	1,283	36,000	1,069	32,400	962	30,600	791	27,000	652	25,200	535	
		8	0.01	38,400	1,013	32,000	844	28,800	760	27,200	625	24,000	515	22,400	422	
		2	0.08	48,000	1,728	40,000	1,440	36,000	1,296	34,000	1,088	30,000	900	28,000	784	
		4	0.056	48,000	1,728	40,000	1,440	36,000	1,296	34,000	1,088	30,000	900	28,000	784	
		5	0.045	43,200	1,400	36,000	1,166	32,400	1,050	30,600	881	27,000	729	25,200	635	
		6	0.032	43,200	1,400	36,000	1,166	32,400	1,050	30,000	881	27,000	729	25,200	635	
		8	0.02	38,400	1,244	32,000	1,037	28,800	933	27,200	783	24,000	648	22,400	564	
		10	0.01	38,400	1,175	32,000	979	28,800	881	27,200	740	24,000	612	22,400	533	



Recommended range				PN series											
				ATH series											
Work material				1		2		3		4		5		6	
				Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut				120%		100%		90%		80%		65%		60%	
Ball Radius R (mm)	Tool Dia. (mm)	Under neck Length (mm)	a _p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
0.45	0.9	2	0.09	45,600	1,944	38,000	1,620	34,200	1,458	32,300	1,215	28,500	1,004	26,600	891
		4	0.058	45,600	1,944	38,000	1,620	34,200	1,458	32,300	1,215	28,500	1,004	26,600	891
		6	0.042	41,040	1,574	34,200	1,312	30,780	1,181	29,070	984	25,650	813	23,940	722
		8	0.03	36,480	1,399	30,400	1,166	27,360	1,049	25,840	875	22,800	723	21,280	641
0.5	1	2	0.1	43,200	2,160	36,000	1,800	32,400	1,620	30,600	1,377	27,000	1,134	25,200	1,008
		3	0.1	43,200	2,160	36,000	1,800	32,400	1,620	30,600	1,377	27,000	1,134	25,200	1,008
		4	0.07	43,200	2,160	36,000	1,800	32,400	1,620	30,600	1,377	27,000	1,134	25,200	1,008
		5	0.06	43,200	2,160	36,000	1,800	32,400	1,620	30,600	1,377	27,000	1,134	25,200	1,008
		6	0.04	38,880	1,750	32,400	1,458	29,160	1,312	27,540	1,115	24,300	919	22,680	816
		7	0.04	38,880	1,750	32,400	1,458	29,160	1,312	27,540	1,115	24,300	919	22,680	816
		8	0.04	38,880	1,750	32,400	1,458	29,160	1,312	27,540	1,115	24,300	919	22,680	816
		9	0.03	38,880	1,750	32,400	1,458	29,160	1,312	27,540	1,115	24,300	919	22,680	816
		10	0.025	38,880	1,750	32,400	1,458	29,160	1,312	27,540	1,115	24,300	919	22,680	816
		12	0.013	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		13	0.011	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		14	0.01	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		16	0.008	34,560	1,469	28,800	1,224	25,920	1,102	24,480	936	21,600	771	20,160	685
		18	0.006	30,240	1,210	25,200	1,008	22,680	907	21,420	771	18,900	635	17,640	564
		20	0.005	25,920	1,037	21,600	864	19,440	778	18,360	661	16,200	544	15,120	484
		0.55	1.1	2	0.1	40,320	2,110	33,600	1,758	30,240	1,582	28,560	1,301	25,200	1,090
4	0.07			40,320	2,110	33,600	1,758	30,240	1,582	28,560	1,301	25,200	1,090	23,520	967
6	0.04			36,720	1,774	30,600	1,478	27,540	1,330	26,010	1,094	22,950	916	21,420	813
8	0.04			36,720	1,774	30,600	1,478	27,540	1,330	26,010	1,094	22,950	916	21,420	813
10	0.025			36,720	1,774	30,600	1,478	27,540	1,330	26,010	1,094	22,950	916	21,420	813
0.6	1.2	4	0.08	36,923	1,932	30,769	1,610	27,692	1,449	26,154	1,208	23,077	998	21,538	886
		6	0.04	34,560	1,797	28,800	1,498	25,920	1,348	24,480	1,102	21,600	950	20,160	806
		8	0.04	34,560	1,797	28,800	1,498	25,920	1,348	24,480	1,102	21,600	950	20,160	806
		10	0.035	34,560	1,617	28,800	1,423	25,920	1,213	24,480	1,102	21,600	855	20,160	726
0.7	1.4	12	0.03	34,560	1,617	28,800	1,348	25,920	1,213	24,480	1,102	21,600	855	20,160	726
		8	0.055	30,240	1,814	25,200	1,512	22,680	1,361	21,420	1,157	18,900	983	17,640	882
		12	0.035	30,240	1,633	25,200	1,361	22,680	1,225	21,420	1,041	18,900	885	17,640	794
		16	0.017	26,880	1,371	22,400	1,142	20,160	1,028	19,040	874	16,800	743	15,680	666
0.75	1.5	4	0.1	33,600	2,218	28,000	1,848	25,200	1,663	23,800	1,428	21,000	1,134	19,600	980
		6	0.1	33,600	2,218	28,000	1,848	25,200	1,663	23,800	1,428	21,000	1,134	19,600	980
		8	0.06	30,240	1,796	25,200	1,497	22,680	1,347	21,420	1,157	18,900	919	17,640	794
		10	0.06	30,240	1,796	25,200	1,497	22,680	1,347	21,420	1,157	18,900	919	17,640	794
		12	0.06	30,240	1,796	25,200	1,497	22,680	1,347	21,420	1,157	18,900	919	17,640	794
		14	0.05	26,880	1,508	25,200	1,497	20,160	1,131	19,040	971	16,800	771	15,680	666
		16	0.019	26,880	1,508	22,400	1,257	20,160	1,131	19,040	971	16,800	771	15,680	666
		18	0.019	26,880	1,508	22,400	1,257	20,160	1,131	19,040	971	16,800	771	15,680	666
0.8	1.6	20	0.019	26,880	1,508	22,400	1,257	20,160	1,131	19,040	971	16,800	771	15,680	666
		8	0.11	31,200	2,184	26,000	1,820	23,400	1,638	22,100	1,370	19,500	1,170	18,200	1,019
		12	0.065	28,080	1,769	23,400	1,474	21,060	1,327	19,890	1,110	17,550	948	16,380	826
		16	0.04	28,080	1,769	23,400	1,474	21,060	1,327	19,890	1,110	17,550	948	16,380	826
0.9	1.8	20	0.02	24,960	1,485	20,800	1,238	18,720	1,114	17,680	932	15,600	796	14,560	693
		8	0.13	31,200	2,496	26,000	2,080	23,400	1,872	22,100	1,547	19,500	1,287	18,200	1,092
		12	0.07	28,080	2,022	23,400	1,685	21,060	1,516	19,890	1,253	17,550	1,042	16,380	885
		16	0.045	28,080	2,022	23,400	1,685	21,060	1,516	19,890	1,253	17,550	1,042	16,380	885
1	2	20	0.022	24,960	1,697	20,800	1,414	18,720	1,273	17,680	1,052	15,600	875	14,560	743
		3	0.2	25,200	2,520	21,000	2,100	18,900	1,890	17,850	1,607	15,750	1,355	14,700	1,176
		4	0.2	25,200	2,520	21,000	2,100	18,900	1,890	17,850	1,607	15,750	1,355	14,700	1,176
		6	0.2	25,200	2,268	21,000	1,890	18,900	1,701	17,850	1,428	15,750	1,197	14,700	1,058
		8	0.14	25,500	2,268	21,000	1,890	18,900	1,701	17,850	1,428	15,750	1,197	14,700	1,058
		10	0.14	25,200	2,026	21,000	1,680	18,900	1,512	17,850	1,285	15,750	1,071	14,700	941
		12	0.08	22,680	1,814	18,900	1,512	17,010	1,361	16,065	1,157	14,175	964	13,230	847
		13	0.08	22,680	1,814	18,900	1,512	17,010	1,361	16,065	1,157	14,175	964	13,230	847
		14	0.08	22,680	1,814	18,900	1,512	17,010	1,361	16,065	1,157	14,175	964	13,230	847
		16	0.08	22,680	1,633	18,900	1,361	17,010	1,225	16,065	1,041	14,175	868	13,230	762
		18	0.06	22,680	1,633	18,900	1,361	17,010	1,225	16,065	1,041	14,175	868	13,230	762
		20	0.05	22,680	1,633	18,900	1,361	17,010	1,225	16,065	1,041	14,175	868	13,230	762
		22	0.042	21,420	1,457	17,850	1,214	16,065	1,092	15,173	929	13,388	774	12,495	680
		25	0.035	20,160	1,371	16,800	1,142	15,120	1,028	14,280	874	12,600	728	11,760	640
		30	0.015	20,160	1,371	16,800	1,142	15,120	1,028	14,280	874	12,600	728	11,760	640
		35	0.012	17,640	1,129	14,700	941	13,230	847	12,495	720	11,025	600	10,290	527
40	0.01	15,120	968	12,600	806	11,340	729	10,710	617	9,450	514	8,820	452		
1.25	2.5	6	0.25	22,200	2,700	18,500	2,250	16,650	2,025	15,725	1,688	13,875	1,373	12,950	1,125
		10	0.17	22,200	2,700	18,500	2,250	16,650	2,025	15,725	1,688	13,875	1,373	12,950	1,125
		15	0.1	19,980	2,186	16,650	1,822	14,985	1,640	14,153	1,367	12,488	1,111	11,655	911
		20	0.08	19,980	2,186	16,650	1,822	14,985	1,640	14,153	1,367	12,488	1,111	11,655	911
		25	0.065	19,980	1,967	16,650	1,639	14,985	1,475	14,153	1,229	12,488	1,000	11,655	820
		30	0.044	17,760	1,836	14,800	1,530	13,320	1,377	12,580	1,148	11,100	933	10,360	765

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MOLDINO
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DEEP SERIES
ตระกูลดีฟ

Recommended range				PN series											
				ATH series											
Work material				1		2		3		4		5		6	
				Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut				120%		100%		90%		80%		65%		60%	
Ball Radius R (mm)	Tool Dia. (mm)	Under neck Length (mm)	ap (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
1.5	3	8	0.3	19,200	2,880	16,000	2,400	14,400	2,160	13,600	1,822	12,000	1,512	11,200	1,344
		10	0.21	19,200	2,880	16,000	2,400	14,400	2,160	13,600	1,822	12,000	1,512	11,200	1,344
		13	0.21	19,200	2,880	16,000	2,400	14,400	2,160	13,600	1,822	12,000	1,512	11,200	1,344
		16	0.21	19,200	2,592	16,000	2,160	14,400	1,944	13,600	1,640	12,000	1,512	11,200	1,210
		20	0.12	17,280	2,333	14,400	1,944	12,960	1,750	12,240	1,476	10,800	1,361	10,080	1,089
		25	0.08	17,280	2,333	14,400	1,944	12,960	1,750	12,240	1,476	10,800	1,225	10,080	1,089
		30	0.08	17,280	2,333	14,400	1,944	12,960	1,750	12,240	1,476	10,800	1,225	10,080	1,089
		35	0.064	15,360	1,958	12,800	1,632	11,520	1,469	10,880	1,239	9,600	1,028	8,960	914
1.75	3.5	15	0.24	16,500	2,820	13,750	2,350	12,375	2,115	11,688	1,763	10,313	1,434	9,625	1,175
		25	0.14	14,480	2,280	12,375	1,900	11,138	1,710	10,519	1,425	9,281	1,159	8,663	950
		35	0.09	14,480	2,280	12,375	1,900	11,138	1,710	10,519	1,425	9,281	1,159	8,663	950
		45	0.072	13,200	1,918	11,000	1,598	9,900	1,438	9,350	1,199	8,250	975	7,700	799
2	4	10	0.4	13,800	2,760	11,500	2,300	10,350	2,070	9,775	1,760	8,625	1,466	8,050	1,288
		13	0.32	13,800	2,760	11,500	2,300	10,350	2,070	9,775	1,760	8,625	1,466	8,050	1,288
		16	0.28	13,800	2,760	11,500	2,300	10,350	2,070	9,775	1,760	8,625	1,466	8,050	1,288
		20	0.28	13,800	2,760	11,500	2,300	10,350	2,070	9,775	1,760	8,625	1,466	8,050	1,288
		25	0.16	12,420	2,236	10,350	1,863	9,315	1,677	8,798	1,425	7,763	1,188	7,245	1,043
		30	0.16	12,420	2,236	10,350	1,863	9,315	1,677	8,798	1,425	7,763	1,188	7,245	1,043
		35	0.1	12,420	2,236	10,350	1,863	9,315	1,677	8,798	1,425	7,763	1,188	7,245	1,043
		40	0.1	12,420	2,236	10,350	1,863	9,315	1,677	8,798	1,425	7,763	1,188	7,245	1,043
		45	0.08	11,040	1,877	9,200	1,564	8,280	1,408	7,820	1,196	6,900	997	6,440	876
		50	0.07	11,040	1,877	9,200	1,564	8,280	1,408	7,820	1,196	6,900	997	6,440	876
2.5	5	20	0.35	10,800	2,592	9,000	2,160	8,100	1,944	7,650	1,530	6,750	1,350	6,300	1,134
		25	0.35	10,800	2,592	9,000	2,160	8,100	1,944	7,650	1,530	6,750	1,350	6,300	1,134
		30	0.2	9,720	2,333	8,100	1,944	7,290	1,750	6,885	1,377	6,075	1,215	5,670	1,021
		40	0.2	9,720	2,100	8,100	1,750	7,290	1,575	6,885	1,239	6,075	1,094	5,670	919
3	6	12	0.6	10,800	3,024	9,000	2,520	8,100	2,268	7,650	1,890	6,750	1,537	6,300	1,260
		20	0.5	10,800	2,652	8,500	2,210	7,650	1,989	7,225	1,658	6,375	1,348	5,950	1,105
		30	0.42	9,600	2,304	8,000	1,920	7,200	1,728	6,800	1,360	6,000	1,200	5,600	1,008
		50	0.15	8,640	1,866	7,200	1,555	6,480	1,400	6,120	1,102	5,400	972	5,040	816

- ※ (1) ap is shown as the criteria for Group 2 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.
 ※ (2) When performing cutting where cutting chips may cause clogging, such as for rib cutting, blind grooves, etc., cutting depth setting should be set by multiplying a cutting depth factor to calculate the cutting depth amount, and this amount should then be reduced to 80% of the calculated value.
 ※ (3) Adjust by setting ae to (3 to 5) x (ap) x (cutting depth ratio). When performing finishing processing, calculate the theoretical cusp height and set accordingly.

Cutting depth setting example: When cutting rib groove contours in hardened steel (50HRC) using an EPDBE2020-10-ATH tool:
 Cutting depth = 0.21 (ap) x 0.65 (cutting depth factor for Group 5 hardened steel) x 0.8 (for closed-area cutting) = 0.11mm

[Note]

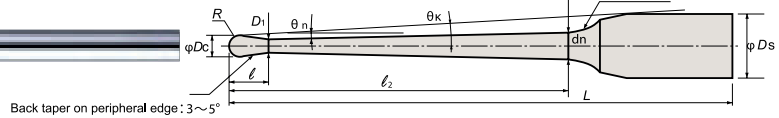
1. PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
2. Use the appropriate coolant for the work material and machining shape.
3. These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
4. If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.



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EPOCH PENCIL DEEP BALL EVOLUTION
EPDBPE2 0000-0000.0-00-ATH

[Note] ※ : R2 or higher does not have backdraft shape.

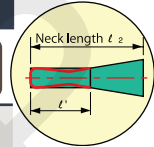


Pencil Regular Neck


 $R \leq 0.25 : \pm 0.003$
 $0.25 < R \leq 0.3 : \pm 0.005$
 $3 < R : \pm 0.01^{**}$

 $Ds \leq 6 : 0 \sim -0.005$
 $6 < Ds \leq 10 : 0 \sim -0.006$
 $10 < Ds : 0 \sim -0.008$

(mm)


 $^{**}\pm 0.015$ for R4 ~ R5 types or types with under neck lengths of more than 80. ± 0.015 for all R6 types.

Wider range of neck angle and under-neck length variations to handle all kinds of deep rib cutting.

Order No.	Stock	Size (mm)													The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool Dia.	θn Neck Angle	ℓ2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	dn Under Neck Dia.	L Overall length	Ds shank Dia.	Neck R	Neck shap	ℓ' Apporx neck length	θκ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDBPE2002-1-04-ATH	●				1			0.182			7		1.35	10.89	1.55	1.72	1.88	2.03	2.31
EPDBPE2002-1.5-04-ATH	●				1.5			0.189			7		1.77	10.39	2.06	2.28	2.47	2.64	2.97
EPDBPE2002-2-04-ATH	●			0.4	2			0.196			10		2.20	9.94	2.70	3.03	3.30	3.56	4.02
EPDBPE2002-3-04-ATH	●				3			0.210			10		2.29	9.14	3.73	4.14	4.47	4.77	5.29
EPDBPE2002-2-09-ATH	●				2			0.228			10		1.10	10.01	2.32	2.81	3.14	3.42	3.92
EPDBPE2002-2.5-09-ATH	●			0.9	2.5			0.244			10		1.10	9.60	2.36	3.32	3.70	4.01	4.54
EPDBPE2002-3-09-ATH	●	0.1	0.2		3	0.15	0.17	0.260	50	4	10	A	1.10	9.23	2.36	3.84	4.25	4.58	5.15
EPDBPE2002-1-14-ATH	●				1			0.212			7		0.76	10.96	1.24	1.51	1.71	1.88	2.20
EPDBPE2002-2-14-ATH	●			1.4	2			0.260			10		0.76	10.08	1.13	2.47	2.93	3.26	3.80
EPDBPE2002-3-14-ATH	●				3			0.309			10		0.76	9.32	1.13	2.42	3.96	4.37	5.00
EPDBPE2002-1-29-ATH	●				1			0.256			7		0.44	11.08	0.51	0.62	0.81	1.57	1.99
EPDBPE2002-2-29-ATH	●			2.9	2			0.357			10		0.44	10.29	0.51	0.62	0.81	1.21	3.35
EPDBPE2002-3-29-ATH	●				3			0.459			10		0.44	9.61	0.51	0.62	0.81	1.21	4.37
EPDBPE2003-2-04-ATH	●				2			0.294			7		2.19	9.94	2.57	2.83	3.04	3.24	3.59
EPDBPE2003-3-04-ATH	●			0.4	3			0.308			10		2.39	9.12	3.73	4.14	4.47	4.76	5.28
EPDBPE2003-3-09-ATH	●	0.15	0.3		3	0.25	0.27	0.356	50	4	10	A	1.20	9.21	2.52	3.85	4.25	4.58	5.15
EPDBPE2003-4-09-ATH	●			0.9	4			0.388			10		1.20	8.53	2.52	4.87	5.35	5.73	6.35
EPDBPE2004-2-04-ATH	●				2			0.394			7		2.20	9.93	2.57	2.82	3.03	3.23	3.57
EPDBPE2004-3-04-ATH	●				3			0.408			7		2.44	9.10	3.60	3.92	4.18	4.40	4.80
EPDBPE2004-4-04-ATH	●				4			0.422			10		2.44	8.39	4.76	5.23	5.61	5.93	6.51
EPDBPE2004-5-04-ATH	●			0.4	5			0.436			10		2.44	7.78	5.78	6.33	6.74	7.10	7.71
EPDBPE2004-6-04-ATH	●				6			0.450			10		2.44	7.25	6.81	7.41	7.86	8.25	8.90
EPDBPE2004-8-04-ATH	●				8			0.478			10		2.44	6.39	8.85	9.57	10.08	10.51	11.24
EPDBPE2004-2-09-ATH	●				2			0.423			7		1.25	10.00	2.30	2.66	2.90	3.12	3.49
EPDBPE2004-4-09-ATH	●	0.2	0.4		4	0.3	0.37	0.486	50	4	10	A	1.25	8.49	2.57	4.87	5.35	5.72	6.34
EPDBPE2004-5-09-ATH	●			0.9	5			0.518			10		1.25	7.89	2.57	5.90	6.44	6.85	7.53
EPDBPE2004-6-09-ATH	●				6			0.549			10		1.25	7.37	2.57	6.92	7.52	7.97	8.69
EPDBPE2004-2-14-ATH	●				2			0.453			7		0.91	10.07	1.31	2.41	2.75	2.99	3.40
EPDBPE2004-4-14-ATH	●			1.4	4			0.551			10		0.91	8.60	1.31	2.70	5.00	5.47	6.16
EPDBPE2004-6-14-ATH	●				6			0.649			10		0.91	7.50	1.31	2.70	7.04	7.64	8.46
EPDBPE2004-2-29-ATH	●				2			0.542			7		0.59	10.28	0.67	0.80	1.02	1.48	3.04
EPDBPE2004-4-29-ATH	●			2.9	4			0.745			10		0.59	8.93	0.67	0.80	1.02	1.48	5.42
EPDBPE2004-6-29-ATH	●				6			0.947			10		0.59	7.90	0.67	0.80	1.02	1.48	7.45
EPDBPE2005-4-04-ATH	●				4			0.521			7		2.49	8.35	4.62	5.00	5.30	5.55	5.99
EPDBPE2005-6-04-ATH	●			0.4	6			0.549			10		2.49	7.20	6.80	7.41	7.86	8.24	8.89
EPDBPE2005-6-09-ATH	●	0.25	0.5		6	0.35	0.47	0.648	50	4	10	A	1.30	7.32	2.62	6.92	7.52	7.97	8.69
EPDBPE2005-8-09-ATH	●			0.9	8			0.710			10		1.30	6.45	2.62	8.96	9.67	10.18	10.99
EPDBPE2005-12-09-ATH	●				12			0.836			10		1.30	5.21	2.62	13.05	13.94	14.55	15.49
EPDBPE20054-2-04-ATH	●				2			0.543			4		1.80	9.95	2.36	2.55	2.70	2.83	3.06
EPDBPE20054-4-04-ATH	●				4			0.571			7		1.80	8.35	4.55	4.96	5.26	5.52	5.97
EPDBPE20054-5-04-ATH	●				5			0.585			7		1.80	7.72	5.57	6.04	6.38	6.66	7.15
EPDBPE20054-6-04-ATH	●	0.27	0.54	0.4	6	0.37	0.52	0.599	50	4	10	A	1.80	7.19	6.73	7.37	7.82	8.21	8.87
EPDBPE20054-6.5-04-ATH	●				6.5			0.606			10		1.80	6.94	7.24	7.91	8.38	8.78	9.46
EPDBPE20054-7-04-ATH	●				7			0.613			10		1.80	6.72	7.76	8.45	8.94	9.35	10.05
EPDBPE2006-2-04-ATH	●				2			0.592	50		4		2.17	9.93	2.42	2.59	2.73	2.85	3.08
EPDBPE2006-4-04-ATH	●				4			0.620	50		7		2.54	8.31	4.62	5.00	5.29	5.54	5.98
EPDBPE2006-6-04-ATH	●				6			0.648	50		10		2.54	7.14	6.80	7.41	7.85	8.23	8.88
EPDBPE2006-8-04-ATH	●	0.3	0.6	0.4	8	0.4	0.57	0.676	50	4	10	A	2.54	6.26	8.85	9.56	10.07	10.50	11.22
EPDBPE2006-10-04-ATH	●				10			0.704	50		10		2.54	5.57	10.89	11.70	12.27	12.73	13.52
EPDBPE2006-12-04-ATH	●				12			0.732	55		10		2.54	5.02	12.94	13.83	14.44	14.95	15.79
EPDBPE2006-15-04-ATH	●				15			0.774	55		10		2.54	4.37	15.99	17.01	17.68	18.24	19.27

● : Stocked item

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ห้ามนำไปเผยแพร่ก่อนได้รับอนุญาตจากทางบริษัท

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

DEEP SERIES
ตระกูลดีฟ

Order No.	Stock	Size (mm)												The effective under-neck length for the various draft angles						
		R Ball radius	Dc Tool Dia.	θn Neck Angle	ℓ2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	dn Under Neck Dia.	L Overall length	Ds shank Dia.	Neck R	Neck shap	ℓ' Apporx neck length	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°	
EPDBPE2006-4-09-ATH	●				4			0.683	50		7		1.35	8.41	2.67	4.70	5.07	5.37	5.85	
EPDBPE2006-6-09-ATH	●				6			0.746	50		10		1.35	7.26	2.67	6.92	7.51	7.96	8.68	
EPDBPE2006-8-09-ATH	●			0.9	8			0.809	50		10		1.35	6.38	2.67	8.96	9.67	10.18	10.98	
EPDBPE2006-10-09-ATH	●				10			0.872	50		10		1.35	5.70	2.67	11.01	11.81	12.37	13.25	
EPDBPE2006-12-09-ATH	●				12			0.934	55		10		1.35	5.14	2.67	13.05	13.94	14.54	15.49	
EPDBPE2006-15-09-ATH	●			15			1.029	55		10		1.35	4.49	2.67	16.10	17.11	17.78	18.81		
EPDBPE2006-4-14-ATH	●	0.3	0.6		4	0.4	0.57	0.746	50	4	7	A	1.01	8.52	1.41	2.80	4.78	5.16	5.70	
EPDBPE2006-5-14-ATH	●			5	0.795			50	1.01				7.91	1.41	2.80	5.80	6.23	6.83		
EPDBPE2006-6-14-ATH	●			6	0.844			50	1.01				7.39	1.41	2.80	7.04	7.63	8.45		
EPDBPE2006-8-14-ATH	●			1.4	8			0.941	50		10		1.01	6.52	1.41	2.80	9.08	9.78	10.71	
EPDBPE2006-10-14-ATH	●				10			1.039	50		10		1.01	5.83	1.41	2.80	11.13	11.92	12.94	
EPDBPE2006-20-14-ATH	●				20			1.528	60		10		1.01	3.82	1.41	2.80	21.31	22.47	23.84	
EPDBPE2006-6-29-ATH	●			2.9	6			1.137	50		10		0.69	7.79	0.77	0.90	1.12	1.58	7.45	
EPDBPE2006-8-29-ATH	●				8			1.340	50		10		0.69	6.95	0.77	0.90	1.12	1.58	9.49	
EPDBPE2006-12-29-ATH	●				12			1.745	55		10		0.69	5.71	0.77	0.90	1.12	1.58	13.56	
EPDBPE2006-20-29-ATH	●			20			2.556	60		10	B	0.69	4.15	0.77	0.90	1.12	1.58	21.68		
EPDBPE2008-4-04-ATH	●			0.4	4			0.819	50		7		2.64	8.22	4.61	4.99	5.28	5.53	5.97	
EPDBPE2008-6-04-ATH	●				6			0.847	50		7		2.64	7.01	6.66	7.14	7.50	7.79	8.30	
EPDBPE2008-8-04-ATH	●				8			0.875	50		10		2.64	6.11	8.85	9.56	10.06	10.49	11.21	
EPDBPE2008-12-04-ATH	●	0.4	0.8		12	0.5	0.77	0.931	55	4	10	A	2.64	4.86	12.93	13.83	14.44	14.94	15.77	
EPDBPE2008-8-09-ATH	●			8	1.006			50	1.45				6.24	2.77	8.96	9.66	10.17	10.97		
EPDBPE2008-12-09-ATH	●			12	1.131			55	1.45				4.99	2.77	13.04	13.93	14.54	15.48		
EPDBPE2008-16-09-ATH	●			0.9	16			1.257	55		10		1.45	4.15	2.77	17.12	18.16	18.58	19.90	
EPDBPE2008-16-29-ATH	●				16			2.340	55		10	B	0.79	4.67	0.87	1.00	1.22	1.69	17.62	
EPDBPE2008-20-29-ATH	●				20			2.746	60		10		0.79	3.97	0.87	1.00	1.22	1.69	21.68	
EPDBPE2009-4-04-ATH	●			0.45	4			0.907	50		4		3.46	8.15	4.50	4.75	4.94	5.11	5.41	
EPDBPE2009-8-04-ATH	●				8			0.963	55		7		3.46	6.03	8.75	9.30	9.70	10.03	10.60	
EPDBPE2009-12-04-ATH	●				12			1.019	55		10		3.46	4.78	12.99	13.86	14.46	14.95	15.78	
EPDBPE2009-16-04-ATH	●	0.9	0.4	0.6	16	0.86	0.86	1.075	60	4	10	A	3.46	3.96	17.07	18.08	18.77	19.33	20.54	
EPDBPE2009-18-04-ATH	●							18	1.103				65	3.46	3.65	19.10	20.19	20.91	21.50	23.11
EPDBPE2009-20-04-ATH	●							20	1.131				65	3.46	3.38	21.13	22.29	23.05	23.66	25.68
EPDBPE2009-22-04-ATH	●				22			1.159	65		10		3.46	3.15	23.17	24.38	25.17	25.81	28.24	
EPDBPE2009-24-04-ATH	●				24			1.187	70		10		3.46	2.95	25.20	26.47	27.29	27.96	No interference	
EPDBPE2010-6-04-ATH	●			0.4	6			1.013	50		7		5.09	8.26	6.82	7.24	7.57	7.85	8.34	
EPDBPE2010-8-04-ATH	●				8			1.041	55		7		5.09	7.44	8.85	9.36	9.74	10.07	10.62	
EPDBPE2010-10-04-ATH	●				10			1.068	55		10		5.09	6.76	11.07	11.79	12.33	12.78	13.54	
EPDBPE2010-15-04-ATH	●			0.4	15			1.138	60		10		5.09	5.51	16.16	17.08	17.73	18.27	19.31	
EPDBPE2010-20-04-ATH	●				20			1.208	65		10		5.09	4.65	21.23	22.33	23.08	23.69	25.73	
EPDBPE2010-25-04-ATH	●				25			1.278	70		10		5.09	4.02	26.31	27.56	28.38	29.05	32.15	
EPDBPE2010-30-04-ATH	●				30			1.348	75		10		5.09	3.54	31.37	32.76	33.66	34.82	38.57	
EPDBPE2010-50-04-ATH	●				50			1.627	95		10		5.09	2.40	51.62	53.44	55.27	57.96	No interference	
EPDBPE2010-70-04-ATH	●				70			1.906	115		10		5.09	1.81	71.83	73.98	77.33	No interference	No interference	
EPDBPE2010-6-09-ATH	●			0.9	6			1.103	50		7		2.70	8.36	5.47	6.91	7.32	7.65	8.19	
EPDBPE2010-10-09-ATH	●				10			1.229	55		10		2.70	6.88	5.47	11.20	11.91	12.44	13.28	
EPDBPE2010-15-09-ATH	●				15			1.386	60		10		2.70	5.64	5.47	16.28	17.19	17.84	18.84	
EPDBPE2010-16-09-ATH	●			0.9	16			1.418	60		10		2.70	5.44	5.47	17.29	18.24	18.91	19.94	
EPDBPE2010-20-09-ATH	●				20			1.543	65		10	A	2.70	4.77	5.47	21.35	22.44	23.18	24.68	
EPDBPE2010-25-09-ATH	●				25			1.700	70		10		2.70	4.14	5.47	26.42	27.66	28.48	30.83	
EPDBPE2010-30-09-ATH	●	0.5	1	0.8	30	0.94	0.94	1.857	75	6	10		2.70	3.65	5.47	31.49	32.86	33.75	36.98	
EPDBPE2010-35-09-ATH	●							35	2.015				80	2.70	3.27	5.47	36.55	38.04	39.00	43.12
EPDBPE2010-40-09-ATH	●							40	2.172				85	2.70	2.96	5.47	41.61	43.22	44.46	No interference
EPDBPE2010-50-09-ATH	●				50			2.486	90		10		2.70	2.48	5.47	51.73	53.53	55.55	No interference	
EPDBPE2010-60-09-ATH	●				60			2.800	105		10		2.70	2.14	5.47	61.84	63.81	66.63	No interference	
EPDBPE2010-70-09-ATH	●				70			3.114	115		10		2.70	1.88	5.47	71.94	74.09	No interference	No interference	
EPDBPE2010-6-14-ATH	●			1.4	6			1.194	50		7		2.02	8.47	2.87	5.85	7.01	7.41	8.01	
EPDBPE2010-12-14-ATH	●				12			1.487	60		10		2.02	6.45	2.87	5.85	13.36	14.14	15.20	
EPDBPE2010-16-14-ATH	●				16			1.683	60		10		2.02	5.57	2.87	5.85	17.42	18.36	19.56	
EPDBPE2010-20-14-ATH	●			20			1.878	65		10		2.02	4.90	2.87	5.85	21.48	22.55	23.88		
EPDBPE2010-22-14-ATH	●			22			1.976	70		10		2.02	4.62	2.87	5.85	23.50	24.64	26.03		
EPDBPE2010-25-14-ATH	●			25			2.123	70		10		2.02	4.26	2.87	5.85	26.55	27.76	29.51		
EPDBPE2010-50-14-ATH	●				50			3.345	95		10		2.02	2.57	2.87	5.85	51.84	53.63	No interference	
EPDBPE2010-90-14-ATH	●				90			5.300	135		10	B	2.02	1.56	2.87	5.85	92.23	No interference	No interference	
EPDBPE2010-10-29-ATH	●			2.9	10			1.872	55		10		1.39	7.42	1.57	1.86	2.35	3.39	11.74	
EPDBPE2010-15-29-ATH	●				15			2.379	60		10		1.39	6.20	1.57	1.86	2.35	3.39	16.81	
EPDBPE2010-20-29-ATH	●				20			2.885	65		10	A	1.39	5.33	1.57	1.86	2.35	3.39	21.88	
EPDBPE2010-30-29-ATH	●			30			3.898	75		10		1.39	4.16.							



Order No.	Stock	Size (mm)												The effective under-neck length for the various draft angles					
		R Ball radius	Dc Tool Dia.	θn Neck Angle	ℓ2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	dn Under Neck Dia.	L Overall length	Ds shank Dia.	Neck R	Neck shap	ℓ' Apporx neck length	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDBPE2015-30-04-ATH	●			0.4	30			1.820	75		10		7.07	3.30	31.46	32.79	33.68	34.85	38.57
EPDBPE2015-10-09-ATH	●				10			1.692	55		7		3.89	6.63	7.83	11.08	11.61	12.02	12.67
EPDBPE2015-15-09-ATH	●				15			1.849	60		10		3.89	5.36	7.83	16.40	17.25	17.88	18.86
EPDBPE2015-20-09-ATH	●			0.9	20			2.006	65		10		3.89	4.50	7.83	21.47	22.49	23.21	24.72
EPDBPE2015-30-09-ATH	●				30			2.320	75		10		3.89	3.40	7.83	31.59	32.90	33.78	37.01
EPDBPE2015-10-14-ATH	●	0.75	1.5		10	1.35	1.42	1.843	55	6	7	A	2.98	6.75	4.23	8.59	11.19	11.70	12.45
EPDBPE2015-20-14-ATH	●				20			2.332	65		10		2.98	4.62	4.23	8.59	21.61	22.61	23.91
EPDBPE2015-30-14-ATH	●			1.4	30			2.820	75		10		2.98	3.51	4.23	8.59	31.73	33.02	35.45
EPDBPE2015-40-14-ATH	●				40			3.309	85		10		2.98	2.83	4.23	8.59	41.84	43.36	No interference
EPDBPE2015-50-14-ATH	●				50			3.798	95		10		2.98	2.37	4.23	8.59	51.95	53.67	No interference
EPDBPE2015-20-29-ATH	●			2.9	20			3.310	65		10		2.13	5.03	2.42	2.87	3.63	5.25	22.05
EPDBPE2015-46-29-ATH	●				46			6.000	95	-	C		2.13	2.84	2.42	2.87	3.63	5.25	No interference
EPDBPE2018-4-04-ATH	●				4			1.764	50		4		4.38	9.14	4.63	4.82	4.99	5.14	5.40
EPDBPE2018-8-04-ATH	●				8			1.819	50		4		6.61	7.07	8.68	9.01	9.27	9.49	10.27
EPDBPE2018-12-04-ATH	●				12			1.875	55		7		6.61	5.77	12.97	13.59	14.05	14.43	15.40
EPDBPE2018-16-04-ATH	●				16			1.931	60		7		6.61	4.87	17.02	17.77	18.30	18.73	20.53
EPDBPE2018-20-04-ATH	●				20			1.987	65		10		6.61	4.21	21.29	22.35	23.08	23.68	25.67
EPDBPE2018-24-04-ATH	●	0.9	1.8	0.4	24	1.6	1.73	2.043	65	6	10	A	6.61	3.71	25.35	26.53	27.33	27.97	30.80
EPDBPE2018-28-04-ATH	●				28			2.099	70		10		6.61	3.32	29.40	30.69	31.55	32.49	35.94
EPDBPE2018-32-04-ATH	●				32			2.154	70		10		6.61	3.00	33.45	34.85	35.76	37.11	No interference
EPDBPE2018-36-04-ATH	●				36			2.210	75		10		6.61	2.74	37.50	38.99	39.96	41.74	No interference
EPDBPE2018-38-04-ATH	●				38			2.238	80		10		6.61	2.62	39.53	41.06	42.05	44.06	No interference
EPDBPE2018-40-04-ATH	●				40			2.266	80		10		6.61	2.52	41.55	43.13	44.24	46.37	No interference
EPDBPE2020-8-04-ATH	●				8			2.008	50		4		7.42	6.96	8.70	9.03	9.28	9.50	10.27
EPDBPE2020-12-04-ATH	●				12			2.064	55		7		7.42	5.64	13.00	13.61	14.06	14.43	15.40
EPDBPE2020-16-04-ATH	●				16			2.120	60		7		7.42	4.74	17.05	17.79	18.31	18.74	20.54
EPDBPE2020-20-04-ATH	●			0.4	20			2.176	65		10		7.42	4.09	21.33	22.37	23.09	23.68	25.67
EPDBPE2020-25-04-ATH	●				26			2.245	65		10		7.42	3.49	26.40	27.59	28.39	29.05	32.09
EPDBPE2020-30-04-ATH	●				30			2.315	70		10		7.42	3.04	31.46	32.79	33.67	34.81	38.51
EPDBPE2020-40-04-ATH	●				40			2.455	80		10		7.42	2.42	41.58	43.14	44.26	46.39	No interference
EPDBPE2020-80-04-ATH	●				80			3.013	120		10		7.42	1.34	81.99	84.47	No interference	No interference	No interference
EPDBPE2020-12-09-ATH	●				12			2.244	55		7	A	4.24	5.76	8.30	13.11	13.70	14.14	14.84
EPDBPE2020-16-09-ATH	●				16			2.369	60		7		4.24	4.86	8.30	17.16	17.88	18.39	19.76
EPDBPE2020-20-09-ATH	●				20			2.495	65		10		4.24	4.20	8.30	21.48	22.49	23.20	24.68
EPDBPE2020-25-09-ATH	●				25			2.652	65		10		4.24	3.60	8.30	26.54	27.70	28.50	30.82
EPDBPE2020-30-09-ATH	●				30			2.809	70		10		4.24	3.14	8.30	31.60	32.90	33.77	36.97
EPDBPE2020-35-09-ATH	●			0.9	35			2.966	75		10		4.24	2.79	8.30	36.66	38.08	39.02	No interference
EPDBPE2020-40-09-ATH	●				40			3.123	80		10		4.24	2.51	8.30	41.72	43.25	44.50	No interference
EPDBPE2020-50-09-ATH	●				50			3.438	90		10		4.24	2.09	8.30	51.82	53.56	55.58	No interference
EPDBPE2020-60-09-ATH	●	1	2		60	1.7	1.92	3.752	100	6	10		4.24	1.79	8.30	61.92	63.84	No interference	No interference
EPDBPE2020-70-09-ATH	●				70			4.066	110		10		4.24	1.56	8.30	72.02	74.15	No interference	No interference
EPDBPE2020-75-09-ATH	●				75			4.223	115		10	B	4.24	1.47	8.30	77.06	No interference	No interference	No interference
EPDBPE2020-10-14-ATH	●				10			2.326	55		7		3.33	6.47	4.63	9.19	11.20	11.70	12.43
EPDBPE2020-16-14-ATH	●				16			2.619	60		7		3.33	4.98	4.63	9.19	17.27	17.97	18.98
EPDBPE2020-20-14-ATH	●				20			2.814	65		10		3.33	4.32	4.63	9.19	21.62	22.61	23.90
EPDBPE2020-22-14-ATH	●				22			2.912	65		10	A	3.33	4.05	4.63	9.19	23.65	24.70	26.05
EPDBPE2020-25-14-ATH	●			1.4	25			3.059	65		10		3.33	3.71	4.63	9.19	26.68	27.82	29.55
EPDBPE2020-30-14-ATH	●				30			3.303	70		10		3.33	3.24	4.63	9.19	31.74	33.02	35.42
EPDBPE2020-40-14-ATH	●				40			3.792	80		10		3.33	2.60	4.63	9.19	41.85	43.36	No interference
EPDBPE2020-50-14-ATH	●				50			4.281	90		10		3.33	2.16	4.63	9.19	51.96	53.67	No interference
EPDBPE2020-75-14-ATH	●				75			5.503	115		10	B	3.33	1.51	4.63	9.19	77.19	No interference	No interference
EPDBPE2020-12-29-ATH	●				12			2.964	55		7		2.48	6.30	2.80	3.27	4.09	5.83	13.57
EPDBPE2020-15-29-ATH	●				15			3.267	60		7	A	2.48	5.60	2.80	3.27	4.09	5.83	16.59
EPDBPE2020-20-29-ATH	●			2.9	20			3.774	65		10		2.48	4.72	2.80	3.27	4.09	5.83	22.08
EPDBPE2020-41-29-ATH	●				41			6.000	130	-	C		2.48	2.85	2.8	3.27	4.09	5.83	No interference
EPDBPE2020-20-49-ATH	●			4.9	20			5.058	65		10	B	2.16	5.19	2.29	2.46	2.68	2.98	4.04
EPDBPE2030-8-04-ATH	●				8			2.937	50		4		8.50	6.25	8.87	9.13	9.35	9.55	10.33
EPDBPE2030-16-04-ATH	●				16			3.048	55		7		12.52	4.01	17.25	17.89	18.38	18.79	20.60
EPDBPE2030-20-04-ATH	●				20			3.104	60		7		12.52	3.40	21.29	22.04	22.60	23.34	25.74
EPDBPE2030-30-04-ATH	●			0.4	30			3.244	70		10		12.52	2.46	31.67	32.88	33.73	34.92	No interference
EPDBPE2030-40-04-ATH	●				40			3.384	80		10		12.52	1.93	41.78	43.23	44.38	No interference	No interference
EPDBPE2030-50-04-ATH	●				50			3.523	90		10		12.52	1.59	51.87	53.53	55.41	No interference	No interference
EPDBPE2030-80-04-ATH	●				80			3.942	120		10		12.52	1.04	82.14	84.60	No interference	No interference	No interference
EPDBPE2030-15-09-ATH	●				15			3.253	55		7		6.95	4.30	13.78	16.35	16.95	17.41	18.64
EPDBPE2030-20-09-ATH	●	1.5	3		20	2.5	2.86	3.410	60	6	7		6.95	3.50	13.78	21.40	22.14	22.68	24.78
EPDBPE203																			

● : Stocked item

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END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

DEEP SERIES
ตระกูลตีฟ

Order No.	Stock	Size (mm)												The effective under-neck length for the various draft angles								
		R Ball radius	Dc Tool Dia.	θn Neck Angle	ℓ2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	dn Under Neck Dia.	L Overall length	Ds shank Dia.	Neck R	Neck shap	ℓ' Apporx neck length	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°			
EPDBPE2030-50-14-ATH	●	1.5	3	1.4	50	2.5	2.86	5.182	90	6	-	B	5.36	1.68	7.51	15.05	52.16	No interference	No interference			
EPDBPE2030-66-14-ATH	●			66	6.000			140	-		C	5.36	1.34	7.51	15.05	No interference	No interference	No interference				
EPDBPE2030-30-29-ATH	●			2.9	30			5.646	70		10	B	3.88	2.83	4.37	5.14	6.45	9.22	No interference			
EPDBPE2040-60-04-ATH	●	2	4	0.9	60	8	3.86	4.586	110	8	10	A	18.02	1.74	62.14	63.88	66.58	No interference	No interference			
EPDBPE2040-100-04-ATH	●				100			5.145	150			10	B	18.02	1.10	102.44	105.80	No interference	No interference	No interference		
EPDBPE2040-20-09-ATH	●				20			4.237	70			7		12.45	4.26	20.79	21.76	22.37	22.87	25.16		
EPDBPE2040-30-09-ATH	●	2	4	0.9	30	8	3.86	4.551	80	8	10	A	12.45	3.17	25.53	31.83	32.66	33.95	37.45			
EPDBPE2040-35-09-ATH	●				35			4.708	85			7		12.45	2.82	25.53	36.87	37.79	39.50	No interference		
EPDBPE2040-40-09-ATH	●				40			4.856	90			8	10	12.45	2.53	25.53	42.31	43.56	45.04	No interference		
EPDBPE2040-50-09-ATH	●	2	4	0.9	50	8	3.86	5.180	100	8	10	B	12.45	2.10	25.53	52.39	53.84	56.12	No interference			
EPDBPE2040-60-09-ATH	●				60			5.494	110			10		12.45	1.80	25.53	62.46	64.14	No interference	No interference		
EPDBPE2040-120-09-ATH	●				120			7.379	170			-	D	12.45	0.97	25.53	No interference	No interference	No interference	No interference		
EPDBPE2040-45-14-ATH	●	2	4	1.4	45	8	3.86	5.669	95	8	10	B	10.86	2.37	15.79	33.06	47.66	48.93	No interference			
EPDBPE2040-80-14-ATH	●				80			7.379	130				10		10.86	1.43	15.79	33.06	No interference	No interference	No interference	
EPDBPE2040-25-29-ATH	●				25			5.582	75				7		9.38	3.99	10.91	13.27	17.30	25.73	27.74	
EPDBPE2050-100-04-ATH	●	2.5	5	0.9	100	10	4.86	6.117	150	8	10	B	20.02	0.85	102.48	No interference	No interference	No interference	No interference			
EPDBPE2050-30-09-ATH	●				30			5.488	80				7		14.45	2.58	29.41	31.92	32.71	34.04	No interference	
EPDBPE2050-40-09-ATH	●				40			5.803	90				7		14.45	2.02	29.41	41.98	43.12	45.12	No interference	
EPDBPE2050-60-09-ATH	●	2.5	5	0.9	60	10	4.86	6.431	110	8	10	B	14.45	1.40	29.41	62.56	No interference	No interference	No interference			
EPDBPE2050-90-09-ATH	●				90			7.373	140				10		14.45	0.96	29.41	No interference	No interference	No interference	No interference	
EPDBPE2050-60-14-ATH	●				60			7.304	110				10		12.86	1.43	18.62	38.82	No interference	No interference	No interference	
EPDBPE2050-74-14-ATH	●	2.5	5	1.4	74	10	4.86	8.000	150	8	10	C	12.86	1.21	18.62	38.82	No interference	No interference	No interference			
EPDBPE2050-40-29-ATH	●				40			8.000	90				-		11.38	2.28	13.23	16.06	20.92	31.18	No interference	
EPDBPE2060-120-04-ATH	●				120			7.368	200				8	-	D	22.02	0.49	No interference	No interference	No interference	No interference	No interference
EPDBPE2060-30-09-ATH	●	3	6	0.9	30	12	5.86	6.426	80	8	7	B	16.45	1.87	30.63	32.00	32.76	No interference	No interference			
EPDBPE2060-40-09-ATH	●				40			6.740	90				8	7		16.45	1.44	33.29	42.06	No interference	No interference	No interference
EPDBPE2060-45-09-ATH	●				45			6.897	95				8	7		16.45	1.29	33.29	47.09	No interference	No interference	No interference
EPDBPE2060-50-09-ATH	●	3	6	0.9	50	12	5.86	7.054	100	8	7	B	16.45	1.16	33.29	52.12	No interference	No interference	No interference			
EPDBPE2060-60-09-ATH	●				60			7.368	110				10	10		16.45	1.82	33.29	62.65	64.34	No interference	No interference
EPDBPE2060-70-09-ATH	●				70			7.682	120				10	10		16.45	1.59	33.29	72.71	74.90	No interference	No interference
EPDBPE2060-80-09-ATH	●	3	6	1.4	80	12	5.86	7.996	130	10	10	C	16.45	1.41	33.29	82.78	No interference	No interference	No interference			
EPDBPE2060-120-09-ATH	●				120			9.253	200				10	-	D	16.45	0.98	33.29	No interference	No interference	No interference	No interference
EPDBPE2060-50-14-ATH	●				50			7.717	100				10	7	B	14.86	2.19	21.46	44.58	52.43	54.41	No interference
EPDBPE2060-96-14-ATH	●	3.5	7	1.4	96	14	6.86	10.000	200	10	7	B	14.86	1.24	21.46	44.58	No interference	No interference	No interference			
EPDBPE2060-30-29-ATH	●				30			7.684	80				10	7	B	13.38	3.53	15.54	18.85	24.53	31.45	33.60
EPDBPE2070-45-09-ATH	●				45			7.834	95						18.45	1.85	37.16	47.17	48.59	No interference	No interference	
EPDBPE2070-60-14-ATH	●	3.5	7	1.4	60	14	6.86	9.108	110	10	7	B	16.86	1.46	24.29	50.33	No interference	No interference	No interference			
EPDBPE2070-40-29-ATH	●				40			9.494	90						15.38	2.24	17.85	21.64	28.14	40.93	No interference	
EPDBPE2080-120-04-ATH	●				120			9.340	200				10	-	D	24.02	0.50	No interference	No interference	No interference	No interference	No interference
EPDBPE2080-50-09-ATH	●	4	8	0.9	50	14	7.86	8.991	110	10	7	B	18.45	1.18	36.54	52.17	No interference	No interference	No interference			
EPDBPE2080-55-09-ATH	●				55			9.148	115				10	7		18.45	1.08	36.54	57.20	No interference	No interference	No interference
EPDBPE2080-60-09-ATH	●				60			9.305	120				10	7	B	18.45	0.99	36.54	No interference	No interference	No interference	No interference
EPDBPE2080-70-09-ATH	●	4	8	0.9	70	14	7.86	9.619	130	10	7	B	18.45	0.85	36.54	No interference	No interference	No interference	No interference			
EPDBPE2080-80-09-ATH	●				80			9.934	140				12	10		18.45	1.42	36.54	82.83	No interference	No interference	No interference
EPDBPE2080-120-09-ATH	●				120			11.190	200				12	-	D	18.45	0.98	36.54	No interference	No interference	No interference	No interference
EPDBPE2080-50-14-ATH	●	6	12	0.9	50	22	11.86	9.620	110	10	7	B	16.86	1.21	24.01	49.10	No interference	No interference	No interference			
EPDBPE2080-98-14-ATH	●				98			12.000	200				12	-		16.86	1.22	24.01	49.10	No interference	No interference	No interference
EPDBPE2080-35-29-ATH	●				35			10.000	95				10	-	C	15.38	1.85	17.75	21.38	27.61	No interference	No interference
EPDBPE2100-120-04-ATH	●	5	10	0.9	120	18	9.86	11.284	200	12	7	B	28.02	0.50	No interference	No interference	No interference	No interference	No interference			
EPDBPE2100-60-09-ATH	●				60			11.180	130				12	7		22.45	1.00	44.30	No interference	No interference	No interference	No interference
EPDBPE2100-65-09-ATH	●				65			11.337	135				12	7		22.45	0.93	44.30	No interference	No interference	No interference	No interference
EPDBPE2100-75-09-ATH	●	5	10	0.9	75	18	9.86	11.651	140	12	7	B	22.45	0.81	44.30	No interference	No interference	No interference	No interference			
EPDBPE2100-86-09-ATH	●				86			12.000	200				12	-	C	22.45	0.71	44.30	No interference	No interference	No interference	No interference
EPDBPE2100-55-14-ATH	●				55			11.669	125				12	7	B	20.86	1.12	29.68	55.87	No interference	No interference	No interference
EPDBPE2100-120-14-ATH	●	6	12	1.4	120	22	11.86	14.846	200	16	4	B	20.86	1.48	29.68	60.62	No interference	No interference	No interference			
EPDBPE2100-35-29-ATH	●				35			11.582	105				12	4		19.38	1.84	22.37	26.96	34.84	No interference	No interference
EPDBPE2120-120-04-ATH	●				120			13.228	200				14	-		32.02	0.50	No interference	No interference	No interference	No interference	No interference
EPDBPE2120-75-09-ATH	●	6	12	0.9	75	22	11.86	13.525	150	14	-	D	26.45	0.83	52.05	No interference	No interference	No interference	No interference			
EPDBPE2120-120-09-ATH	●				120			14.939	200				16	-		26.45	1.00	52.05	No interference	No interference	No interference	No interference
EPDBPE2120-80-14-ATH	●				80			14.695	160				16	-		24.86	1.52	35.35	72.13	81.75	No interference	No interference
EPDBPE2120-106-14-ATH	●	6	12	1.4	106	22	11.86	16.000	200	16	-	C	24.86	1.15	35.35	72.13	No interference	No interference	No interference			
EPDBPE2120-60-29-ATH	●				60			15.710	140				16	-	D	23.38	2.11	27.00	35.54	42.06	60.10	No interference

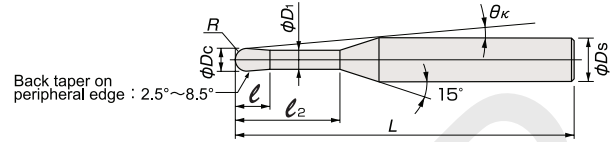
● : Stocked item



ดอกเอ็นมิลล์

EPOCH DEEP BALL EVOLUTION HARD
EPDBEH2 0.05-0.25-(S6)-TH3

2Flutes



Back taper on peripheral edge : 2.5°~8.5°

Long Neck

R0.05 ~ 0.25 : ± 0.003
R0.3 ~ R6 : ± 0.005 

0 ~ -0.005

(mm)

For deep cutting of hardened steels. Provides high accuracy cutting and long tool life on hardened steels.

Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool dia.	L2 Under Neck Length	L Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	theta_k Interference Angle	0.5°	1°	1.5°	2°	3°
EPDBEH2001-0.2-TH3	●			0.2					14.64	0.24	0.25	0.25	0.26	0.28
EPDBEH2001-0.3-TH3	●	0.05	0.1	0.3	0.08	0.08	45	4	14.46	0.34	0.35	0.36	0.38	0.40
EPDBEH2001-0.5-TH3	●			0.5					14.1	0.55	0.57	0.59	0.61	0.65
EPDBEH2002-0.3-TH3	●			0.3					14.54	0.34	0.35	0.36	0.37	0.39
EPDBEH2002-0.5-TH3	●			0.5					14.17	0.55	0.56	0.58	0.60	0.64
EPDBEH2002-0.75-TH3	●			0.75					13.73	0.81	0.83	0.86	0.89	0.95
EPDBEH2002-1-TH3	●			1					13.32	1.06	1.10	1.13	1.17	1.26
EPDBEH2002-1.25-TH3	●	0.1	0.2	1.25	0.15	0.18	50	4	12.93	1.32	1.37	1.41	1.46	1.57
EPDBEH2002-1.5-TH3	●			1.5					12.56	1.58	1.63	1.69	1.75	1.88
EPDBEH2002-2-TH3	●			2					11.89	2.10	2.17	2.24	2.32	2.50
EPDBEH2002-2.5-TH3	●			2.5					11.28	2.61	2.70	2.80	2.90	3.13
EPDBEH2002-3-TH3	●			3					10.73	3.13	3.24	3.35	3.47	3.75
EPDBEH2003-0.5-TH3	●			0.5					14.21	0.56	0.58	0.60	0.61	0.65
EPDBEH2003-0.75-TH3	●			0.75					13.76	0.82	0.85	0.87	0.90	0.96
EPDBEH2003-1-TH3	●			1					13.33	1.08	1.11	1.15	1.19	1.27
EPDBEH2003-1.25-TH3	●			1.25					12.93	1.34	1.38	1.43	1.47	1.58
EPDBEH2003-1.5-TH3	●	0.15	0.3	1.5	0.25	0.27	50	4	12.56	1.60	1.65	1.70	1.76	1.89
EPDBEH2003-2-TH3	●			2					11.86	2.12	2.18	2.26	2.34	2.52
EPDBEH2003-2.5-TH3	●			2.5					11.24	2.63	2.72	2.81	2.91	3.14
EPDBEH2003-3-TH3	●			3					10.68	3.15	3.25	3.37	3.49	3.76
EPDBEH2003-3.5-TH3	●			3.5					10.18	3.67	3.79	3.92	4.06	4.38
EPDBEH2003-4-TH3	●			4					9.72	4.18	4.32	4.47	4.64	5.00
EPDBEH2004-0.5-TH3	●			0.5					14.28	0.56	0.58	0.59	0.60	0.64
EPDBEH2004-0.75-TH3	●			0.75					13.81	0.82	0.84	0.87	0.89	0.95
EPDBEH2004-1-TH3	●			1					13.37	1.08	1.11	1.14	1.18	1.26
EPDBEH2004-1.5-TH3	●			1.5					12.57	1.60	1.65	1.70	1.75	1.88
EPDBEH2004-2-TH3	●			2					11.86	2.11	2.18	2.25	2.33	2.50
EPDBEH2004-2.5-TH3	●	0.2	0.4	2.5	0.3	0.37	50	4	11.23	2.63	2.72	2.81	2.90	3.13
EPDBEH2004-3-TH3	●			3					10.65	3.15	3.25	3.36	3.48	3.75
EPDBEH2004-3.5-TH3	●			3.5					10.14	3.66	3.78	3.91	4.05	4.37
EPDBEH2004-4-TH3	●			4					9.67	4.18	4.32	4.47	4.63	4.99
EPDBEH2004-4.5-TH3	●			4.5					9.24	4.70	4.85	5.02	5.20	5.61
EPDBEH2004-5-TH3	●			5					8.85	5.21	5.39	5.58	5.78	6.23
EPDBEH2005-1-TH3	●			1					13.42	1.08	1.11	1.14	1.17	1.25
EPDBEH2005-1.5-TH3	●			1.5					12.59	1.59	1.64	1.69	1.75	1.87
EPDBEH2005-2-TH3	●			2					11.86	2.11	2.18	2.25	2.32	2.49
EPDBEH2005-2.5-TH3	●	0.25	0.5	2.5	0.35	0.47	50	4	11.21	2.63	2.71	2.80	2.90	3.11
EPDBEH2005-3-TH3	●			3					10.62	3.15	3.25	3.36	3.47	3.73
EPDBEH2005-4-TH3	●			4					9.61	4.18	4.32	4.46	4.62	4.98
EPDBEH2005-5-TH3	●			5					8.78	5.21	5.39	5.57	5.77	6.22
EPDBEH2005-5.5-TH3	●			5.5					8.41	5.73	5.92	6.13	6.35	6.84
EPDBEH2005-6-TH3	●			6					8.08	6.25	6.46	6.68	6.92	7.46
EPDBEH2005-7-TH3	●	0.25	0.5	7	0.35	0.47	50	4	7.48	7.28	7.53	7.79	8.07	8.71
EPDBEH2005-8-TH3	●			8					6.96	8.31	8.60	8.90	9.22	9.95

● : Stocked item

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ห้ามนำไปเผยแพร่ก่อนได้รับอนุญาตจากทางบริษัท

END MILL

ดอกเอ็นมิลล์



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Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool dia.	ℓ_2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	θ_K Interference Angle	0.5°	1°	1.5°	2°	3°
EPDBEH2006-1-TH3	●			1					13.47	1.08	1.10	1.13	1.17	1.24
EPDBEH2006-1.5-TH3	●			1.5					12.61	1.59	1.64	1.69	1.74	1.86
EPDBEH2006-2-TH3	●			2					11.86	2.11	2.17	2.24	2.31	2.48
EPDBEH2006-2.5-TH3	●			2.5					11.19	2.63	2.71	2.80	2.89	3.10
EPDBEH2006-3-TH3	●			3					10.59	3.14	3.24	3.35	3.46	3.72
EPDBEH2006-3.5-TH3	●			3.5					10.05	3.66	3.78	3.90	4.04	4.34
EPDBEH2006-4-TH3	●			4					9.56	4.18	4.31	4.46	4.61	4.97
EPDBEH2006-4.5-TH3	●	0.3	0.6	4.5	0.4	0.57	50	4	9.12	4.69	4.85	5.01	5.19	5.59
EPDBEH2006-5-TH3	●			5					8.71	5.21	5.38	5.57	5.76	6.21
EPDBEH2006-5.5-TH3	●			5.5					8.34	5.73	5.92	6.12	6.34	6.83
EPDBEH2006-6-TH3	●			6					8	6.24	6.45	6.67	6.91	7.45
EPDBEH2006-7-TH3	●			7					7.4	7.28	7.52	7.78	8.06	8.70
EPDBEH2006-8-TH3	●			8					6.88	8.31	8.59	8.89	9.21	9.94
EPDBEH2006-9-TH3	●			9					6.43	9.35	9.66	10.00	10.36	11.18
EPDBEH2006-10-TH3	●			10					6.03	10.38	10.73	11.11	11.51	12.43
EPDBEH2007-2-TH3	●			2					5.37	12.45	12.87	13.32	13.81	14.91
EPDBEH2007-4-TH3	●			4					11.85	2.11	2.17	2.24	2.31	2.47
EPDBEH2007-6-TH3	●	0.35	0.7	6	0.45	0.67	50	4	9.5	4.18	4.31	4.45	4.61	4.95
EPDBEH2007-8-TH3	●			8					7.92	6.24	6.45	6.67	6.91	7.44
EPDBEH2008-1-TH3	●			1					6.79	8.31	8.59	8.89	9.21	9.93
EPDBEH2008-1.5-TH3	●			1.5					13.58	1.07	1.10	1.12	1.15	1.21
EPDBEH2008-2-TH3	●			2					12.66	1.59	1.63	1.68	1.73	1.83
EPDBEH2008-2.5-TH3	●			2.5					11.85	2.11	2.17	2.23	2.30	2.46
EPDBEH2008-3-TH3	●			3					11.14	2.62	2.70	2.79	2.88	3.08
EPDBEH2008-4-TH3	●			4					10.51	3.14	3.24	3.34	3.45	3.70
EPDBEH2008-5-TH3	●	0.4	0.8	5	0.5	0.77	50	4	10.41	3.16	3.25	3.35	3.46	3.70
EPDBEH2008-6-TH3	●			6					9.44	4.17	4.31	4.45	4.60	4.94
EPDBEH2008-8-TH3	●			8					8.57	5.21	5.38	5.56	5.75	6.19
EPDBEH2008-10-TH3	●			10					7.84	6.24	6.45	6.66	6.90	7.43
EPDBEH2008-12-TH3	●			12					6.7	8.31	8.58	8.88	9.20	9.92
EPDBEH2009-2-TH3	●			2					5.85	10.38	10.72	11.10	11.50	12.40
EPDBEH2009-4-TH3	●	0.45	0.9	4	0.6	0.87	50	4	5.19	12.44	12.86	13.31	13.80	14.89
EPDBEH2009-6-TH3	●			6					11.85	2.11	2.16	2.23	2.29	2.44
EPDBEH2009-8-TH3	●			8					9.38	4.17	4.30	4.44	4.59	4.93
EPDBEH2010-1.5-TH3	●			1.5					7.75	6.24	6.44	6.66	6.89	7.42
EPDBEH2010-2-TH3	●			2					6.61	8.31	8.58	8.88	9.19	9.90
EPDBEH2010-2.5-TH3	●			2.5					12.67	1.61	1.64	1.69	1.73	1.83
EPDBEH2010-3-TH3	●			3					11.82	2.12	2.18	2.24	2.31	2.46
EPDBEH2010-4-TH3	●			4			50		11.07	2.64	2.71	2.80	2.88	3.08
EPDBEH2010-5-TH3	●			5					10.41	3.16	3.25	3.35	3.46	3.70
EPDBEH2010-6-TH3	●			6					9.29	4.19	4.32	4.46	4.61	4.94
EPDBEH2010-7-TH3	●			7					8.39	5.22	5.39	5.57	5.76	6.19
EPDBEH2010-8-TH3	●			8				4	7.65	6.26	6.46	6.67	6.91	7.43
EPDBEH2010-9-TH3	●			9					7.03	7.29	7.53	7.78	8.06	8.67
EPDBEH2010-10-TH3	●			10					6.5	8.32	8.60	8.89	9.21	9.91
EPDBEH2010-12-TH3	●	0.5	1	12	0.8	0.96			6.05	9.36	9.67	10.00	10.36	11.16
EPDBEH2010-13-TH3	●			13			55		5.65	10.39	10.74	11.11	11.51	12.40
EPDBEH2010-14-TH3	●			14					5	12.46	12.88	13.32	13.81	14.89
EPDBEH2010-16-TH3	●			16					4.72	13.49	13.95	14.43	14.96	16.13
EPDBEH2010-18-TH3	●			18					4.48	14.53	15.02	15.54	16.11	17.37
EPDBEH2010-20-TH3	●			20			60		4.06	16.59	17.16	17.76	18.40	19.86
EPDBEH2010-2-S6-TH3	●			2					3.71	18.66	19.29	19.97	20.70	22.35
EPDBEH2010-3-S6-TH3	●			3					3.42	20.73	21.43	22.19	23.00	24.83
EPDBEH2010-6-S6-TH3	●			6			50	6	12.92	2.12	2.18	2.24	2.31	2.46
EPDBEH2010-8-S6-TH3	●			8					11.86	3.16	3.25	3.35	3.46	3.70
EPDBEH2010-10-S6-TH3	●			10					9.53	6.26	6.46	6.67	6.91	7.43
EPDBEH2011-2-TH3	●			2					8.42	8.32	8.60	8.89	9.21	9.91
EPDBEH2011-4-TH3	●			4					7.54	10.39	10.74	11.11	11.51	12.40
EPDBEH2011-6-TH3	●	0.55	1.1	6	1	1.05	50	4	11.78	2.14	2.20	2.26	2.32	2.47
EPDBEH2011-8-TH3	●			8					9.2	4.21	4.34	4.47	4.62	4.95
EPDBEH2011-10-TH3	●			10					7.54	6.28	6.47	6.69	6.92	7.44
EPDBEH2011-2-TH3	●			2					6.39	8.34	8.61	8.91	9.22	9.93
EPDBEH2011-4-TH3	●			4					5.54	10.41	10.75	11.12	11.52	12.41

● : Stocked items



Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool dia.	ϕ_2 Under Neck Length	ϕ Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	θ_K Interference Angle					
										0.5°	1°	1.5°	2°	3°
EPDBEH2012-2-TH3	●			2					11.78	2.14	2.19	2.25	2.31	2.46
EPDBEH2012-3-TH3	●			3					10.29	3.17	3.26	3.36	3.46	3.70
EPDBEH2012-4-TH3	●			4			50		9.13	4.21	4.33	4.47	4.61	4.94
EPDBEH2012-6-TH3	●			6				4	7.45	6.27	6.47	6.68	6.91	7.43
EPDBEH2012-8-TH3	●	0.6	1.2	8	1.1	1.15			6.29	8.34	8.61	8.90	9.21	9.91
EPDBEH2012-10-TH3	●			10					5.44	10.41	10.75	11.12	11.51	12.40
EPDBEH2012-12-TH3	●			12			55		4.79	12.48	12.89	13.33	13.81	14.89
EPDBEH2012-2-S6-TH3	●			2			50	6	12.94	2.14	2.19	2.25	2.31	2.46
EPDBEH2012-4-S6-TH3	●			4					10.92	4.21	4.33	4.47	4.61	4.94
EPDBEH2014-8-TH3	●			8			50		6.06	8.36	8.62	8.91	9.22	9.91
EPDBEH2014-12-TH3	●	0.7	1.4	12	1.3	1.34	55	4	4.58	12.49	12.90	13.34	13.82	14.89
EPDBEH2014-16-TH3	●			16					3.68	16.63	17.18	17.78	18.42	19.86
EPDBEH2015-2-TH3	●			2					11.76	2.13	2.18	2.23	2.29	2.42
EPDBEH2015-2.5-TH3	●			2.5					10.88	2.65	2.72	2.79	2.87	3.04
EPDBEH2015-3-TH3	●			3					10.12	3.17	3.25	3.34	3.44	3.66
EPDBEH2015-4-TH3	●			4			50		8.88	4.20	4.32	4.45	4.59	4.91
EPDBEH2015-5-TH3	●			5					7.9	5.23	5.39	5.56	5.74	6.15
EPDBEH2015-6-TH3	●			6					7.12	6.27	6.46	6.67	6.89	7.39
EPDBEH2015-8-TH3	●			8				4	5.95	8.34	8.60	8.88	9.19	9.88
EPDBEH2015-10-TH3	●	0.72	1.5	10	1.35	1.44			5.1	10.40	10.74	11.10	11.49	12.36
EPDBEH2015-12-TH3	●			12					4.47	12.47	12.88	13.32	13.79	14.85
EPDBEH2015-14-TH3	●			14			55		3.98	14.54	15.02	15.53	16.09	17.34
EPDBEH2015-16-TH3	●			16					3.58	16.60	17.16	17.75	18.39	19.82
EPDBEH2015-18-TH3	●			18			60		3.26	18.67	19.30	19.97	20.69	22.31
EPDBEH2015-20-TH3	●			20					2.99	20.74	21.44	22.18	22.99	No interference
EPDBEH2015-3-S6-TH3	●			3					11.84	3.17	3.25	3.34	3.44	3.66
EPDBEH2015-5-S6-TH3	●			5			50	6	10.02	5.23	5.39	5.56	5.74	6.15
EPDBEH2015-8-S6-TH3	●			8					8.14	8.34	8.60	8.88	9.19	9.88
EPDBEH2015-12-S6-TH3	●			12					6.51	12.47	12.88	13.32	13.79	14.85
EPDBEH2016-8-TH3	●			8			50		5.82	8.35	8.62	8.90	9.20	9.89
EPDBEH2016-12-TH3	●			12				4	4.35	12.49	12.90	13.33	13.80	14.86
EPDBEH2016-16-TH3	●	0.8	1.6	16	1.4	1.54	55		3.47	16.62	17.17	17.77	18.40	19.84
EPDBEH2016-20-TH3	●			20			60		2.89	20.76	21.45	22.20	23.00	No interference
EPDBEH2018-8-TH3	●			8			50		5.55	8.37	8.63	8.91	9.21	9.9
EPDBEH2018-12-TH3	●			12				4	4.11	12.50	12.91	13.34	13.81	14.86
EPDBEH2018-16-TH3	●	0.9	1.8	16	1.6	1.73	55		3.26	16.64	17.19	17.78	18.41	19.83
EPDBEH2018-20-TH3	●			20			60		2.7	20.77	21.47	22.21	23.01	No interference
EPDBEH2020-2.5-TH3	●			2.5					10.6	2.66	2.72	2.78	2.85	3.01
EPDBEH2020-3-TH3	●			3					9.72	3.18	3.25	3.34	3.43	3.63
EPDBEH2020-4-TH3	●			4					8.32	4.21	4.32	4.45	4.58	4.87
EPDBEH2020-5-TH3	●			5			50		7.27	5.25	5.39	5.55	5.73	6.11
EPDBEH2020-6-TH3	●			6					6.46	6.28	6.46	6.66	6.88	7.36
EPDBEH2020-8-TH3	●			8					5.27	8.35	8.60	8.88	9.18	9.84
EPDBEH2020-10-TH3	●			10					4.46	10.41	10.74	11.10	11.48	12.33
EPDBEH2020-12-TH3	●			12					3.86	12.48	12.88	13.31	13.77	14.82
EPDBEH2020-13-TH3	●			13				4	3.62	13.51	13.95	14.42	14.92	16.06
EPDBEH2020-14-TH3	●			14			55		3.4	14.55	15.02	15.53	16.07	17.30
EPDBEH2020-16-TH3	●			16					3.04	16.62	17.16	17.75	18.37	19.79
EPDBEH2020-18-TH3	●			18					2.75	18.68	19.30	19.96	20.67	No interference
EPDBEH2020-20-TH3	●	1	2	20	1.7	1.94	60		2.51	20.75	21.44	22.18	22.97	No interference
EPDBEH2020-22-TH3	●			22					2.31	22.82	23.58	24.40	25.27	No interference
EPDBEH2020-25-TH3	●			25			65		2.06	25.92	26.79	27.72	28.72	No interference
EPDBEH2020-30-TH3	●			30			70		1.75	31.09	32.14	33.26	No interference	No interference
EPDBEH2020-35-TH3	●			35			75		1.52	36.26	37.48	38.80	No interference	No interference
EPDBEH2020-40-TH3	●			40			80		1.34	41.42	42.83	No interference	No interference	No interference
EPDBEH2020-3-S6-TH3	●			3					11.8	3.18	3.25	3.34	3.43	3.63
EPDBEH2020-6-S6-TH3	●			6					9.04	6.28	6.46	6.66	6.88	7.36
EPDBEH2020-8-S6-TH3	●			8			50	6	7.82	8.35	8.60	8.88	9.18	9.84
EPDBEH2020-12-S6-TH3	●			12					6.15	12.48	12.88	13.31	13.77	14.82
EPDBEH2020-16-S6-TH3	●			16					5.07	16.62	17.16	17.75	18.37	19.79
EPDBEH2020-20-S6-TH3	●			20			60		4.31	20.75	21.44	22.18	22.97	24.76

● : Stocked item

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Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool dia.	ℓ ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDBEH2025-6-TH3	★			6			50		5.54	6.35	6.53	6.72	6.92	7.39
EPDBEH2025-10-TH3	★			10					3.66	10.48	10.81	11.15	11.52	12.36
EPDBEH2025-15-TH3	★	1.25	2.5	15			55		2.57	15.65	16.15	16.69	17.27	No interference
EPDBEH2025-20-TH3	★			20	2	2.4	60	4	1.98	20.82	21.5	22.23	No interference	No interference
EPDBEH2025-25-TH3	★			25			65		1.61	25.99	26.85	27.78	No interference	No interference
EPDBEH2025-30-TH3	★			30			70		1.36	31.16	32.2	No interference	No interference	No interference
EPDBEH2030-8-TH3	★			8			55		6.95	8.45	8.69	8.95	9.23	9.86
EPDBEH2030-10-TH3	★			10					5.98	10.51	10.83	11.17	11.53	12.35
EPDBEH2030-13-TH3	★			13					4.95	13.61	14.04	14.49	14.98	16.08
EPDBEH2030-16-TH3	★			16			60		4.23	16.71	17.25	17.82	18.43	19.81
EPDBEH2030-20-TH3	★	1.5	3	20	2.5	2.88	65	6	3.53	20.85	21.52	22.25	23.03	24.78
EPDBEH2030-25-TH3	★			25			70		2.93	26.02	26.87	27.79	28.78	No interference
EPDBEH2030-30-TH3	★			30			75		2.51	31.19	32.22	33.33	34.53	No interference
EPDBEH2030-35-TH3	★			35			80		2.19	36.35	37.57	38.87	40.28	No interference
EPDBEH2035-15-TH3	★			15			60		3.94	15.73	16.22	16.74	17.31	18.58
EPDBEH2035-25-TH3	★	1.75	3.5	25	2.75	3.35	70	6	2.54	26.07	26.92	27.83	28.81	No interference
EPDBEH2035-35-TH3	★			35			80		1.88	36.4	37.61	38.91	No interference	No interference
EPDBEH2035-45-TH3	★			45			90		1.49	46.74	48.31	No interference	No interference	No interference
EPDBEH2040-10-TH3	★			10			55		4.76	10.55	10.85	11.17	11.52	12.30
EPDBEH2040-13-TH3	★			13					3.82	13.65	14.06	14.50	14.97	16.03
EPDBEH2040-16-TH3	★			16			60		3.18	16.76	17.27	17.82	18.42	19.76
EPDBEH2040-20-TH3	★			20			65		2.61	20.89	21.55	22.26	23.02	No interference
EPDBEH2040-25-TH3	★	2	4	25	3	3.85	70	6	2.13	26.06	26.9	27.80	28.77	No interference
EPDBEH2040-30-TH3	★			30			75		1.79	31.23	32.25	33.34	No interference	No interference
EPDBEH2040-35-TH3	★			35					1.55	36.4	37.6	38.88	No interference	No interference
EPDBEH2040-40-TH3	★			40			80		1.37	41.56	42.94	No interference	No interference	No interference
EPDBEH2040-45-TH3	★			45			90		1.22	46.73	48.29	No interference	No interference	No interference
EPDBEH2040-50-TH3	★			50			100		1.11	51.9	53.64	No interference	No interference	No interference
EPDBEH2050-20-TH3	★			20			65		1.46	20.87	21.52	No interference	No interference	No interference
EPDBEH2050-25-TH3	★	2.5	5	25	3.5	4.85	70	6	1.17	26.04	26.86	No interference	No interference	No interference
EPDBEH2050-30-TH3	★			30			75		0.97	31.21	No interference	No interference	No interference	No interference
EPDBEH2050-50-TH3	★			40			80		0.73	41.55	No interference	No interference	No interference	No interference
EPDBEH2060-12-TH3	★			12			60		0	No interference	No interference	No interference	No interference	No interference
EPDBEH2060-20-TH3	★			20			65		0	No interference	No interference	No interference	No interference	No interference
EPDBEH2060-30-TH3	★	3	6	30	6	5.85	75	6	0	No interference	No interference	No interference	No interference	No interference
EPDBEH2060-50-TH3	★			50			100		0	No interference	No interference	No interference	No interference	No interference
EPDBEH2080-24-TH3	★	4	8	24	12	7.6	100	8	0	No interference	No interference	No interference	No interference	No interference
EPDBEH2100-30-TH3	★	5	10	30	15	9.5	100	10	0	No interference	No interference	No interference	No interference	No interference
EPDBEH2120-36-TH3	★	6	12	36	18	11.5	110	12	0	No interference	No interference	No interference	No interference	No interference

★ : Stocked items of new products ● : Stocked items



Recommended cutting conditions

EPDBEH-TH3

High efficiency cutting condition

High accuracy cutting condition

Work material				1		2		3		4		5	
				Pre-hardened Steel (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)		Hardened Steels (65 ~ 68HRC)		Hardened Steels (68 ~ 72HRC)	
Ratio to standard depth of cut				100%		85%		80%		65%		55%	
Ball Radius R (mm)	Tool dia. Dc (mm)	Under neck length (mm)	ap (mm)	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
0.05	0.1	0.2	0.006	50,000	230	50,000	200	50,000	190	45,000	170	42,500	130
		0.3	0.005	50,000	230	50,000	200	50,000	190	45,000	170	42,500	130
		0.5	0.003	50,000	230	50,000	200	50,000	190	45,000	170	42,500	130
0.1	0.2	0.3	0.016	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
		0.5	0.016	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
		0.75	0.014	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
		1	0.011	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
		1.25	0.009	45,900	270	40,500	220	37,800	170	34,020	150	32,130	120
		1.5	0.006	45,900	270	40,500	220	37,800	170	34,020	150	32,130	120
		2	0.006	45,900	270	40,500	220	37,800	170	34,020	150	32,130	120
		2.5	0.005	40,800	210	36,000	170	33,600	130	30,240	120	28,560	90
		3	0.003	40,800	210	36,000	170	33,600	130	30,240	120	28,560	90
0.15	0.3	0.5	0.022	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
		0.75	0.019	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
		1	0.017	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
		1.25	0.015	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
		1.5	0.013	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
		2	0.01	45,900	370	40,500	310	37,800	270	34,020	250	32,130	190
		2.5	0.008	45,900	370	40,500	310	37,800	270	34,020	250	32,130	190
		3	0.006	45,900	370	40,500	310	37,800	270	34,020	250	32,130	190
		3.5	0.004	36,720	260	29,400	210	26,400	180	23,760	160	22,440	130
0.2	0.4	4	0.003	36,720	260	29,400	210	26,400	180	23,760	160	22,440	130
		0.5	0.034	50,000	770	46,800	660	43,680	610	39,310	550	37,130	430
		0.75	0.034	50,000	770	46,800	660	43,680	610	39,310	550	37,130	430
		1	0.032	50,000	770	46,800	660	43,680	610	39,310	550	37,130	430
		1.5	0.027	50,000	660	46,800	470	43,680	440	39,310	390	37,130	310
		2	0.022	50,000	550	46,800	470	43,680	440	39,310	390	37,130	310
		2.5	0.018	36,720	360	32,400	290	36,290	270	32,660	250	30,850	190
		3	0.013	36,720	360	32,400	290	36,900	270	32,660	250	30,850	190
		3.5	0.01	36,720	360	32,400	290	36,290	270	32,660	250	30,850	190
		4	0.008	36,720	360	32,400	290	36,290	270	32,660	250	30,850	190
		4.5	0.006	32,640	310	28,800	250	26,880	230	24,190	210	22,850	160
0.25	0.5	5	0.004	32,640	310	28,800	250	26,880	230	24,190	210	22,850	160
		1	0.036	50,000	1,190	47,130	1,050	43,930	740	39,820	670	37,560	520
		1.5	0.032	50,000	1,190	47,130	1,050	43,930	680	39,820	610	37,560	480
		2	0.028	50,000	960	47,130	840	43,930	680	39,820	610	37,560	480
		2.5	0.026	45,450	650	42,840	570	39,940	500	36,220	450	34,180	350
		3	0.024	45,450	650	42,840	570	39,940	390	36,220	350	34,180	270
		4	0.016	34,970	500	32,950	520	30,730	390	28,540	350	26,290	270
		5	0.014	34,970	500	32,950	520	30,730	390	28,540	350	26,290	270
		5.5	0.012	31,080	420	29,300	370	27,310	320	24,770	290	23,370	230
		6	0.01	31,080	420	29,300	370	27,310	320	24,770	290	23,370	230
		7	0.008	31,080	420	29,300	370	27,310	320	24,770	290	23,370	230
		8	0.006	31,080	420	29,300	370	27,310	320	24,770	290	23,370	230
0.3	0.6	1	0.06	50,000	1,950	48,000	1,730	44,800	1,340	40,320	1,210	38,080	940
		1.5	0.055	50,000	1,950	48,000	1,730	44,800	1,340	40,320	1,210	38,080	940
		2	0.05	50,000	1,950	48,000	1,730	44,800	1,340	40,320	1,210	38,080	940
		2.5	0.036	50,000	1,560	48,000	1,380	44,800	990	40,320	890	38,080	690
		3	0.033	50,000	1,560	48,000	1,380	44,800	990	40,320	890	38,080	690
		3.5	0.028	48,960	1,450	43,200	1,180	40,320	840	36,290	760	34,270	590
		4	0.021	48,960	1,450	43,200	1,180	40,320	770	36,290	690	34,270	540
		4.5	0.018	45,900	1,070	40,500	880	37,800	680	34,020	610	32,130	480
		5	0.016	39,780	930	35,100	760	32,760	590	29,480	530	27,850	410
		5.5	0.014	39,780	930	35,100	760	32,760	590	29,480	530	27,850	410
		6	0.012	39,780	930	35,100	760	32,760	590	29,480	530	27,850	410
		7	0.012	27,200	600	24,000	490	22,400	420	20,160	370	19,040	290
		8	0.012	27,200	600	24,000	490	22,400	380	20,160	340	19,040	270
		9	0.01	27,200	600	24,000	490	22,400	380	20,160	340	19,040	270
0.35	0.7	2	0.073	50,000	2,160	48,000	1,930	44,800	1,190	40,320	1,070	38,080	830
		4	0.033	48,960	1,600	43,200	1,320	43,870	850	39,480	760	37,370	590

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



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DEEP SERIES
ตระกูลดีฟ

DEEP SERIES เอ็นมิลล์ตระกูลดีฟ
CBN END MILL CBN เอ็นมิลล์
Carbide Endmill เอ็นมิลล์คาร์ไบด์
HSS Endmill เอ็นมิลล์ไฮสปีด
Ball หัวบอล
Radius หัวก้นมุม R
Square หัวสี่
Taper Ball หัวเตปเปอร์บอล
Roughing

Work material				1		2		3		4		5	
				Pre-hardened Steel (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)		Hardened Steels (65 ~ 68HRC)		Hardened Steels (68 ~ 72HRC)	
Ratio to standard depth of cut				100%		85%		80%		65%		55%	
Ball Radius R (mm)	Tool dia. Dc (mm)	Under neck length (mm)	ap (mm)	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
0.35	0.7	6	0.022	39,780	1,030	35,100	850	35,650	640	32,080	580	30,370	450
		8	0.016	27,200	630	24,000	520	24,370	420	21,940	380	20,760	300
		1	0.12	50,000	2,400	48,000	2,590	44,800	1,880	40,320	1,690	38,080	1,320
		1.5	0.12	50,000	2,400	48,000	2,590	44,800	1,880	40,320	1,690	38,080	1,320
		2	0.096	50,000	2,400	48,000	2,590	44,800	1,880	40,320	1,690	38,080	1,320
		2.5	0.088	50,000	2,400	48,000	2,590	44,800	1,880	40,320	1,690	38,080	1,320
		3	0.08	50,000	2,400	48,000	2,590	44,800	1,880	40,320	1,690	38,080	1,320
		4	0.063	50,000	2,400	48,000	2,590	44,800	1,880	40,320	1,690	38,080	1,320
		5	0.047	48,960	2,110	43,200	2,120	40,320	1,520	36,290	1,370	34,270	1,070
		6	0.033	42,840	1,730	37,800	1,430	35,280	1,250	31,750	1,120	29,990	870
		8	0.016	35,360	1,020	31,200	840	29,120	730	26,210	660	24,750	510
		10	0.016	27,200	740	24,000	610	22,400	530	20,160	480	19,040	370
0.4	0.8	12	0.01	27,200	740	24,000	610	22,400	530	20,160	480	19,040	370
		2	0.108	50,000	2,820	45,600	2,410	42,560	2,140	38,300	1,930	36,180	1,500
		4	0.065	48,450	2,370	42,750	1,960	39,900	1,740	35,910	1,560	33,920	1,220
		6	0.044	40,700	1,520	35,910	1,250	33,520	1,110	30,160	1,000	28,490	780
		8	0.029	31,010	1,050	27,360	870	25,540	770	22,980	690	21,710	540
		1.5	0.18	45,900	3,100	43,200	2,720	37,800	2,270	34,020	2,040	32,130	1,590
		2	0.16	45,900	3,100	43,200	2,720	37,800	2,270	34,020	2,040	32,130	1,590
		2.5	0.16	45,900	3,100	43,200	2,720	37,800	2,270	34,020	2,040	32,130	1,590
		3	0.16	45,900	3,100	43,200	2,720	37,800	2,270	34,020	2,040	32,130	1,590
		4	0.112	45,900	3,100	43,200	2,720	37,800	2,270	34,020	2,040	32,130	1,590
		5	0.072	39,780	2,600	43,200	2,540	32,760	1,840	29,480	1,650	27,850	1,280
		6	0.048	38,560	2,320	38,880	2,350	29,480	1,380	26,540	1,240	25,060	970
0.45	0.9	7	0.048	33,050	1,340	31,590	1,320	27,220	1,060	24,490	960	23,130	740
		8	0.048	33,050	1,340	31,590	1,320	27,220	980	24,490	880	23,130	690
		9	0.036	33,050	1,340	31,590	1,320	27,220	980	24,490	880	23,130	690
		10	0.03	33,050	1,340	31,590	1,320	27,220	980	24,490	880	23,130	690
		12	0.02	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
		13	0.018	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
		14	0.016	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
		16	0.012	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
		18	0.01	21,420	770	18,900	640	17,640	560	15,880	510	14,990	400
		20	0.008	18,360	660	16,200	540	15,120	480	13,610	440	12,850	340
		2	0.16	42,840	2,930	37,800	2,450	35,280	2,180	31,750	1,960	29,990	1,520
		4	0.112	42,840	2,930	37,800	2,450	35,280	2,180	31,750	1,960	29,990	1,520
0.5	1	6	0.048	33,810	1,710	29,840	1,430	27,850	1,270	25,060	1,140	23,670	890
		8	0.048	31,210	1,310	27,540	1,100	25,700	980	23,130	880	21,850	680
		10	0.03	31,210	1,310	27,540	1,100	25,700	980	23,130	880	21,850	680
		2	0.154	39,230	2,720	36,920	2,560	32,310	1,860	29,080	1,670	27,460	1,300
		3	0.154	39,230	2,720	36,920	2,560	32,310	1,860	29,080	1,670	27,460	1,300
		4	0.128	39,230	2,720	36,920	2,560	32,310	1,860	29,080	1,670	27,460	1,300
		6	0.088	39,230	2,720	36,920	2,560	32,310	1,860	29,080	1,670	27,460	1,300
		8	0.048	31,820	2,070	30,240	2,060	26,210	1,050	23,590	940	22,280	730
		10	0.042	29,380	1,320	27,000	1,070	24,190	870	21,770	780	20,560	610
		12	0.036	29,380	1,320	25,920	1,030	24,190	870	21,770	780	20,560	610
		8	0.088	27,850	1,810	24,570	1,530	22,930	1,380	20,640	1,240	19,490	960
		12	0.042	25,700	1,250	22,680	1,060	21,170	950	19,050	860	17,990	670
0.55	1.1	16	0.028	19,040	870	16,800	740	15,680	670	14,110	600	13,330	470
		2	0.192	35,700	3,210	31,500	2,550	29,400	2,210	26,460	1,990	24,990	1,540
		2.5	0.192	35,700	3,210	31,500	2,550	29,400	2,210	26,460	1,990	24,990	1,540
		3	0.192	35,700	3,210	31,500	2,550	29,400	2,210	26,460	1,990	24,990	1,540
		4	0.16	35,700	3,210	31,500	2,550	29,400	2,210	26,460	1,990	24,990	1,540
		5	0.16	35,700	3,210	31,500	2,550	29,400	2,210	26,460	1,990	24,990	1,540
		6	0.16	35,700	3,210	31,500	2,550	29,400	2,210	26,460	1,990	24,990	1,540
		8	0.072	27,850	1,810	24,570	1,430	22,930	1,240	20,640	1,120	19,490	870
		10	0.072	25,700	1,670	22,680	1,320	21,170	1,140	19,050	1,030	17,990	800
		12	0.072	25,700	1,390	22,680	1,100	21,170	950	19,050	860	17,990	670
		14	0.06	22,850	1,170	20,160	930	18,820	800	16,930	720	15,990	560
		16	0.03	19,040	970	16,800	770	15,680	670	14,110	600	13,330	470
0.6	1.2	18	0.03	19,040	970	16,800	770	15,680	670	14,110	600	13,330	470
		20	0.03	19,040	970	16,800	770	15,680	670	14,110	600	13,330	470
		8	0.176	30,940	2,490	27,300	2,130	23,660	1,590	21,290	1,430	20,110	1,110
		12	0.078	27,850	2,180	24,570	1,860	21,290	1,290	19,170	1,160	18,100	900
		16	0.048	23,870	1,330	21,060	1,140	19,660	990	17,690	890	16,710	690
		20	0.032	17,680	930	15,600	800	14,560	690	13,100	620	12,380	490
0.7	1.4	8	0.208	28,730	2,410	25,350	2,010	23,660	1,700	21,290	1,530	20,110	1,190
		12	0.084	23,870	1,500	21,060	1,250	19,660	1,060	17,690	960	16,710	740
		16	0.054	23,870	1,500	21,060	1,250	19,660	1,060	17,690	960	16,710	740
		20	0.036	17,680	1,050	15,600	880	14,560	740	13,100	670	12,380	520
0.8	1.6	8	0.208	28,730	2,410	25,350	2,010	23,660	1,700	21,290	1,530	20,110	1,190
		12	0.084	23,870	1,500	21,060	1,250	19,660	1,060	17,690	960	16,710	740
		16	0.054	23,870	1,500	21,060	1,250	19,660	1,060	17,690	960	16,710	740
		20	0.036	17,680	1,050	15,600	880	14,560	740	13,100	670	12,380	520
0.9	1.8	8	0.208	28,730	2,410	25,350	2,010	23,660	1,700	21,290	1,530	20,110	1,190
		12	0.084	23,870	1,500	21,060	1,250	19,660	1,060	17,690	960	16,710	740
		16	0.054	23,870	1,500	21,060	1,250	19,660	1,060	17,690	960	16,710	740
		20	0.036	17,680	1,050	15,600	880	14,560	740	13,100	670	12,380	520



Work material				1		2		3		4		5	
				Pre-hardened Steel (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)		Hardened Steels (65 ~ 68HRC)		Hardened Steels (68 ~ 72HRC)	
Ratio to standard depth of cut				100%		85%		80%		65%		55%	
Ball Radius R (mm)	Tool dia. Dc (mm)	Under neck length (mm)	ap (mm)	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	2	2.5	0.32	26,780	3,620	23,630	3,050	22,050	2,650	19,850	2,380	18,740	1,850
		3	0.32	26,780	3,620	23,630	3,050	22,050	2,650	19,850	2,380	18,740	1,850
		4	0.32	26,780	3,620	23,630	3,050	22,050	2,650	19,850	2,380	18,740	1,850
		5	0.32	26,780	3,620	23,630	3,050	22,050	2,650	19,850	2,380	18,740	1,850
		6	0.32	26,780	3,210	23,630	2,690	22,050	2,380	19,850	2,140	18,740	1,670
		8	0.224	26,780	3,210	23,630	2,690	22,050	2,380	19,850	2,140	18,740	1,670
		10	0.168	24,990	2,700	22,050	2,250	19,110	1,470	17,200	1,320	16,240	1,030
		12	0.096	22,490	2,430	19,850	2,050	17,200	1,320	15,480	1,190	14,620	930
		13	0.096	22,490	2,430	19,850	2,020	15,880	1,020	14,290	920	13,500	710
		14	0.096	22,490	2,110	18,430	1,630	15,880	1,020	14,290	920	13,500	710
		16	0.096	20,890	1,350	18,430	1,470	15,880	910	14,290	820	13,500	640
		18	0.072	19,280	1,250	18,430	1,350	15,880	910	14,290	820	13,500	640
		20	0.06	19,280	1,250	18,430	1,130	15,880	910	14,290	820	13,500	640
		22	0.04	15,170	930	13,390	770	14,990	820	13,500	730	12,750	570
		25	0.04	14,280	870	12,600	730	14,110	770	12,700	690	12,000	540
		30	0.024	14,280	870	12,600	730	14,110	770	12,700	690	12,000	540
1.25	2.5	35	0.02	12,500	720	11,030	600	10,290	530	9,260	470	8,750	370
		40	0.018	10,710	620	9,450	510	8,820	450	7,940	410	7,500	320
		6	0.4	23,590	3,800	20,810	3,090	19,430	2,530	17,480	2,280	16,610	1,820
		10	0.272	23,590	3,800	20,810	3,090	19,430	2,530	17,480	2,280	16,610	1,820
		15	0.12	18,400	2,130	16,230	2,020	15,150	1,420	13,640	1,280	12,950	1,020
		20	0.096	16,980	1,640	16,230	1,450	13,990	1,090	12,590	980	11,960	790
1.5	3	25	0.078	16,980	1,480	14,990	1,200	13,990	980	12,590	880	11,960	710
		30	0.044	12,580	1,150	11,100	930	10,360	770	9,320	690	8,860	550
		8	0.48	20,400	4,100	18,000	3,400	16,800	3,020	15,120	2,720	14,360	2,180
		10	0.336	20,400	4,100	18,000	3,400	16,800	3,020	15,120	2,720	14,360	2,180
		13	0.252	19,040	3,060	16,800	2,540	15,680	2,260	14,110	2,030	13,410	1,630
		16	0.252	19,040	2,760	16,800	2,290	14,560	1,890	13,100	1,700	12,450	1,360
1.75	3.5	20	0.144	15,910	1,920	14,040	1,590	12,100	1,310	10,890	1,180	10,340	940
		25	0.096	15,910	1,920	14,040	1,590	12,100	1,310	10,890	1,180	10,340	940
		30	0.096	14,690	1,770	12,960	1,470	12,100	1,310	10,890	1,180	10,340	940
		35	0.064	10,880	1,240	9,600	1,030	10,750	1,100	9,680	990	9,190	790
		15	0.288	15,190	2,750	13,410	2,240	12,510	1,830	11,260	1,650	10,700	1,320
		25	0.168	12,620	1,710	11,140	1,390	10,400	1,140	9,360	1,030	8,890	820
2	4	35	0.072	12,620	1,710	11,140	1,390	10,400	1,140	9,360	1,030	8,890	820
		45	0.072	9,350	1,200	8,250	980	7,700	800	6,930	720	6,580	580
		10	0.48	14,660	3,960	12,940	3,300	12,080	2,900	10,870	2,610	10,320	2,090
		13	0.384	14,660	3,960	12,940	3,300	12,080	2,900	10,870	2,610	10,320	2,090
		16	0.336	14,660	3,960	12,940	3,300	12,080	2,900	10,870	2,610	10,320	2,090
		20	0.336	12,710	2,750	11,210	2,290	10,470	2,010	9,420	1,810	8,950	1,450
2.5	5	25	0.192	11,440	2,220	10,090	2,160	9,420	1,630	8,480	1,460	8,050	1,170
		30	0.128	10,560	1,710	9,320	1,430	8,690	1,250	7,820	1,130	7,430	900
		35	0.08	10,560	1,710	9,320	1,430	8,690	1,250	7,820	1,130	7,430	900
		40	0.08	10,560	1,710	9,320	1,430	8,690	1,250	7,820	1,130	7,430	900
		45	0.08	7,820	1,200	6,900	1,000	6,440	880	5,800	790	5,510	630
		50	0.08	7,820	1,200	6,900	1,000	6,440	880	5,800	790	5,510	630
3	6	20	0.42	10,710	3,210	9,450	2,840	8,820	2,380	7,940	2,140	7,540	1,710
		25	0.42	9,950	2,980	8,780	2,630	8,190	2,210	7,370	1,990	7,000	1,590
		30	0.24	8,950	2,690	7,900	2,370	7,370	1,990	6,630	1,790	6,300	1,430
		40	0.16	8,260	1,490	7,290	1,310	6,800	1,100	6,120	990	5,820	790
		12	0.48	11,480	4,250	10,130	3,460	9,450	2,840	8,510	2,550	8,080	2,040
		20	0.4	10,840	3,730	9,560	3,030	8,930	2,490	8,030	2,240	7,630	1,790
4	8	30	0.336	8,840	2,120	7,800	2,030	7,280	1,570	6,550	1,410	6,220	1,130
		50	0.12	7,340	1,590	6,480	1,400	6,050	1,180	5,440	1,060	5,170	850
5	10	30	0.6	8,750	3,420	7,550	2,600	7,100	2,450	6,390	1,850	5,750	1,270
6	12	36	0.8	7,000	3,000	6,050	2,250	5,680	2,130	5,110	1,610	4,600	1,030
6	12	36	0.8	5,850	2,600	5,050	1,980	4,720	1,840	4,250	1,440	3,820	880

※(1) ap is shown as the criteria for Group 1 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.

※(2) When performing cutting where cutting chips may cause clogging, such as for rib cutting, blind grooves, etc., cutting depth setting should be set by multiplying a cutting depth factor to calculate the cutting depth amount, and this amount should then be reduced to 80% of the calculated value.

※(3) Adjust by setting ae to (3 to 5) (ap) (cutting depth ratio). When performing finishing processing, calculate the theoretical cusp height and set accordingly.

Cutting depth setting example: When cutting rib groove contours in hardened steel (50HRC) using an EPDBEH2020-10-TH3 tool:

Cutting depth = 0.168 (ap) × 0.85 (cutting depth factor for Group 2 hardened steel) × 0.8 (for closed-area cutting) = 0.011mm

[Note]

① Although basically dry (air blow) cutting is recommended, please use appropriate coolant according to the work material and machining shape.

② 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.

③ If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.

END MILL

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MOLDINO
The Edge To Innovation

Recommended cutting conditions

EPDBEH-TH3

High efficiency cutting condition

High accuracy cutting condition

DEEP SERIES เอ็นมิลล์ตระกูลดีฟ CBN END MILL CBN เอ็นมิลล์ Carbide Endmill เอ็นมิลล์คาร์ไบด์ HSS Endmill เอ็นมิลล์ไฮสปีด Ball หัวบอล Radius หัวก้นมุม R Square หัวสี่ Taper Ball หัวเตเปอร์บอล Roughing	Work material				1		2		3		4		5	
					Pre-hardened Steel (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)		Hardened Steels (65 ~ 68HRC)		Hardened Steels (68 ~ 72HRC)	
					Ratio to standard depth of cut		100%		85%		80%		65%	
	Ball Radius R (mm)	Tool dia. Dc (mm)	Under neck length (mm)	ap (mm)	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
0.05	0.1	0.2	0.2	0.003	50,000	230	50,000	200	50,000	190	45,000	170	42,500	130
			0.3	0.002	50,000	230	50,000	200	50,000	190	45,000	170	42,500	130
			0.5	0.002	50,000	230	50,000	200	50,000	190	45,000	170	42,500	130
0.1	0.2	0.2	0.3	0.012	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
			0.5	0.012	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
			0.75	0.01	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
			1	0.009	50,000	330	45,500	270	42,000	210	37,800	190	35,700	150
			1.25	0.006	45,900	270	40,500	220	37,800	170	34,020	150	32,130	120
			1.5	0.006	45,900	270	40,500	220	37,800	170	34,020	150	32,130	120
			2	0.005	45,900	270	40,500	220	37,800	170	34,020	150	32,130	120
			2.5	0.004	40,800	210	36,000	170	33,600	130	30,240	120	28,560	90
			3	0.002	40,800	210	36,000	170	33,600	130	30,240	120	28,560	90
0.15	0.3	0.3	0.5	0.016	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
			0.75	0.014	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
			1	0.013	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
			1.25	0.011	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
			1.5	0.01	50,000	450	45,000	380	42,000	340	37,800	300	35,700	240
			2	0.007	45,900	370	40,500	310	37,800	270	34,020	250	32,130	190
			2.5	0.006	45,900	370	40,500	310	37,800	270	34,020	250	32,130	190
			3	0.005	45,900	370	40,500	310	37,800	270	34,020	250	32,130	190
			3.5	0.003	36,720	260	29,400	210	26,400	180	23,760	160	22,440	130
0.2	0.4	0.4	4	0.002	36,720	260	29,400	210	26,400	180	23,760	160	22,440	130
			0.5	0.034	40,800	450	36,000	360	33,600	340	30,240	300	28,560	240
			0.75	0.034	40,800	450	36,000	360	33,600	340	30,240	300	28,560	240
			1	0.032	40,800	450	36,000	360	33,600	340	30,240	300	28,560	240
			1.5	0.027	40,800	450	36,000	360	33,600	340	30,240	300	28,560	240
			2	0.022	40,800	450	36,000	360	33,600	340	30,240	300	28,560	240
			2.5	0.013	36,720	360	32,400	290	30,240	270	27,220	250	25,700	190
			3	0.009	36,720	360	32,400	290	30,240	270	27,220	250	25,700	190
			3.5	0.006	36,720	360	32,400	290	30,240	270	27,220	250	25,700	190
0.25	0.5	0.5	4	0.004	36,720	360	32,400	290	30,240	270	27,220	250	25,700	190
			4.5	0.003	32,640	310	28,800	250	26,880	230	24,190	210	22,850	160
			5	0.002	32,640	310	28,800	250	26,880	230	24,190	210	22,850	160
			1	0.036	34,000	610	30,000	540	28,000	480	25,200	430	23,800	330
			1.5	0.032	34,000	610	30,000	540	28,000	480	25,200	430	23,800	330
			2	0.028	34,000	610	30,000	540	28,000	480	25,200	430	23,800	330
			2.5	0.026	30,600	500	27,000	440	25,200	390	22,680	350	21,420	270
			3	0.024	30,600	500	27,000	440	25,200	390	22,680	350	21,420	270
			4	0.016	30,600	500	27,000	440	25,200	390	22,680	350	21,420	270
0.3	0.6	0.6	5	0.014	30,600	500	27,000	440	25,200	390	22,680	350	21,420	270
			5.5	0.006	27,200	420	24,000	370	22,400	320	20,160	290	19,040	230
			6	0.005	27,200	420	24,000	370	22,400	320	20,160	290	19,040	230
			7	0.004	27,200	420	24,000	370	22,400	320	20,160	290	19,040	230
			8	0.003	27,200	420	24,000	370	22,400	320	20,160	290	19,040	230
			1	0.04	34,000	880	30,000	720	28,000	560	25,200	500	23,800	390
			1.5	0.038	34,000	880	30,000	720	28,000	560	25,200	500	23,800	390
			2	0.034	34,000	880	30,000	720	28,000	560	25,200	500	23,800	390
			2.5	0.03	34,000	880	30,000	720	28,000	560	25,200	500	23,800	390
0.35	0.7	0.7	3	0.027	34,000	880	30,000	720	28,000	560	25,200	500	23,800	390
			3.5	0.023	30,600	760	27,000	620	25,200	480	22,680	430	21,420	340
			4	0.019	30,600	760	27,000	620	25,200	480	22,680	430	21,420	340
			4.5	0.018	30,600	720	27,000	580	25,200	450	22,680	410	21,420	320
			5	0.016	30,600	720	27,000	580	25,200	450	22,680	410	21,420	320
			5.5	0.014	30,600	720	27,000	580	25,200	450	22,680	410	21,420	320
			6	0.012	30,600	720	27,000	580	25,200	450	22,680	410	21,420	320
			7	0.006	27,200	600	24,000	490	22,400	380	20,160	340	19,040	270
			8	0.006	27,200	600	24,000	490	22,400	380	20,160	340	19,040	270
0.35	0.7	0.7	9	0.005	27,200	600	24,000	490	22,400	380	20,160	340	19,040	270
			10	0.004	23,800	530	21,000	430	19,600	330	17,640	300	16,660	230
			12	0.003	20,400	420	18,000	350	16,800	270	15,120	240	14,280	190
			2	0.049	34,000	980	30,000	810	28,000	660	25,200	590	23,800	460
0.35	0.7	0.7	4	0.027	30,600	840	27,000	690	25,200	560	22,680	510	21,420	400



Work material				1		2		3		4		5	
				Pre-hardened Steel (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)		Hardened Steels (65 ~ 68HRC)		Hardened Steels (68 ~ 72HRC)	
Ratio to standard depth of cut				100%		85%		80%		65%		55%	
Ball Radius R (mm)	Tool dia. Dc (mm)	Under neck length (mm)	ap (mm)	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
0.35	0.7	6	0.022	30,600	790	27,000	650	25,200	540	22,680	480	21,420	370
		8	0.008	27,200	630	24,000	520	22,400	420	20,160	380	19,040	300
0.4	0.8	1	0.08	34,000	1,090	30,000	900	28,000	780	25,200	710	23,800	550
		1.5	0.08	34,000	1,090	30,000	900	28,000	780	25,200	710	23,800	550
		2	0.064	34,000	1,090	30,000	900	28,000	780	25,200	710	23,800	550
		2.5	0.06	34,000	1,090	30,000	900	28,000	780	25,200	710	23,800	550
		3	0.055	34,000	1,090	30,000	900	28,000	780	25,200	710	23,800	550
		4	0.045	34,000	1,090	30,000	900	28,000	780	25,200	710	23,800	550
		5	0.036	30,600	880	27,000	730	25,200	640	22,680	570	21,420	450
		6	0.026	30,600	880	27,000	730	25,200	640	22,680	570	21,420	450
		8	0.016	27,200	780	24,000	650	22,400	560	20,160	510	19,040	400
		10	0.008	27,200	740	24,000	610	22,400	530	20,160	480	19,040	370
		12	0.006	27,200	740	24,000	610	22,400	530	20,160	480	19,040	370
0.45	0.9	2	0.072	32,300	1,220	28,500	1,000	26,600	890	23,940	800	22,610	620
		4	0.046	32,300	1,220	28,500	1,000	26,600	890	23,940	800	22,610	620
		6	0.034	29,070	980	25,650	810	23,940	720	21,550	650	20,350	510
		8	0.024	25,840	880	22,800	720	21,280	640	19,150	580	18,090	450
0.5	1	1.5	0.09	30,600	1,380	27,000	1,130	25,200	1,010	22,680	910	21,420	710
		2	0.08	30,600	1,380	27,000	1,130	25,200	1,010	22,680	910	21,420	710
		2.5	0.08	30,600	1,380	27,000	1,130	25,200	1,010	22,680	910	21,420	710
		3	0.08	30,600	1,380	27,000	1,130	25,200	1,010	22,680	910	21,420	710
		4	0.056	30,600	1,380	27,000	1,130	25,200	1,010	22,680	910	21,420	710
		5	0.048	30,600	1,380	27,000	1,130	25,200	1,010	22,680	910	21,420	710
		6	0.032	27,540	1,120	24,300	920	22,680	820	20,410	730	19,280	570
		7	0.032	27,540	1,120	24,300	920	22,680	820	20,410	730	19,280	570
		8	0.032	27,540	1,120	24,300	920	22,680	820	20,410	730	19,280	570
		9	0.024	27,540	1,120	24,300	920	22,680	820	20,410	730	19,280	570
		10	0.02	27,540	1,120	24,300	920	22,680	820	20,410	730	19,280	570
		12	0.01	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
		13	0.009	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
		14	0.008	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
		16	0.006	24,480	940	21,600	770	20,160	690	18,140	620	17,140	480
0.55	1.1	2	0.08	28,560	1,300	25,200	1,090	23,520	970	21,170	870	19,990	680
		4	0.056	28,560	1,300	25,200	1,090	23,520	970	21,170	870	19,990	680
		6	0.032	26,010	1,090	22,950	920	21,420	810	19,280	730	18,210	570
		8	0.032	26,010	1,090	22,950	920	21,420	810	19,280	730	18,210	570
		10	0.02	26,010	1,090	22,950	920	21,420	810	19,280	730	18,210	570
0.6	1.2	2	0.077	26,150	1,210	23,080	1,000	21,540	890	19,380	800	18,310	620
		3	0.077	26,150	1,210	23,080	1,000	21,540	890	19,380	800	18,310	620
		4	0.064	26,150	1,210	23,080	1,000	21,540	890	19,380	800	18,310	620
		6	0.048	26,150	1,210	23,080	1,000	21,540	890	19,380	800	18,310	620
		8	0.032	24,480	1,220	21,600	950	20,160	810	18,140	730	17,140	560
		10	0.028	24,480	1,100	21,600	860	20,160	730	18,140	650	17,140	510
0.7	1.4	12	0.024	24,480	1,100	21,600	860	20,160	730	18,140	650	17,140	510
		8	0.044	21,420	1,160	18,900	980	17,640	880	15,880	790	14,990	620
		12	0.028	21,420	1,040	18,900	890	17,640	790	15,880	720	14,990	560
0.75	1.5	16	0.014	19,040	870	16,800	740	15,680	670	14,110	600	13,330	470
		2	0.096	23,800	1,430	21,000	1,130	19,600	980	17,640	880	16,660	690
		2.5	0.096	23,800	1,430	21,000	1,130	19,600	980	17,640	880	16,660	690
		3	0.096	23,800	1,430	21,000	1,130	19,600	980	17,640	880	16,660	690
		4	0.08	23,800	1,430	21,000	1,130	19,600	980	17,640	880	16,660	690
		5	0.08	23,800	1,430	21,000	1,130	19,600	980	17,640	880	16,660	690
		6	0.08	23,800	1,430	21,000	1,130	19,600	980	17,640	880	16,660	690
		8	0.048	21,420	1,160	18,900	920	17,640	790	15,880	720	14,990	560
		10	0.048	21,420	1,160	18,900	920	17,640	790	15,880	720	14,990	560
		12	0.048	21,420	1,160	18,900	920	17,640	790	15,880	720	14,990	560
		14	0.04	19,040	970	16,800	770	15,680	670	14,110	600	13,330	470
		16	0.015	19,040	970	16,800	770	15,680	670	14,110	600	13,330	470
0.8	1.6	18	0.015	19,040	970	16,800	770	15,680	670	14,110	600	13,330	470
		20	0.015	19,040	970	16,800	770	15,680	670	14,110	600	13,330	470
		8	0.088	22,100	1,370	19,500	1,170	18,200	1,020	16,380	920	15,470	710
		12	0.052	19,890	1,110	17,550	950	16,380	830	14,740	740	13,920	580
0.9	1.8	16	0.032	19,890	1,110	17,550	950	16,380	830	14,740	740	13,920	580
		20	0.016	17,680	930	15,600	800	14,560	690	13,100	620	12,380	490
		8	0.104	22,100	1,550	19,500	1,290	18,200	1,090	16,380	980	15,470	760
		12	0.056	19,890	1,250	17,550	1,040	16,380	890	14,740	800	13,920	620
		16	0.036	19,890	1,250	17,550	1,040	16,380	890	14,740	800	13,920	620
		20	0.018	17,680	1,050	15,600	880	14,560	740	13,100	670	12,380	520

DEEP SERIES

เอ็นมิลล์ตระกูลตีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

DEEP SERIES
ตระกูลดีฟ

DEEP SERIES เอ็นมิลล์ตระกูลดีฟ
CBN END MILL CBN เอ็นมิลล์
Carbide Endmill เอ็นมิลล์คาร์ไบด์
HSS Endmill เอ็นมิลล์ไฮสปีด
Ball หัวบอล
Radius หัวก้นมุม R
Square หัวสี่
Taper Ball หัวแปแอร์บอล
Roughing

Work material				1		2		3		4		5	
				Pre-hardened Steel (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)		Hardened Steels (65 ~ 68HRC)		Hardened Steels (68 ~ 72HRC)	
Ratio to standard depth of cut				100%		85%		80%		65%		55%	
Ball Radius R (mm)	Tool dia. Dc (mm)	Under neck length (mm)	ap (mm)	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	2	2.5	0.16	17,850	1,610	15,750	1,360	14,700	1,180	13,230	1,060	12,500	820
		3	0.16	17,850	1,610	15,750	1,360	14,700	1,180	13,230	1,060	12,500	820
		4	0.16	17,850	1,610	15,750	1,360	14,700	1,180	13,230	1,060	12,500	820
		5	0.16	17,850	1,610	15,750	1,360	14,700	1,180	13,230	1,060	12,500	820
		6	0.16	17,850	1,430	15,750	1,200	14,700	1,060	13,230	950	12,500	740
		8	0.112	17,850	1,430	15,750	1,200	14,700	1,060	13,230	950	12,500	740
		10	0.112	17,850	1,290	15,750	1,070	14,700	940	13,230	850	12,500	660
		12	0.064	16,070	1,160	14,180	960	13,230	850	11,910	760	11,250	590
		13	0.064	16,070	1,160	14,180	960	13,230	850	11,910	760	11,250	590
		14	0.064	16,070	1,160	14,180	960	13,230	850	11,910	760	11,250	590
		16	0.064	16,070	1,040	14,180	870	13,230	760	11,910	690	11,250	530
		18	0.048	16,070	1,040	14,180	870	13,230	760	11,910	690	11,250	530
		20	0.04	16,070	1,040	14,180	870	13,230	760	11,910	690	11,250	530
		22	0.034	15,170	930	13,390	770	12,500	680	11,250	610	10,620	480
		25	0.028	14,280	870	12,600	730	11,760	640	10,580	580	10,000	450
		30	0.012	14,280	870	12,600	730	11,760	640	10,580	580	10,000	450
		35	0.01	12,500	720	11,030	600	10,290	530	9,260	470	8,750	370
		40	0.008	10,710	620	9,450	510	8,820	450	7,940	410	7,500	320
1.25	2.5	6	0.2	15,730	1,690	13,880	1,370	12,950	1,130	11,660	1,010	11,070	810
		10	0.136	15,730	1,690	13,880	1,370	12,950	1,130	11,660	1,010	11,070	810
		15	0.08	14,150	1,370	12,490	1,110	11,660	910	10,490	820	9,970	660
		20	0.064	14,150	1,370	12,490	1,110	11,660	910	10,490	820	9,970	660
		25	0.052	14,150	1,230	12,490	1,000	11,660	820	10,490	740	9,970	590
		30	0.035	12,580	1,150	11,100	930	10,360	770	9,320	690	8,860	550
1.5	3	8	0.24	13,600	1,820	12,000	1,510	11,200	1,340	10,080	1,210	9,580	970
		10	0.168	13,600	1,820	12,000	1,510	11,200	1,340	10,080	1,210	9,580	970
		13	0.168	13,600	1,820	12,000	1,510	11,200	1,340	10,080	1,210	9,580	970
		16	0.168	13,600	1,640	12,000	1,360	11,200	1,210	10,080	1,090	9,580	870
		20	0.096	12,240	1,480	10,800	1,230	10,080	1,090	9,070	980	8,620	780
		25	0.064	12,240	1,480	10,800	1,230	10,080	1,090	9,070	980	8,620	780
		30	0.064	12,240	1,480	10,800	1,230	10,080	1,090	9,070	980	8,620	780
		35	0.051	10,880	1,240	9,600	1,030	8,960	910	8,060	820	7,660	660
1.75	3.5	15	0.192	11,690	1,760	10,310	1,430	9,630	1,180	8,660	1,060	8,230	850
		25	0.112	10,520	1,430	9,280	1,160	8,660	950	7,800	860	7,410	680
		35	0.072	10,520	1,430	9,280	1,160	8,660	950	7,800	860	7,410	680
		45	0.058	9,350	1,200	8,250	980	7,700	800	6,930	720	6,580	580
2	4	10	0.32	9,780	1,760	8,630	1,470	8,050	1,290	7,250	1,160	6,880	930
		13	0.256	9,780	1,760	8,630	1,470	8,050	1,290	7,250	1,160	6,880	930
		16	0.224	9,780	1,760	8,630	1,470	8,050	1,290	7,250	1,160	6,880	930
		20	0.224	9,780	1,760	8,630	1,470	8,050	1,290	7,250	1,160	6,880	930
		25	0.128	8,800	1,430	7,760	1,190	7,250	1,040	6,520	940	6,190	750
		30	0.128	8,800	1,430	7,760	1,190	7,250	1,040	6,520	940	6,190	750
		35	0.08	8,800	1,430	7,760	1,190	7,250	1,040	6,520	940	6,190	750
		40	0.08	8,800	1,430	7,760	1,190	7,250	1,040	6,520	940	6,190	750
		45	0.064	7,820	1,200	6,900	1,000	6,440	880	5,800	790	5,510	630
		50	0.056	7,820	1,200	6,900	1,000	6,440	880	5,800	790	5,510	630
2.5	5	20	0.28	7,650	1,530	6,750	1,350	6,300	1,130	5,670	1,020	5,390	820
		25	0.28	7,650	1,530	6,750	1,350	6,300	1,130	5,670	1,020	5,390	820
		30	0.16	6,890	1,360	6,080	1,220	5,670	1,020	5,100	920	4,850	740
		40	0.16	6,890	1,240	6,080	1,090	5,670	920	5,100	830	4,850	660
3	6	12	0.48	7,650	1,890	6,750	1,540	6,300	1,260	5,670	1,130	5,390	910
		20	0.4	7,230	1,660	6,380	1,350	5,950	1,110	5,360	990	5,090	800
		30	0.336	6,800	1,360	6,000	1,200	5,600	1,010	5,040	910	4,790	730
		50	0.12	6,120	1,100	5,400	970	5,040	820	4,540	730	4,310	590
4	8	24	0.5	6,400	1,690	5,720	1,320	4,180	1,170	3,960	870	3,760	700
5	10	30	0.6	5,100	1,460	4,510	1,130	3,520	1,000	3,190	770	3,030	620
6	12	36	0.8	4,200	1,240	3,850	1,000	2,640	880	2,640	660	2,510	530

※(1) ap is shown as the criteria for Group 1 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.

※(2) When performing cutting where cutting chips may cause clogging, such as for rib cutting, blind grooves, etc., cutting depth setting should be set by multiplying a cutting depth factor to calculate the cutting depth amount, and this amount should then be reduced to 80% of the calculated value.

※(3) Adjust by setting ae to (3 to 5) (ap) (cutting depth ratio). When performing finishing processing, calculate the theoretical cusp height and set accordingly.

Cutting depth setting example: When cutting rib groove contours in hardened steel (50HRC) using an EPDBEH2020-10-TH3 tool:

Cutting depth = 0.112 (ap) × 0.85 (cutting depth factor for Group 2 hardened steel) × 0.8 (for closed-area cutting) = 0.076mm

[Note]

① Although basically dry (air blow) cutting is recommended, please use appropriate coolant according to the work material and machining shape.

② 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.

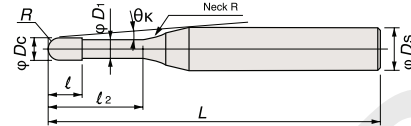
③ If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.



ดอกเอ็นมิลล์

EPOCH SD (S-DLC) DEEP BALL
EPDB2 ○-○-SD

2Flutes



High-accuracy rating product


 $R \leq 0.25 : \pm 0.003$
 $0.25 < R : \pm 0.005$


0 ~ -0.005

(mm)

High welding resistance makes it ideal for machining aluminum alloys and copper. DLC coating.

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		R Ball Radius	Dc Tool Dia.	l2 Under Neck Length	l Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	Neck R	θκ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDB2002-0.4-SD	●			0.4						11.54	0.59	0.61	0.63	0.66	0.7
EPDB2002-0.6-SD	●	0.1	0.2	0.6	0.15	0.17	50	4	1	11.3	0.8	0.83	0.86	0.88	0.93
EPDB2002-1-SD	●			1						10.86	1.22	1.26	1.3	1.33	1.39
EPDB2003-0.5-SD	●			0.5						11.47	0.78	0.82	0.86	0.9	0.98
EPDB2003-1-SD	●	0.15	0.3	1	0.25	0.27	50	4	2	10.89	1.31	1.38	1.43	1.49	1.59
EPDB2003-1.5-SD	●			1.5						10.36	1.84	1.92	1.99	2.06	2.18
EPDB2004-1-SD	●			1						10.91	1.31	1.37	1.43	1.48	1.58
EPDB2004-1.5-SD	●	0.2	0.4	1.5	0.3	0.37	50	4	2	10.37	1.84	1.92	1.99	2.06	2.17
EPDB2004-2-SD	●			2						9.88	2.36	2.46	2.54	2.62	2.75
EPDB2005-2-SD	●			2						9.88	2.86	3.14	3.39	3.62	4.06
EPDB2005-4-SD	●	0.25	0.5	4	0.35	0.47	50	4	10	8.27	5.06	5.45	5.78	6.08	6.61
EPDB2005-6-SD	●			6						7.1	7.23	7.69	8.08	8.43	9.05
EPDB2006-2-SD	●			2						9.88	2.86	3.13	3.38	3.61	4.04
EPDB2006-4-SD	●	0.3	0.6	4	0.4	0.57	50	4	10	8.22	5.06	5.44	5.77	6.07	6.6
EPDB2006-6-SD	●			6						7.04	7.22	7.69	8.08	8.42	9.04
EPDB2008-4-SD	●			4						8.14	5.05	5.43	5.75	6.05	6.58
EPDB2008-6-SD	●	0.4	0.8	6	0.5	0.77	50	4	10	6.92	7.21	7.68	8.06	8.41	9.02
EPDB2008-8-SD	●			8						6.01	9.36	9.89	10.33	10.71	11.38
EPDB2010-4-SD	●			4						8.02	5.09	5.45	5.77	6.06	6.58
EPDB2010-8-SD	●	0.5	1	8	0.8	0.96	50	4	10	5.85	9.39	9.91	10.34	10.72	11.38
EPDB2010-12-SD	●			12			55			4.6	13.63	14.26	14.78	15.22	15.99
EPDB2015-6-SD	●			6			50			6.33	7.31	7.73	8.09	8.42	9.01
EPDB2015-12-SD	●	0.75	1.5	12	1.35	1.44	55	4	10	4.14	13.68	14.29	14.79	15.23	15.98
EPDB2015-18-SD	●			18			60			3.08	19.97	20.72	21.32	21.84	23.83
EPDB2020-8-SD	●			8			55			4.81	9.5	9.97	10.37	10.73	11.37
EPDB2020-16-SD	●	1	2	16	1.7	1.92	65	4	10	2.88	17.92	18.61	19.17	19.65	No interference
EPDB2020-24-SD	●			24			80			2.06	26.26	27.11	27.77	28.75	No interference
EPDB2030-12-SD	●			12			60			4.81	13.82	14.36	14.83	15.24	15.96
EPDB2030-24-SD	●	1.5	3	24	2.5	2.88	75	6	10	2.88	26.33	27.14	27.79	28.76	No interference
EPDB2030-36-SD	●			36			90			2.06	38.74	39.74	41.17	43.12	No interference
EPDB2040-16-SD	●			16			60			3.03	17.93	18.58	19.11	19.58	20.91
EPDB2040-32-SD	●	2	4	32	3	3.9	75	6	10	1.64	34.56	35.5	36.48	No interference	No interference
EPDB2040-48-SD	●			48			90			1.13	51.05	52.37	No interference	No interference	No interference
EPDB2050-20-SD	●			20			65			1.38	22.09	22.81	No interference	No interference	No interference
EPDB2050-40-SD	●	2.5	5	40	3.5	4.9	80	6	10	0.71	42.8	No interference	No interference	No interference	No interference

● : Stocked Items.

END MILL

ดอกเอ็นมิลล์

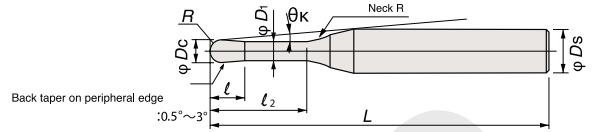


ดอกเอ็นมิลล์

EPOCH HD COATED DEEP BALL END MILL
EGDB2 -HD



2Flutes



Diamond Coating



0 ~ -0.005

(mm)

Ideal for machining of graphite, high-Si aluminum alloys, and FRP. Diamond coating.

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		R ball radius	Dc Tool Dia.	l2 Under Neck Dia.	D1 Neck Dia.	Flute Length	L Overall length	Ds shank Dia.	Neck R	theta_k Interference Angle	0.5°	1°	1.5°	2°	3°
EGDB2004-4-HD	●			4						8.3	5.07	5.45	5.78	6.08	6.63
EGDB2004-8-HD	●	0.2	0.4	8	0.37	0.6	60	4	10	6.29	9.37	9.91	10.35	10.74	11.42
EGDB2004-12-HD	●			12						5.06	13.62	14.26	14.79	15.24	16.02
EGDB2006-5-HD	●			5						7.59	6.14	6.57	6.96	7.25	7.83
EGDB2006-10-HD	●	0.3	0.6	10	0.57	0.9	60	4	10	5.47	11.49	12.08	12.57	12.99	13.72
EGDB2006-15-HD	●			15						4.28	16.77	17.49	18.06	18.55	19.9
EGDB2006-20-HD	●			20						3.51	22.01	22.82	23.47	24.01	26.54
EGDB2010-10-HD	●			10						5.15	11.51	12.09	12.57	12.98	13.7
EGDB2010-20-HD	●	0.5	1	20	0.96	1.5	60	4	10	3.23	22.02	22.83	23.47	24.01	26.5
EGDB2010-30-HD	●			30			80			2.35	32.42	33.39	34.25	35.91	No interference
EGDB2010-40-HD	●			40						1.85	42.76	43.86	45.65	No interference	No interference
EGDB2015-20-HD	●			20			60	4		2.84	22.06	22.85	23.48	24.01	No interference
EGDB2015-40-HD	●	0.75	1.5	40	1.44	2.25	80	4	10	1.59	42.78	43.87	45.67	No interference	No interference
EGDB2020-20-HD	●			20			60			2.4	22.1	22.87	23.49	24.02	No interference
EGDB2020-40-HD	●	1	2	40	1.92	3	80	4	10	1.31	42.81	43.89	No interference	No interference	No interference
EGDB2020-60-HD	●			60			100			0.9	63.36	No interference	No interference	No interference	No interference
EGDB2030-20-HD	●			20			60			1.32	22.18	22.91	No interference	No interference	No interference
EGDB2030-40-HD	●	1.5	3	40	2.88	4.5	80	4	10	0.69	42.87	No interference	No interference	No interference	No interference
EGDB2030-60-HD	●			60			100			0.47	No interference	No interference	No interference	No interference	No interference

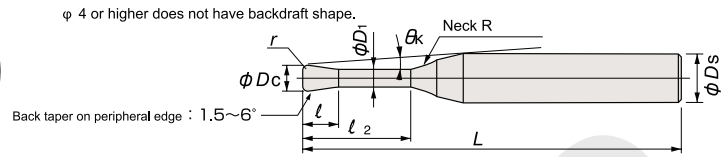
●: Stocked Items.



ดอกเอ็นมิลล์

EPOCH DEEP RADIUS EVOLUTION
EPDRE2 -ATH

φ 4 or higher does not have backdraft shape.



Straight Neck

±0.005
(central axis)

h5 0~-0.005

(mm)

Improved flute tip shape and neck shape suppresses warping to enable high-accuracy cutting. Use of ATH coating further extends tool life.

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Mill Dia.	r Corner radius	l2 Under Neck Length	l Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRE2002-0.5-002-ATH	●			0.5						11.33	0.70	0.73	0.75	0.78	0.83
EPDRE2002-1-002-ATH	●		0.02	1						10.77	1.22	1.26	1.30	1.34	1.41
EPDRE2002-2-002-ATH	●	0.2		2	0.15	0.17	50	4	1	9.81	2.26	2.32	2.38	2.47	2.74
EPDRE2002-0.5-005-ATH	●			0.5						11.36	0.70	0.73	0.75	0.78	0.82
EPDRE2002-1-005-ATH	●		0.05	1						10.81	1.22	1.26	1.30	1.34	1.40
EPDRE2002-1.5-005-ATH	●			1.5						10.30	1.74	1.79	1.84	1.89	2.06
EPDRE2002-2-005-ATH	●			2						9.84	2.25	2.32	2.38	2.46	2.73
EPDRE2003-1-002-ATH	●		0.02	1						10.74	1.32	1.39	1.45	1.51	1.62
EPDRE2003-2-002-ATH	●			2						9.77	2.37	2.47	2.56	2.64	2.78
EPDRE2003-3-002-ATH	●			3						8.95	3.42	3.54	3.65	3.74	4.06
EPDRE2003-1-005-ATH	●	0.3		1	0.25	0.27	50	4	2	10.78	1.32	1.39	1.45	1.50	1.61
EPDRE2003-1.5-005-ATH	●			1.5						10.26	1.84	1.93	2.01	2.07	2.20
EPDRE2003-2-005-ATH	●		0.05	2						9.79	2.37	2.47	2.56	2.64	2.77
EPDRE2003-2.5-005-ATH	●			2.5						9.36	2.89	3.01	3.10	3.19	3.39
EPDRE2003-3-005-ATH	●			3						8.97	3.41	3.54	3.65	3.74	4.05
EPDRE2004-1-002-ATH	●		0.02	1						10.71	1.32	1.39	1.45	1.51	1.62
EPDRE2004-2-002-ATH	●			2						9.72	2.37	2.47	2.56	2.64	2.78
EPDRE2004-3-002-ATH	●			3						8.89	3.42	3.54	3.65	3.74	4.06
EPDRE2004-4-002-ATH	●			4						8.19	4.46	4.60	4.73	4.86	5.39
EPDRE2004-1-005-ATH	●			1						10.75	1.32	1.39	1.45	1.50	1.61
EPDRE2004-1.5-005-ATH	●			1.5						10.22	1.84	1.93	2.01	2.07	2.20
EPDRE2004-2-005-ATH	●		0.05	2						9.74	2.37	2.47	2.56	2.64	2.77
EPDRE2004-2.5-005-ATH	●	0.4		2.5	0.3	0.37	50	4	2	9.31	2.89	3.01	3.10	3.19	3.39
EPDRE2004-3-005-ATH	●			3						8.91	3.41	3.54	3.65	3.74	4.05
EPDRE2004-3.5-005-ATH	●			3.5						8.54	3.93	4.07	4.19	4.29	4.72
EPDRE2004-4-005-ATH	●			4						8.21	4.45	4.60	4.72	4.86	5.38
EPDRE2004-1-01-ATH	●		0.1	1						10.80	1.31	1.38	1.44	1.50	1.60
EPDRE2004-2-01-ATH	●			2						9.79	2.37	2.47	2.55	2.63	2.77
EPDRE2004-3-01-ATH	●			3						8.95	3.41	3.54	3.64	3.74	4.04
EPDRE2004-4-01-ATH	●			4						8.24	4.45	4.60	4.72	4.85	5.37
EPDRE2005-1-002-ATH	●			1						10.68	1.32	1.39	1.45	1.51	1.62
EPDRE2005-2-002-ATH	●		0.02	2						9.66	2.37	2.47	2.56	2.64	2.78
EPDRE2005-3-002-ATH	●			3						8.82	3.42	3.54	3.65	3.74	4.06
EPDRE2005-4-002-ATH	●			4						8.11	4.46	4.60	4.73	4.86	5.39
EPDRE2005-6-002-ATH	●			6						6.99	6.53	6.71	6.92	7.26	8.05
EPDRE2005-1-005-ATH	●			1						10.71	1.32	1.39	1.45	1.50	1.61
EPDRE2005-2-005-ATH	●		0.05	2						9.69	2.37	2.47	2.56	2.64	2.77
EPDRE2005-3-005-ATH	●			3						8.84	3.41	3.54	3.65	3.74	4.05
EPDRE2005-4-005-ATH	●	0.5		4	0.35	0.47	50	4	2	8.13	4.45	4.60	4.72	4.86	5.38
EPDRE2005-5-005-ATH	●			5						7.53	5.49	5.66	5.79	6.05	6.71
EPDRE2005-6-005-ATH	●			6						7.00	6.53	6.71	6.91	7.25	8.04
EPDRE2005-1-01-ATH	●		0.1	1						10.77	1.31	1.38	1.44	1.50	1.60
EPDRE2005-2-01-ATH	●			2						9.74	2.37	2.47	2.55	2.63	2.77
EPDRE2005-3-01-ATH	●			3						8.88	3.41	3.54	3.64	3.74	4.04
EPDRE2005-4-01-ATH	●			4						8.17	4.45	4.60	4.72	4.85	5.37
EPDRE2005-5-01-ATH	●			5						7.55	5.49	5.66	5.79	6.04	6.69
EPDRE2005-6-01-ATH	●			6						7.03	6.52	6.71	6.90	7.24	8.02

● : Stocked item

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CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งมุม R

Square

หัวสี่

Taper Ball

หัวตaperบอล

Roughing

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Mill Dia.	r Corner radius	t2 Under Neck Length	l Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRE2006-2-002-ATH	●			2						9.61	2.54	2.70	2.83	2.96	3.19
EPDRE2006-4-002-ATH	●		0.02	4						8.04	4.66	4.88	5.07	5.24	5.52
EPDRE2006-6-002-ATH	●			6						6.90	6.76	7.03	7.26	7.45	8.05
EPDRE2006-2-005-ATH	●			2						9.64	2.54	2.69	2.83	2.95	3.18
EPDRE2006-4-005-ATH	●			4						8.06	4.66	4.88	5.07	5.23	5.52
EPDRE2006-6-005-ATH	●		0.05	6						6.92	6.76	7.03	7.26	7.45	8.04
EPDRE2006-8-005-ATH	●	0.6		8	0.4	0.57	50	4	4	6.06	8.85	9.16	9.41	9.64	10.69
EPDRE2006-10-005-ATH	●			10						5.39	10.93	11.28	11.55	12.04	13.35
EPDRE2006-2-01-ATH	●			2						9.68	2.53	2.69	2.82	2.95	3.17
EPDRE2006-4-01-ATH	●			4						8.09	4.65	4.88	5.06	5.23	5.51
EPDRE2006-6-01-ATH	●		0.1	6						6.94	6.76	7.03	7.25	7.44	8.02
EPDRE2006-8-01-ATH	●			8						6.08	8.85	9.16	9.41	9.63	10.67
EPDRE2006-10-01-ATH	●			10						5.41	10.92	11.27	11.55	12.03	13.33
EPDRE2007-2-005-ATH	●			2						9.58	2.54	2.69	2.83	2.95	3.18
EPDRE2007-4-005-ATH	●		0.05	4						7.98	4.66	4.88	5.07	5.23	5.52
EPDRE2007-6-005-ATH	●			6						6.83	6.76	7.03	7.26	7.45	8.04
EPDRE2007-2-01-ATH	●	0.7		2	0.45	0.67	50	4	4	9.63	2.53	2.69	2.82	2.95	3.17
EPDRE2007-4-01-ATH	●		0.1	4						8.01	4.65	4.88	5.06	5.23	5.51
EPDRE2007-6-01-ATH	●			6						6.86	6.76	7.03	7.25	7.44	8.02
EPDRE2008-2-002-ATH	●			2						9.49	2.54	2.70	2.83	2.96	3.19
EPDRE2008-4-002-ATH	●		0.02	4						7.87	4.66	4.88	5.07	5.24	5.52
EPDRE2008-6-002-ATH	●			6						6.73	6.76	7.03	7.26	7.45	8.05
EPDRE2008-2-005-ATH	●			2			50			9.52	2.54	2.69	2.83	2.95	3.18
EPDRE2008-4-005-ATH	●			4						7.89	4.66	4.88	5.07	5.23	5.52
EPDRE2008-6-005-ATH	●		0.05	6						6.74	6.76	7.03	7.26	7.45	8.04
EPDRE2008-8-005-ATH	●			8						5.88	8.85	9.16	9.41	9.64	10.69
EPDRE2008-12-005-ATH	●			12			55			4.68	13.00	13.38	13.75	14.43	16.00
EPDRE2008-2-01-ATH	●	0.8		2	0.5	0.77		4	4	9.57	2.53	2.69	2.82	2.95	3.17
EPDRE2008-4-01-ATH	●			4			50			7.93	4.65	4.88	5.06	5.23	5.51
EPDRE2008-6-01-ATH	●		0.1	6						6.77	6.76	7.03	7.25	7.44	8.02
EPDRE2008-8-01-ATH	●			8						5.90	8.85	9.16	9.41	9.63	10.67
EPDRE2008-12-01-ATH	●			12			55			4.70	13.00	13.38	13.75	14.42	15.98
EPDRE2008-2-02-ATH	●			2						9.67	2.53	2.68	2.81	2.93	3.15
EPDRE2008-4-02-ATH	●			4			50			8.00	4.65	4.87	5.05	5.21	5.50
EPDRE2008-6-02-ATH	●		0.2	6						6.82	6.75	7.02	7.24	7.43	7.99
EPDRE2008-8-02-ATH	●			8						5.94	8.84	9.15	9.40	9.62	10.64
EPDRE2008-12-02-ATH	●			12			55			4.72	12.99	13.37	13.73	14.40	15.95
EPDRE2010-2-002-ATH	●			2						9.29	2.64	2.78	2.91	3.03	3.24
EPDRE2010-4-002-ATH	●			4						7.65	4.75	4.95	5.13	5.29	5.56
EPDRE2010-6-002-ATH	●		0.02	6			50			6.50	6.84	7.09	7.31	7.49	8.14
EPDRE2010-8-002-ATH	●			8						5.65	8.92	9.21	9.46	9.73	10.79
EPDRE2010-10-002-ATH	●			10						5.00	10.99	11.32	11.59	12.13	13.45
EPDRE2010-12-002-ATH	●			12			55			4.48	13.06	13.42	13.84	14.52	16.10
EPDRE2010-2-005-ATH	●			2						9.32	2.64	2.78	2.91	3.02	3.24
EPDRE2010-3-005-ATH	●			3						8.41	3.70	3.87	4.02	4.16	4.41
EPDRE2010-4-005-ATH	●			4						7.67	4.75	4.95	5.13	5.28	5.56
EPDRE2010-5-005-ATH	●			5			50			7.04	5.79	6.02	6.22	6.39	6.80
EPDRE2010-6-005-ATH	●		0.05	6						6.51	6.84	7.09	7.30	7.49	8.13
EPDRE2010-8-005-ATH	●			8						5.66	8.92	9.21	9.46	9.73	10.78
EPDRE2010-10-005-ATH	●			10						5.00	10.99	11.32	11.59	12.12	13.44
EPDRE2010-12-005-ATH	●			12			55			4.48	13.06	13.42	13.84	14.51	16.09
EPDRE2010-16-005-ATH	●			16						3.71	17.18	17.60	18.40	19.30	21.40
EPDRE2010-20-005-ATH	●	1		20	0.8	0.94	60	4	4	3.17	21.29	21.93	22.96	24.09	26.71
EPDRE2010-2-01-ATH	●			2						9.37	2.64	2.78	2.90	3.01	3.23
EPDRE2010-3-01-ATH	●			3						8.45	3.69	3.87	4.02	4.15	4.40
EPDRE2010-4-01-ATH	●			4						7.70	4.74	4.95	5.12	5.28	5.55
EPDRE2010-5-01-ATH	●			5			50			7.07	5.79	6.02	6.21	6.39	6.79
EPDRE2010-6-01-ATH	●		0.1	6						6.54	6.83	7.09	7.30	7.49	8.11
EPDRE2010-8-01-ATH	●			8						5.68	8.91	9.21	9.45	9.72	10.77
EPDRE2010-10-01-ATH	●			10						5.02	10.99	11.32	11.59	12.11	13.42
EPDRE2010-12-01-ATH	●			12			55			4.50	13.06	13.42	13.83	14.50	16.08
EPDRE2010-16-01-ATH	●			16			60			3.72	17.18	17.60	18.39	19.29	21.39
EPDRE2010-20-01-ATH	●			20						3.17	21.29	21.93	22.95	24.08	26.70
EPDRE2010-2-02-ATH	●			2						9.47	2.63	2.77	2.89	3.00	3.21
EPDRE2010-3-02-ATH	●			3						8.54	3.69	3.86	4.01	4.14	4.39
EPDRE2010-4-02-ATH	●			4						7.77	4.74	4.94	5.11	5.27	5.54
EPDRE2010-5-02-ATH	●		0.2	5			50			7.13	5.79	6.01	6.21	6.38	6.75
EPDRE2010-6-02-ATH	●			6						6.59	6.83	7.08	7.29	7.48	8.08
EPDRE2010-8-02-ATH	●			8						5.72	8.91	9.20	9.45	9.70	10.74

★: Stocked Items of New Products.

●: Stocked item



Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Mill Dia.	r Corner radius	ℓ2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRE2010-10-02-ATH	●			10			50			5.05	10.98	11.32	11.58	12.09	13.39
EPDRE2010-12-02-ATH	●			12			55			4.52	13.05	13.42	13.81	14.48	16.05
EPDRE2010-16-02-ATH	●		0.2	16			60			3.74	17.18	17.59	18.38	19.27	21.35
EPDRE2010-20-02-ATH	●			20						3.19	21.29	21.92	22.94	24.06	26.66
EPDRE2010-2-03-ATH	●			2						9.57	2.63	2.76	2.87	2.98	3.19
EPDRE2010-3-03-ATH	●			3						8.62	3.68	3.85	3.99	4.13	4.37
EPDRE2010-4-03-ATH	●	1		4	0.8	0.94		4	4	7.84	4.73	4.93	5.10	5.25	5.53
EPDRE2010-5-03-ATH	●			5			50			7.19	5.78	6.01	6.20	6.37	6.72
EPDRE2010-6-03-ATH	●		0.3	6						6.64	6.82	7.07	7.28	7.47	8.05
EPDRE2010-8-03-ATH	●			8						5.75	8.91	9.20	9.44	9.68	10.70
EPDRE2010-10-03-ATH	●			10						5.08	10.98	11.31	11.58	12.07	13.36
EPDRE2010-12-03-ATH	●			12			55			4.54	13.05	13.41	13.80	14.46	16.01
EPDRE2010-16-03-ATH	●			16			60			3.75	17.17	17.59	18.36	19.25	21.32
EPDRE2010-20-03-ATH	●			20						3.20	21.28	21.91	22.92	24.04	26.63
EPDRE20125-5-01-ATH	●			5			50			6.80	5.81	6.04	6.23	6.40	6.82
EPDRE20125-10-01-ATH	●		0.1	10						4.76	11.01	11.34	11.60	12.14	13.45
EPDRE20125-15-01-ATH	●			15			55			3.66	16.17	16.57	17.28	18.12	20.09
EPDRE20125-20-01-ATH	●			20			60			2.97	21.30	21.95	22.98	24.10	No interference
EPDRE20125-5-02-ATH	●			5						6.86	5.81	6.03	6.22	6.39	6.79
EPDRE20125-10-02-ATH	●	1.25	0.2	10	1.15	1.18	50	4	4	4.79	11.00	11.33	11.59	12.12	13.42
EPDRE20125-15-02-ATH	●			15			55			3.68	16.16	16.56	17.26	18.10	20.06
EPDRE20125-20-02-ATH	●			20			60			2.98	21.30	21.95	22.97	24.09	No interference
EPDRE20125-5-03-ATH	●			5						6.92	5.81	6.03	6.21	6.38	6.75
EPDRE20125-10-03-ATH	●		0.3	10			50			4.82	11.00	11.32	11.59	12.10	13.39
EPDRE20125-15-03-ATH	●			15			55			3.69	16.16	16.56	17.25	18.08	20.03
EPDRE20125-20-03-ATH	●			20			60			2.99	21.30	21.94	22.95	24.07	No interference
EPDRE2015-4-01-ATH	●			4						7.15	4.80	4.99	5.16	5.31	5.58
EPDRE2015-6-01-ATH	●			6			50			5.97	6.88	7.12	7.33	7.51	8.18
EPDRE2015-8-01-ATH	●		0.1	8						5.12	8.96	9.24	9.48	9.77	10.83
EPDRE2015-12-01-ATH	●			12			55			3.98	13.09	13.45	13.88	14.56	16.14
EPDRE2015-15-01-ATH	●			15						3.42	16.18	16.58	17.30	18.15	20.12
EPDRE2015-20-01-ATH	●			20			60			2.76	21.32	21.98	23.01	24.13	No interference
EPDRE2015-4-02-ATH	●			4						7.22	4.79	4.98	5.15	5.30	5.57
EPDRE2015-6-02-ATH	●			6			50			6.02	6.88	7.12	7.32	7.50	8.14
EPDRE2015-8-02-ATH	●		0.2	8						5.16	8.95	9.24	9.47	9.75	10.80
EPDRE2015-12-02-ATH	●			12			55			4.01	13.09	13.44	13.87	14.54	16.11
EPDRE2015-15-02-ATH	●			15						3.43	16.18	16.58	17.29	18.13	20.09
EPDRE2015-20-02-ATH	●	1.5		20	1.35	1.42	60	4	4	2.77	21.32	21.97	22.99	24.11	No interference
EPDRE2015-4-03-ATH	●			4						7.30	4.79	4.97	5.14	5.29	5.55
EPDRE2015-6-03-ATH	●			6			50			6.07	6.87	7.11	7.31	7.49	8.11
EPDRE2015-8-03-ATH	●		0.3	8						5.19	8.95	9.23	9.47	9.73	10.77
EPDRE2015-12-03-ATH	●			12			55			4.03	13.09	13.44	13.85	14.52	16.08
EPDRE2015-15-03-ATH	●			15						3.45	16.18	16.57	17.28	18.11	20.06
EPDRE2015-20-03-ATH	●			20			60			2.78	21.31	21.96	22.98	24.09	No interference
EPDRE2015-4-05-ATH	●			4						7.45	4.78	4.96	5.12	5.26	5.53
EPDRE2015-6-05-ATH	●			6			50			6.17	6.86	7.10	7.30	7.48	8.05
EPDRE2015-8-05-ATH	●		0.5	8						5.27	8.94	9.22	9.45	9.70	10.70
EPDRE2015-12-05-ATH	●			12			55			4.07	13.08	13.43	13.83	14.48	16.01
EPDRE2015-15-05-ATH	●			15						3.48	16.17	16.56	17.25	18.07	19.99
EPDRE2015-20-05-ATH	●			20			60			2.80	21.31	21.95	22.95	24.02	No interference
EPDRE20175-5-01-ATH	●			5			50			6.19	5.84	6.06	6.25	6.42	6.85
EPDRE20175-10-01-ATH	●		0.1	10			50			4.19	11.03	11.35	11.61	12.17	13.49
EPDRE20175-15-01-ATH	●			15			55			3.16	16.18	16.58	17.30	18.15	20.12
EPDRE20175-20-01-ATH	●			20			60			2.54	21.32	21.98	23.01	24.13	干涉無し
EPDRE20175-5-02-ATH	●			5			50			6.25	5.84	6.05	6.24	6.41	6.82
EPDRE20175-10-02-ATH	●	1.75	0.2	10	1.55	1.67	50	4	4	4.22	11.02	11.34	11.61	12.15	13.45
EPDRE20175-15-02-ATH	●			15			55			3.18	16.18	16.58	17.29	18.13	20.09
EPDRE20175-20-02-ATH	●			20			60			2.55	21.32	21.97	22.99	24.11	No interference
EPDRE20175-5-03-ATH	●			5			50			6.31	5.83	6.05	6.23	6.40	6.79
EPDRE20175-10-03-ATH	●		0.3	10			50			4.24	11.02	11.34	11.60	12.13	13.42
EPDRE20175-15-03-ATH	●			15			55			3.20	16.18	16.57	17.28	18.11	20.06
EPDRE20175-20-03-ATH	●			20			60			2.56	21.31	21.96	22.98	24.09	No interference
EPDRE2020-4-01-ATH	●			4						6.49	4.80	4.99	5.16	5.31	5.58
EPDRE2020-6-01-ATH	●			6			50			5.30	6.88	7.12	7.33	7.51	8.18
EPDRE2020-8-01-ATH	●		0.1	8						4.47	8.96	9.24	9.48	9.77	10.83
EPDRE2020-12-01-ATH	●	2		12	1.7	1.92	55	4	4	3.41	13.09	13.45	13.88	14.56	16.14
EPDRE2020-16-01-ATH	●			16						2.76	17.21	17.62	18.44	19.35	No interference
EPDRE2020-20-01-ATH	●			20			60			2.31	21.32	21.98	23.01	24.13	No interference
EPDRE2020-25-01-ATH	●			25			65			1.93	26.44	27.43	28.71	No interference	No interference

★: Stocked Items of New Products.

●: Stocked item

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Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Mill Dia.	r Corm radius	t2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRE2020-30-01-ATH	●		0.1	30			70			1.65	31.55	32.88	34.41	No interference	No interference
EPDRE2020-4-02-ATH	●			4						6.57	4.79	4.98	5.15	5.30	5.57
EPDRE2020-6-02-ATH	●			6			50			5.35	6.88	7.12	7.32	7.50	8.14
EPDRE2020-8-02-ATH	●			8						4.51	8.95	9.24	9.47	9.75	10.80
EPDRE2020-12-02-ATH	●		0.2	12						3.43	13.09	13.44	13.87	14.54	16.11
EPDRE2020-16-02-ATH	●			16			55			2.77	17.21	17.62	18.43	19.33	No interference
EPDRE2020-20-02-ATH	●			20			60			2.32	21.32	21.97	22.99	24.11	No interference
EPDRE2020-25-02-ATH	●			25			65			1.93	26.44	27.42	28.69	No interference	No interference
EPDRE2020-30-02-ATH	●			30			70			1.66	31.55	32.87	34.40	No interference	No interference
EPDRE2020-4-03-ATH	●			4						6.64	4.79	4.97	5.14	5.29	5.55
EPDRE2020-6-03-ATH	●			6			50			5.40	6.87	7.11	7.31	7.49	8.11
EPDRE2020-8-03-ATH	●			8						4.55	8.95	9.23	9.47	9.73	10.77
EPDRE2020-12-03-ATH	●		0.3	12						3.45	13.09	13.44	13.85	14.52	16.08
EPDRE2020-16-03-ATH	●			16			55			2.79	17.21	17.61	18.42	19.31	No interference
EPDRE2020-20-03-ATH	●			20			60			2.33	21.31	21.96	22.98	24.09	No interference
EPDRE2020-25-03-ATH	●	2		25	1.7	1.92	65	4	4	1.94	26.43	27.41	28.68	No interference	No interference
EPDRE2020-30-03-ATH	●			30			70			1.66	31.55	32.86	34.38	No interference	No interference
EPDRE2020-6-05-ATH	●			6			50			5.50	6.86	7.10	7.30	7.48	8.05
EPDRE2020-8-05-ATH	●			8			50			4.62	8.94	9.22	9.45	9.70	10.70
EPDRE2020-12-05-ATH	●			12			55			3.50	13.08	13.43	13.83	14.48	16.01
EPDRE2020-16-05-ATH	●		0.5	16						2.81	17.20	17.61	18.39	19.27	No interference
EPDRE2020-20-05-ATH	●			20			60			2.35	21.31	21.95	22.95	24.06	No interference
EPDRE2020-25-05-ATH	●			25			65			1.95	26.43	27.39	28.65	No interference	No interference
EPDRE2020-30-05-ATH	●			30			70			1.67	31.54	32.84	34.36	No interference	No interference
EPDRE2020-6-08-ATH	●			6			50			5.66	6.85	7.08	7.27	7.45	7.95
EPDRE2020-8-08-ATH	●			8						4.73	8.93	9.20	9.43	9.64	10.61
EPDRE2020-12-08-ATH	●			12			55			3.56	13.07	13.41	13.78	14.42	15.92
EPDRE2020-16-08-ATH	●		0.8	16						2.85	17.19	17.59	18.35	19.21	No interference
EPDRE2020-20-08-ATH	●			20			60			2.38	21.30	21.92	22.91	24.00	No interference
EPDRE2020-25-08-ATH	●			25			65			1.97	26.42	27.37	28.61	No interference	No interference
EPDRE2020-30-08-ATH	●			30			70			1.69	31.53	32.81	34.31	No interference	No interference
EPDRE2025-10-01-ATH	●			10			50			3.14	11.08	11.39	11.68	12.25	13.58
EPDRE2025-20-01-ATH	●		0.1	20			60			1.82	21.36	22.06	23.09	No interference	No interference
EPDRE2025-30-01-ATH	●			30			70			1.28	31.59	32.95	No interference	No interference	No interference
EPDRE2025-10-02-ATH	●			10			50			3.16	11.08	11.39	11.67	12.23	13.55
EPDRE2025-20-02-ATH	●		0.2	20			60			1.83	21.36	22.05	23.07	No interference	No interference
EPDRE2025-30-02-ATH	●	2.5		30	2	2.39	70	4	4	1.28	31.58	32.94	No interference	No interference	No interference
EPDRE2025-10-03-ATH	●			10			50			3.19	11.08	11.38	11.65	12.21	13.52
EPDRE2025-20-03-ATH	●		0.3	20			60			1.83	21.36	22.04	23.06	No interference	No interference
EPDRE2025-30-03-ATH	●			30			70			1.29	31.58	32.93	No interference	No interference	No interference
EPDRE2025-10-05-ATH	●			10			50			3.24	11.07	11.37	11.63	12.17	13.45
EPDRE2025-20-05-ATH	●		0.5	20			60			1.85	21.35	22.02	23.06	No interference	No interference
EPDRE2025-30-05-ATH	●			30			70			1.30	31.58	32.92	No interference	No interference	No interference
EPDRE2030-6-01-ATH	●			6			50			6.45	7.01	7.23	7.42	7.59	8.36
EPDRE2030-8-01-ATH	●			8			55			5.61	9.07	9.34	9.56	9.94	11.02
EPDRE2030-12-01-ATH	●			12			60			4.45	13.20	13.53	14.04	14.73	16.33
EPDRE2030-16-01-ATH	●		0.1	16						3.69	17.30	17.78	18.60	19.52	21.64
EPDRE2030-18-01-ATH	●			18						3.40	19.35	19.96	20.89	21.91	24.29
EPDRE2030-20-01-ATH	●			20			65			3.15	21.40	22.13	23.17	24.30	26.95
EPDRE2030-30-01-ATH	●			30			75			2.31	31.62	33.03	34.57	36.27	No interference
EPDRE2030-35-01-ATH	●			35			80			2.04	36.83	38.48	40.27	42.25	No interference
EPDRE2030-6-02-ATH	●			6			50			6.49	7.00	7.22	7.41	7.58	8.33
EPDRE2030-8-02-ATH	●			8			55			5.65	9.07	9.33	9.55	9.92	10.99
EPDRE2030-12-02-ATH	●			12			60			4.48	13.19	13.52	14.03	14.71	16.30
EPDRE2030-16-02-ATH	●		0.2	16						3.71	17.30	17.77	18.59	19.50	21.60
EPDRE2030-18-02-ATH	●	3		18	2.5	2.86		6	4	3.41	19.35	19.95	20.87	21.89	24.26
EPDRE2030-20-02-ATH	●			20			65			3.16	21.40	22.13	23.15	24.28	26.91
EPDRE2030-30-02-ATH	●			30			75			2.31	31.62	33.02	34.56	36.25	No interference
EPDRE2030-35-02-ATH	●			35			80			2.04	36.83	38.47	40.26	42.23	No interference
EPDRE2030-6-03-ATH	●			6			50			6.54	7.00	7.22	7.40	7.57	8.30
EPDRE2030-8-03-ATH	●			8			55			5.68	9.07	9.33	9.54	9.90	10.95
EPDRE2030-12-03-ATH	●			12			60			4.50	13.19	13.52	14.02	14.69	16.26
EPDRE2030-16-03-ATH	●		0.3	16						3.72	17.30	17.76	18.58	19.48	21.57
EPDRE2030-18-03-ATH	●			18						3.43	19.35	19.94	20.86	21.87	24.23
EPDRE2030-20-03-ATH	●			20			65			3.17	21.40	22.12	23.14	24.26	26.88
EPDRE2030-30-03-ATH	●			30			75			2.32	31.62	33.01	34.54	36.23	No interference
EPDRE2030-35-03-ATH	●			35			80			2.05	36.82	38.46	40.25	42.21	No interference
EPDRE2030-8-05-ATH	●		0.5	8			55			5.76	9.06	9.31	9.53	9.87	10.89

● : Stocked item



Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Mill Dia.	r Corner radius	t2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRE2030-12-05-ATH	●			12			60			4.55	13.18	13.51	13.99	14.65	16.20
EPDRE2030-16-05-ATH	●			16						3.75	17.29	17.74	18.55	19.44	21.51
EPDRE2030-18-05-ATH	●		0.5	18			65			3.45	19.34	19.92	20.83	21.83	24.16
EPDRE2030-20-05-ATH	●	20				75			3.20	21.39	22.10	23.11	24.22	26.82	
EPDRE2030-30-05-ATH	●	30				80			2.33	31.61	32.99	34.52	36.19	No interference	
EPDRE2030-35-05-ATH	●			35						2.06	36.82	38.44	40.22	42.17	No interference
EPDRE2030-8-1-ATH	●	3		8	2.5	2.86	55	6	4	5.96	9.05	9.29	9.50	9.77	10.73
EPDRE2030-12-1-ATH	●			12			60			4.67	13.17	13.49	13.92	14.55	16.04
EPDRE2030-16-1-ATH	●		1	16						3.84	17.28	17.70	18.48	19.34	21.35
EPDRE2030-18-1-ATH	●	18				65			3.52	19.33	19.88	20.76	21.73	24.00	
EPDRE2030-20-1-ATH	●	20				75			3.26	21.38	22.05	23.04	24.13	26.66	
EPDRE2030-30-1-ATH	●			30						2.37	31.60	32.95	34.45	36.09	No interference
EPDRE2030-35-1-ATH	●			35			80			2.08	36.79	38.40	40.15	42.08	No interference
EPDRE2040-8-01-ATH	●			8			55			4.38	9.18	9.42	9.64	10.11	11.21
EPDRE2040-12-01-ATH	●			12						3.36	13.29	13.60	14.20	14.90	16.51
EPDRE2040-16-01-ATH	●		0.1	16			60			2.72	17.39	17.93	18.77	19.68	No interference
EPDRE2040-20-01-ATH	●	20				65			2.29	21.48	22.29	23.33	24.47	No interference	
EPDRE2040-30-01-ATH	●	30				75			1.64	31.77	33.18	34.73	No interference	No interference	
EPDRE2040-35-01-ATH	●			35			80			1.43	36.98	38.63	No interference	No interference	No interference
EPDRE2040-45-01-ATH	●			45			90			1.15	47.41	49.52	No interference	No interference	No interference
EPDRE2040-8-02-ATH	●		0.2	8			55			4.41	9.18	9.42	9.63	10.09	11.17
EPDRE2040-12-02-ATH	●	12				60			3.38	13.29	13.59	14.19	14.88	16.48	
EPDRE2040-16-02-ATH	●	16							2.73	17.39	17.92	18.75	19.66	No interference	
EPDRE2040-20-02-ATH	●		20			65				2.30	21.48	22.28	23.31	24.45	No interference
EPDRE2040-30-02-ATH	●		30			75				1.64	31.76	33.17	34.72	No interference	No interference
EPDRE2040-35-02-ATH	●		35			80				1.44	36.98	38.62	No interference	No interference	No interference
EPDRE2040-45-02-ATH	●		45			90				1.15	47.40	49.52	No interference	No interference	No interference
EPDRE2040-8-03-ATH	●			8			55			4.45	9.17	9.41	9.62	10.07	11.14
EPDRE2040-12-03-ATH	●	4		12	3.5	3.8	60	6	4	3.40	13.28	13.59	14.18	14.86	16.45
EPDRE2040-16-03-ATH	●		0.3	16						2.75	17.38	17.91	18.74	19.65	No interference
EPDRE2040-20-03-ATH	●	20				65			2.31	21.48	22.27	23.30	24.43	No interference	
EPDRE2040-30-03-ATH	●	30				75			1.65	31.76	33.16	34.71	No interference	No interference	
EPDRE2040-35-03-ATH	●			35			80			1.44	36.97	38.61	No interference	No interference	No interference
EPDRE2040-45-03-ATH	●			45			90			1.15	47.40	49.51	No interference	No interference	No interference
EPDRE2040-12-05-ATH	●		0.5	12						3.44	13.28	13.58	14.15	14.82	16.39
EPDRE2040-16-05-ATH	●	16				60			2.77	17.38	17.89	18.71	19.61	No interference	
EPDRE2040-20-05-ATH	●	20				65			2.33	21.47	22.25	23.27	24.39	No interference	
EPDRE2040-30-05-ATH	●		30			75				1.66	31.75	33.15	34.68	No interference	No interference
EPDRE2040-35-05-ATH	●		35			80				1.45	36.96	38.59	No interference	No interference	No interference
EPDRE2040-45-05-ATH	●		45			90				1.16	47.39	49.49	No interference	No interference	No interference
EPDRE2040-12-1-ATH	●		1	12			60			3.54	13.27	13.56	14.08	14.72	16.23
EPDRE2040-16-1-ATH	●	16							2.84	17.37	17.85	18.64	19.51	No interference	
EPDRE2040-20-1-ATH	●	20				65			2.37	21.46	22.21	23.20	24.30	No interference	
EPDRE2040-30-1-ATH	●		30			75				1.68	31.73	33.10	34.61	No interference	No interference
EPDRE2040-35-1-ATH	●		35			80				1.47	36.94	38.55	No interference	No interference	No interference
EPDRE2040-45-1-ATH	●		45			90				1.17	47.37	49.44	No interference	No interference	No interference
EPDRE2050-20-01-ATH	●		0.1	20			65			1.26	21.54	22.42	No interference	No interference	No interference
EPDRE2050-40-01-ATH	●	40				85			0.67	42.32	No interference	No interference	No interference	No interference	
EPDRE2050-20-02-ATH	●			20			65			1.26	21.54	22.41	No interference	No interference	No interference
EPDRE2050-40-02-ATH	●		0.2	40			85			0.68	42.31	No interference	No interference	No interference	No interference
EPDRE2050-20-03-ATH	●		0.3	20			65			1.27	21.54	22.40	No interference	No interference	No interference
EPDRE2050-40-03-ATH	●	40				85			0.68	42.31	No interference	No interference	No interference	No interference	
EPDRE2050-20-05-ATH	●			20			65			1.28	21.54	22.38	No interference	No interference	No interference
EPDRE2050-40-05-ATH	●		0.5	40			85			0.68	42.30	No interference	No interference	No interference	No interference
EPDRE2050-20-1-ATH	●		1	20			65			1.31	21.53	22.34	No interference	No interference	No interference
EPDRE2050-40-1-ATH	●	40				85			0.69	42.28	No interference	No interference	No interference	No interference	
EPDRE2060-12-01-ATH	●			12			50			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-18-01-ATH	●		0.1	18			60			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-24-01-ATH	●	24				70			0.01	No interference	No interference	No interference	No interference	No interference	
EPDRE2060-35-01-ATH	●	35				80			0.01	No interference	No interference	No interference	No interference	No interference	
EPDRE2060-55-01-ATH	●			55			100			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-12-02-ATH	●		0.2	12			50			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-18-02-ATH	●	6		18	5	5.7	60	6	-	0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-24-02-ATH	●	24				70			0.01	No interference	No interference	No interference	No interference	No interference	
EPDRE2060-35-02-ATH	●		35			80				0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-55-02-ATH	●			55			100			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-12-03-ATH	●		0.3	12			50			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-18-03-ATH	●			18			60			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-24-03-ATH	●	24				70			0.01	No interference	No interference	No interference	No interference	No interference	

● : Stocked item

END MILL

ดอกเอ็นมิลล์



DEEP SERIES
ตระกูลตีฟ

DEEP SERIES

เอ็นมิลล์ตระกูลตีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกั๊กมุม R

Square

หัวสี่

Taper Ball

หัวเคเปอร์บอล

Roughing

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Mill Dia.	r Corner radius	ℓ ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRE2060-35-03-ATH	●		0.3	35			80			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-55-03-ATH	●			55			100			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-18-05-ATH	●			18			60			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-24-05-ATH	●		0.5	24			70			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-35-05-ATH	●	6		35			80	6	-	0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-55-05-ATH	●			55	5	5.7	100			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-18-1-ATH	●			18			60			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-24-1-ATH	●		1	24			70			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-35-1-ATH	●			35			80			0.01	No interference	No interference	No interference	No interference	No interference
EPDRE2060-55-1-ATH	●			55			100			0.01	No interference	No interference	No interference	No interference	No interference

● : Stocked item

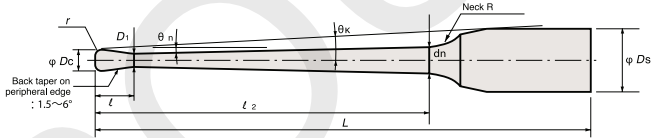
ดอกเอ็นมิลล์

EPOCH PENCIL DEEP RADIUS

EPDRP2 000-000-00000-TH



2Flutes



Pencil Neck



0 ~ -0.015

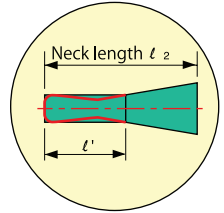


±0.005



0 ~ -0.005

(mm)



TH coating makes it ideal for high-hardness materials. High breakage resistance.

Order No.	Stock	Size (mm)												The effective under-neck length for the various draft angles				
		Dc Tool Dia.	r Corner radius	ℓ ₂ Under Neck Length.	θ _n Neck Angle	ℓ Flute Length	D1 Neck Dia.	dn Under Neck dia.	L Overall length	Ds shank Dia.	Neck R	Approx neck length	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRP2002-2-09005-TH	●	0.2	0.05	2	0.9	0.15	0.17	0.228	50	4	10	1.1	9.96	-	2.82	3.15	3.44	3.93
EPDRP2004-4-09005-TH	●		0.05	4				0.486					8.39	-	4.91	5.38	5.76	6.38
EPDRP2004-5-09005-TH	●	0.4		5	0.9	0.3	0.37	0.518	50	4	10	1.25	7.8	-	5.93	6.47	6.88	7.56
EPDRP2004-4-0901-TH	●		0.1	4				0.486					8.42	-	4.9	5.37	5.74	6.37
EPDRP2004-5-0901-TH	●			5				0.518					7.83	-	5.92	6.46	6.87	7.55
EPDRP2005-5-0901-TH	●			5				0.616					7.75	-	5.93	6.47	6.88	7.55
EPDRP2005-8-0901-TH	●	0.5	0.1	8	0.9	0.35	0.47	0.710	50	4	10	1.3	6.39	-	9	9.7	10.21	11.02
EPDRP2005-10-0901-TH	●			10				0.773	55				5.72	-	11.04	11.84	12.4	13.28
EPDRP2006-12-0901-TH	●	0.6	0.1	12	0.9	0.4	0.57	0.934	55	4	10	1.35	5.09	-	13.08	13.97	14.57	15.52
EPDRP2006-15-0901-TH	●			15				1.029					4.45	-	16.14	17.14	17.81	18.84
EPDRP2008-6-0402-TH	●			6	0.4			0.847	50	7	2.64		6.91	6.68	7.16	7.52	7.82	8.34
EPDRP2008-12-0902-TH	●	0.8	0.2	12	0.9	0.5	0.77	1.131	55	4	10	1.45	4.94	-	13.08	13.96	14.57	15.51
EPDRP2010-8-0402-TH	●			8	0.4			1.041	55		7	5.09	7.32	8.87	9.39	9.78	10.11	10.66
EPDRP2010-10-0902-TH	●			10				1.229	55				6.79	-	11.24	11.95	12.48	13.34
EPDRP2010-15-0902-TH	●			15				1.386	60				5.57	-	16.32	17.23	17.88	18.88
EPDRP2010-20-0902-TH	●		0.2	20				1.543	65				4.72	-	21.39	22.47	23.21	24.78
EPDRP2010-25-0902-TH	●	1		25	0.9			1.700	70		10	2.7	4.1	-	26.46	27.69	28.51	30.93
EPDRP2010-30-0902-TH	●			30		0.8	0.97	1.857	75	6			3.62	-	31.53	32.89	33.78	37.07
EPDRP2010-35-0902-TH	●			35				2.015	80				3.24	-	36.59	38.07	39.03	43.22
EPDRP2010-8-0403-TH	●			8	0.4			1.041	55		7	5.09	7.36	8.87	9.38	9.77	10.09	10.65
EPDRP2010-15-0903-TH	●		0.3	15				1.386	60				5.59	-	16.31	17.22	17.86	18.87
EPDRP2010-25-0903-TH	●			25	0.9			1.700	70		10	2.7	4.11	-	26.45	27.68	28.5	30.89
EPDRP2010-30-0903-TH	●			30				1.857	75				3.63	-	31.52	32.88	33.77	37.04

● : Stocked Items.

END MILL

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Order No.	Stock	Size (mm)												The effective under-neck length for the various draft angles				
		Dc Tool Dia.	r Corner radius	ℓ ₂ Under Neck Length.	θ _n Neck Angle	ℓ Flute Length	D1 Neck Dia.	d _n Under Neck dia.	L Overall length	Ds shank Dia.	Neck R	ℓ Approx neck length	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRP2015-10-0402-TH	●			10	0.4			1.541	55		7	7.07	6.33	11.01	11.56	11.98	12.34	13.08
EPDRP2015-15-0902-TH	●			15				1.849	60				5.24	-	16.47	17.32	17.95	18.93
EPDRP2015-20-0902-TH	●		0.2	20				2.006	65				4.41	-	21.54	22.55	23.27	24.9
EPDRP2015-25-0902-TH	●			25	0.9			2.163	70		10	3.89	3.81	-	26.6	27.76	28.57	31.04
EPDRP2015-30-0902-TH	●	1.5		30		1.35	1.42	2.320	75	6			3.35	-	31.66	32.95	33.83	37.19
EPDRP2015-10-0403-TH	●			10	0.4			1.541	55		7	7.07	6.36	11	11.56	11.97	12.33	13.04
EPDRP2015-20-0903-TH	●			20				2.006	65				4.43	-	21.52	22.54	23.26	24.86
EPDRP2015-25-0903-TH	●		0.3	25	0.9			2.163	70		10	3.89	3.82	-	26.59	27.75	28.56	31.01
EPDRP2015-30-0903-TH	●			30				2.320	75				3.36	-	31.65	32.95	33.82	37.16
EPDRP2020-30-0902-TH	●			30				2.809	70				3.07	-	31.69	32.97	33.84	37.22
EPDRP2020-40-0902-TH	●		0.2	40	0.9			3.123	80		10	7.42	2.46	-	41.8	43.32	44.66	No interference
EPDRP2020-50-0902-TH	●			50				3.438	90				2.06	-	51.9	53.62	55.74	No interference
EPDRP2020-12-0403-TH	●			12	0.4			2.064	55		7		5.46	13.05	13.66	14.12	14.5	15.63
EPDRP2020-20-0903-TH	●			20				2.495	65		6		4.1	-	21.56	22.57	23.28	24.9
EPDRP2020-30-0903-TH	●		0.3	30	0.9			2.809	70		10	4.24	3.08	-	31.68	32.96	33.84	37.19
EPDRP2020-40-0903-TH	●			40				3.123	80				2.47	-	41.79	43.31	44.64	No interference
EPDRP2020-50-0903-TH	●			50				3.438	90				2.06	-	51.89	53.61	55.72	No interference
EPDRP2020-8-0405-TH	●	2		8		1.7	1.92	2.008	50		4		6.76	8.73	9.06	9.32	9.54	10.43
EPDRP2020-12-0405-TH	●			12	0.4			2.064	55		7	7.42	5.51	13.03	13.65	14.1	14.48	15.56
EPDRP2020-16-0405-TH	●			16	0.4			2.120	60				4.65	17.08	17.82	18.35	18.78	20.7
EPDRP2020-20-0905-TH	●			20				2.495	65				4.13	-	21.54	22.54	23.26	24.84
EPDRP2020-25-0905-TH	●		0.5	25				2.652	65		6		3.54	-	26.6	27.75	28.55	30.98
EPDRP2020-30-0905-TH	●			30	0.9			2.809	70		10	4.24	3.1	-	31.66	32.95	33.82	37.13
EPDRP2020-40-0905-TH	●			40				3.123	80				2.48	-	41.77	43.29	44.6	No interference
EPDRP2020-50-0905-TH	●			50				3.438	90				2.07	-	51.87	53.6	55.68	No interference
EPDRP2030-40-0902-TH	●			40				4.038	80				1.94	-	42.04	43.44	No interference	No interference
EPDRP2030-50-0902-TH	●		0.2	50				4.352	90				1.6	-	52.13	53.74	No interference	No interference
EPDRP2030-60-0902-TH	●			60				4.667	100				1.36	-	62.21	No interference	No interference	No interference
EPDRP2030-40-0903-TH	●			40				4.038	80				1.94	-	42.03	43.44	No interference	No interference
EPDRP2030-50-0903-TH	●	3	0.3	50	0.9	2.5	2.86	4.352	90	6	10	6.95	1.61	-	52.12	53.73	No interference	No interference
EPDRP2030-60-0903-TH	●			60				4.667	100				1.36	-	62.21	No interference	No interference	No interference
EPDRP2030-40-0905-TH	●			40				4.038	80				1.95	-	42.01	43.42	No interference	No interference
EPDRP2030-50-0905-TH	●		0.5	50				4.352	90				1.61	-	52.1	53.71	No interference	No interference
EPDRP2030-60-0905-TH	●			60				4.667	100				1.37	-	62.19	No interference	No interference	No interference

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

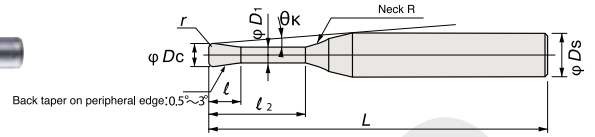
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH HD COATED DEEP RADIUS END MILL EGDR2 000-000-00-HD

2Flutes



Diamond Coating



0 ~ -0.005

(mm)

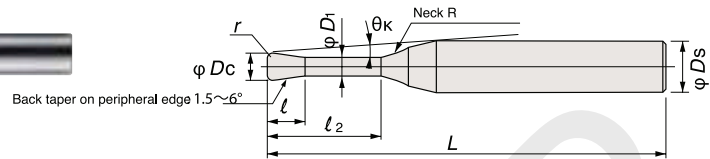
Ideal for machining of graphite, high-Si aluminum alloys, and FRP. Diamond coating.

Order No.	Stock	Size (mm)								θ _K Interference Angle	The effective under-neck length for the various draft angles				
		Dc Tool Dia.	r Corner radius	l ₂ Under Neck Length	D1 Neck Dia.	l Flute Length	L Overall length	Ds shank Dia.	Neck R		0.5°	1°	1.5°	2°	3°
EGDR2005-5-01-HD	●			5						7.55	6.16	6.59	6.96	7.29	7.87
EGDR2005-10-01-HD	●	0.5	0.1	10	0.47	0.75	60	4	10	5.5	11.5	12.1	12.59	13.01	13.75
EGDR2005-15-01-HD	●			15						4.32	16.78	17.5	18.07	18.57	19.97
EGDR2005-20-01-HD	●			20						3.56	22.02	22.84	23.48	24.03	26.6
EGDR2010-10-02-HD	●			10			60			5.06	11.53	12.12	12.6	13.02	13.75
EGDR2010-20-02-HD	●	1	0.2	20	0.96	1.5	60	4	10	3.19	22.04	22.85	23.49	24.04	26.6
EGDR2010-30-02-HD	●			30			80			2.33	32.43	33.41	34.29	35.97	No interference
EGDR2010-40-02-HD	●			40						1.83	42.77	43.87	45.69	No interference	No interference
EGDR2015-20-02-HD	●			20			60			2.78	22.09	22.88	23.52	24.06	No interference
EGDR2015-40-02-HD	●	1.5	0.2	40	1.44	2.25	80	4	10	1.57	42.8	43.9	45.75	No interference	No interference
EGDR2020-20-02-HD	●			20			60			2.32	22.13	22.92	23.55	24.11	No interference
EGDR2020-40-02-HD	●	2	0.2	40	1.92	3	80	4	10	1.29	42.84	43.92	No interference	No interference	No interference
EGDR2020-60-02-HD	●			60			100			0.89	63.38	No interference	No interference	No interference	No interference
EGDR2030-20-02-HD	●			20			60			1.25	22.23	22.99	No interference	No interference	No interference
EGDR2030-40-02-HD	●	3	0.2	40	2.88	4.5	80	4	10	0.67	42.9	No interference	No interference	No interference	No interference
EGDR2030-60-02-HD	●			60			100			0.46	No interference	No interference	No interference	No interference	No interference

● : Stocked Items.



ดอกเอ็นมิลล์

EPOCH DEEP RADIUS F
EPDRF4 0.05-0.1-0.2-TH

Ø4 or higher does not have backdraft shape.

±0.005
(central axis)

0~ -0.005

(mm)

High-accuracy deep radius mill

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Tool Dia.	r Corner radius	ℓ ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRF4010-4-005-TH	●			4						7.67	4.75	4.95	5.13	5.28	5.56
EPDRF4010-6-005-TH	●			6			50			6.51	6.84	7.09	7.3	7.49	8.13
EPDRF4010-8-005-TH	●			8						5.66	8.92	9.21	9.46	9.73	10.78
EPDRF4010-10-005-TH	●		0.05	10						5	10.99	11.32	11.59	12.12	13.44
EPDRF4010-12-005-TH	●			12						4.48	13.06	13.42	13.84	14.51	16.09
EPDRF4010-16-005-TH	●			16			60			3.71	17.18	17.6	18.4	19.3	21.4
EPDRF4010-20-005-TH	●			20						3.17	21.29	21.93	22.96	24.09	26.71
EPDRF4010-4-01-TH	●	1		4	0.8	0.94		4	4	7.7	4.74	4.95	5.12	5.28	5.55
EPDRF4010-6-01-TH	●			6			50			6.54	6.83	7.09	7.3	7.49	8.11
EPDRF4010-8-01-TH	●			8						5.68	8.91	9.21	9.45	9.72	10.77
EPDRF4010-10-01-TH	●		0.1	10						5.02	10.99	11.32	11.59	12.11	13.42
EPDRF4010-12-01-TH	●			12						4.5	13.06	13.42	13.83	14.5	16.08
EPDRF4010-16-01-TH	●			16			60			3.72	17.18	17.6	18.39	19.29	21.39
EPDRF4010-20-01-TH	●			20						3.17	21.29	21.93	22.95	24.08	26.7
EPDRF4015-4-005-TH	●			4			50			7.12	4.8	4.99	5.16	5.31	5.59
EPDRF4015-8-005-TH	●			8						5.1	8.96	9.25	9.48	9.78	10.85
EPDRF4015-12-005-TH	●		0.05	12			60			3.97	13.09	13.45	13.89	14.57	16.16
EPDRF4015-15-005-TH	●			15						3.41	16.18	16.58	17.31	18.16	20.14
EPDRF4015-20-005-TH	●			20						2.76	21.32	21.98	23.01	24.14	No interference
EPDRF4015-4-01-TH	●	1.5		4	1.35	1.42		4	4	7.15	4.8	4.99	5.16	5.31	5.58
EPDRF4015-8-01-TH	●			8			50			5.12	8.96	9.24	9.48	9.77	10.83
EPDRF4015-12-01-TH	●		0.1	12						3.98	13.09	13.45	13.88	14.56	16.14
EPDRF4015-15-01-TH	●			15			60			3.42	16.18	16.58	17.3	18.15	20.12
EPDRF4015-20-01-TH	●			20						2.76	21.32	21.98	23.01	24.13	No interference
EPDRF4020-4-005-TH	●			4			50			6.46	4.8	4.99	5.16	5.31	5.59
EPDRF4020-6-005-TH	●			6						5.27	6.88	7.13	7.33	7.52	8.19
EPDRF4020-8-005-TH	●		0.05	8						4.46	8.96	9.25	9.48	9.78	10.85
EPDRF4020-12-005-TH	●			12						3.4	13.09	13.45	13.89	14.57	16.16
EPDRF4020-16-005-TH	●			16			60			2.75	17.21	17.63	18.45	19.36	No interference
EPDRF4020-20-005-TH	●			20						2.31	21.32	21.98	23.01	24.14	No interference
EPDRF4020-4-01-TH	●			4			50			6.49	4.8	4.99	5.16	5.31	5.58
EPDRF4020-6-01-TH	●			6						5.3	6.88	7.12	7.33	7.51	8.18
EPDRF4020-8-01-TH	●		0.1	8						4.47	8.96	9.24	9.48	9.77	10.83
EPDRF4020-12-01-TH	●			12						3.41	13.09	13.45	13.88	14.56	16.14
EPDRF4020-16-01-TH	●			16			60			2.76	17.21	17.62	18.44	19.35	No interference
EPDRF4020-20-01-TH	●			20						2.31	21.32	21.98	23.01	24.13	No interference
EPDRF4020-4-02-TH	●	2		4	1.7	1.92	50	4	4	6.57	4.79	4.98	5.15	5.3	5.57
EPDRF4020-6-02-TH	●			6						5.35	6.88	7.12	7.32	7.5	8.14
EPDRF4020-8-02-TH	●			8						4.51	8.95	9.24	9.47	9.75	10.8
EPDRF4020-12-02-TH	●		0.2	12						3.43	13.09	13.44	13.87	14.54	16.11
EPDRF4020-16-02-TH	●			16			60			2.77	17.21	17.62	18.43	19.33	No interference
EPDRF4020-20-02-TH	●			20						2.32	21.32	21.97	22.99	24.11	No interference
EPDRF4020-25-02-TH	●			25						1.93	26.44	27.42	28.69	No interference	No interference
EPDRF4020-30-02-TH	●			30			70			1.66	31.55	32.87	34.4	No interference	No interference
EPDRF4020-4-03-TH	●			4			50			6.64	4.79	4.97	5.14	5.29	5.55
EPDRF4020-8-03-TH	●			8						4.55	8.95	9.23	9.47	9.73	10.77
EPDRF4020-12-03-TH	●		0.3	12						3.45	13.09	13.44	13.85	14.52	16.08
EPDRF4020-16-03-TH	●			16			60			2.79	17.21	17.61	18.42	19.31	No interference
EPDRF4020-20-03-TH	●			20						2.33	21.31	21.96	22.98	24.09	No interference
EPDRF4020-4-05-TH	●		0.5	4						6.8	4.78	4.96	5.12	5.26	5.53
EPDRF4020-6-05-TH	●			6			50			5.5	6.86	7.1	7.3	7.48	8.05

● : Stocked Items.

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Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Tool Dia.	r Corner radius	ℓ ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDRF4020-8-05-TH	●			8			50			4.62	8.94	9.22	9.45	9.7	10.7
EPDRF4020-12-05-TH	●			12						3.5	13.08	13.43	13.83	14.48	16.01
EPDRF4020-16-05-TH	●			16						2.81	17.2	17.61	18.39	19.27	No interference
EPDRF4020-20-05-TH	●	2	0.5	20	1.7	1.92		4	4	2.35	21.31	21.95	22.95	24.06	No interference
EPDRF4020-25-05-TH	●			25			70			1.95	26.43	27.39	28.65	No interference	No interference
EPDRF4020-30-05-TH	●			30						1.67	31.54	32.84	34.36	No interference	No interference
EPDRF4025-8-01-TH	●			8			50			3.68	9	9.27	9.51	9.83	10.89
EPDRF4025-16-01-TH	●		0.1	16			60			2.19	17.24	17.67	18.5	19.4	No interference
EPDRF4025-20-01-TH	●			20						1.82	21.35	22.03	23.06	No interference	No interference
EPDRF4025-8-02-TH	●			8			50			3.72	8.99	9.27	9.5	9.81	10.86
EPDRF4025-16-02-TH	●		0.2	16						2.2	17.24	17.67	18.48	19.38	No interference
EPDRF4025-20-02-TH	●	2.5		20	2	2.4		4	4	1.83	21.34	22.02	23.05	No interference	No interference
EPDRF4025-12-03-TH	●			12						2.78	13.12	13.47	13.91	14.58	No interference
EPDRF4025-20-03-TH	●		0.3	20			60			1.84	21.34	22.01	23.03	No interference	No interference
EPDRF4025-12-05-TH	●			12						2.82	13.12	13.46	13.88	14.54	No interference
EPDRF4025-20-05-TH	●		0.5	20						1.85	21.34	22	23	No interference	No interference
EPDRF4030-8-01-TH	●			8						5.61	9.07	9.34	9.56	9.94	11.02
EPDRF4030-16-01-TH	●			16			60			3.69	17.3	17.78	18.6	19.52	21.64
EPDRF4030-25-01-TH	●		0.1	25			70			2.67	26.52	27.58	28.87	30.28	No interference
EPDRF4030-30-01-TH	●			30			80			2.31	31.62	33.03	34.57	36.27	No interference
EPDRF4030-8-02-TH	●			8						5.65	9.07	9.33	9.55	9.92	10.99
EPDRF4030-12-02-TH	●			12			60			4.48	13.19	13.52	14.03	14.71	16.3
EPDRF4030-16-02-TH	●		0.2	16						3.71	17.3	17.77	18.59	19.5	21.6
EPDRF4030-20-02-TH	●			20						3.16	21.4	22.13	23.15	24.28	26.91
EPDRF4030-25-02-TH	●			25			70			2.67	26.51	27.57	28.86	30.27	No interference
EPDRF4030-30-02-TH	●			30			80			2.31	31.62	33.02	34.56	36.25	No interference
EPDRF4030-8-03-TH	●	3		8	2.5	2.86		6	4	5.68	9.07	9.33	9.54	9.9	10.95
EPDRF4030-16-03-TH	●			16			60			3.72	17.3	17.76	18.58	19.48	21.57
EPDRF4030-20-03-TH	●		0.3	20			70			3.17	21.4	22.12	23.14	24.26	26.88
EPDRF4030-25-03-TH	●			25						2.68	26.51	27.56	28.84	30.25	No interference
EPDRF4030-30-03-TH	●			30			80			2.32	31.62	33.01	34.54	36.23	No interference
EPDRF4030-8-05-TH	●			8						5.76	9.06	9.31	9.53	9.87	10.89
EPDRF4030-12-05-TH	●			12			60			4.55	13.18	13.51	13.99	14.65	16.2
EPDRF4030-16-05-TH	●			16						3.75	17.29	17.74	18.55	19.44	21.51
EPDRF4030-20-05-TH	●		0.5	20						3.2	21.39	22.1	23.11	24.22	26.82
EPDRF4030-25-05-TH	●			25			70			2.7	26.51	27.55	28.81	30.21	No interference
EPDRF4030-30-05-TH	●			30			80			2.33	31.61	32.99	34.52	36.19	No interference
EPDRF4030-35-05-TH	●			35						2.06	36.82	38.44	40.22	42.17	No interference
EPDRF4040-12-01-TH	●			12						3.4	13.13	13.47	13.94	14.62	16.2
EPDRF4040-20-01-TH	●		0.1	20			60			2.31	21.35	22.03	23.06	24.19	No interference
EPDRF4040-30-01-TH	●			30						1.65	31.57	32.93	34.46	No interference	No interference
EPDRF4040-40-01-TH	●			40			80			1.28	41.95	43.82	No interference	No interference	No interference
EPDRF4040-12-02-TH	●			12			60			3.42	13.12	13.47	13.92	14.6	16.17
EPDRF4040-20-02-TH	●		0.2	20						2.32	21.34	22.02	23.05	24.17	No interference
EPDRF4040-30-02-TH	●			30						1.65	31.57	32.92	34.45	No interference	No interference
EPDRF4040-40-02-TH	●	4		40	4	3.9	80	6	4	1.29	41.94	43.81	No interference	No interference	No interference
EPDRF4040-12-03-TH	●			12						3.44	13.12	13.47	13.91	14.58	16.14
EPDRF4040-20-03-TH	●		0.3	20			60			2.33	21.34	22.01	23.03	24.15	No interference
EPDRF4040-30-03-TH	●			30						1.66	31.57	32.91	34.44	No interference	No interference
EPDRF4040-40-03-TH	●			40			80			1.29	41.94	43.8	No interference	No interference	No interference
EPDRF4040-12-05-TH	●			12						3.49	13.12	13.46	13.88	14.54	16.07
EPDRF4040-20-05-TH	●		0.5	20			60			2.35	21.34	22	23	24.11	No interference
EPDRF4040-30-05-TH	●			30						1.67	31.57	32.89	34.41	No interference	No interference
EPDRF4040-40-05-TH	●			40			80			1.29	41.93	43.79	No interference	No interference	No interference
EPDRF4050-20-01-TH	●		0.1	20			70			1.28	21.35	22.03	No interference	No interference	No interference
EPDRF4050-40-01-TH	●			40			90			0.68	41.95	No interference	No interference	No interference	No interference
EPDRF4050-20-02-TH	●		0.2	20			70			1.28	21.34	22.02	No interference	No interference	No interference
EPDRF4050-40-02-TH	●			40			90			0.68	41.94	No interference	No interference	No interference	No interference
EPDRF4050-20-03-TH	●		0.3	20	5	4.9	70	6	4	1.29	21.34	22.01	No interference	No interference	No interference
EPDRF4050-40-03-TH	●	5		40			90			0.68	41.94	No interference	No interference	No interference	No interference
EPDRF4050-20-05-TH	●		0.5	20			70			1.3	21.34	22	No interference	No interference	No interference
EPDRF4050-40-05-TH	●			40			90			0.69	41.93	No interference	No interference	No interference	No interference
EPDRF4050-20-10-TH	●		1	20			70			1.33	21.32	21.95	No interference	No interference	No interference
EPDRF4050-40-10-TH	●			40			90			0.69	41.91	No interference	No interference	No interference	No interference
EPDRF4060-30-02-TH	●		0.2	30			80			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-54-02-TH	●			54			100			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-72-02-TH	●			72			120			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-30-03-TH	●			30			80			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-54-03-TH	●		0.3	54			100			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-72-03-TH	●	6		72	6	5.9	120	6	4	0	No interference	No interference	No interference	No interference	No interference
EPDRF4060-30-05-TH	●			30			80			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-54-05-TH	●		0.5	54			100			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-72-05-TH	●			72			120			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-30-10-TH	●		1	30			80			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-54-10-TH	●			54			100			No interference	No interference	No interference	No interference	No interference	No interference
EPDRF4060-72-10-TH	●			72			120			No interference	No interference	No interference	No interference	No interference	No interference

● : Stocked Items.



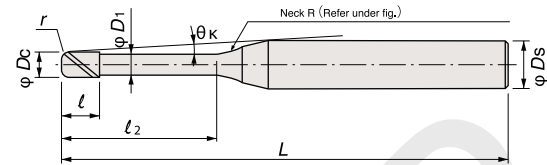
ดอกเอ็นมิลล์

EPOCH TURBO RIB

ETR4 0000-00-00-TH



4Flutes



Straight Neck



±0.01



0~-0.005

(mm)

Suppresses chattering to enable deeper, faster machining.

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		Dc Tool Dia.	r Corner radius	ℓ2 Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
ETR4010-5-02-TH	●			5						8.52	5.79	6.01	6.21	6.38	6.75
ETR4010-7.5-02-TH	●			7.5			50			7.42	8.39	8.68	8.91	9.11	10.07
ETR4010-10-02-TH	●			10						6.58	10.98	11.32	11.58	12.09	13.39
ETR4010-12.5-02-TH	●			12.5						5.90	13.57	13.94	14.38	15.08	16.71
ETR4010-15-02-TH	●			15						5.35	16.15	16.55	17.24	18.07	20.03
ETR4010-17.5-02-TH	●	1	0.2	17.5	1	0.94	60	6	4	4.90	18.72	19.20	20.09	21.07	23.35
ETR4010-20-02-TH	●			20						4.51	21.29	21.92	22.94	24.06	26.66
ETR4010-22.5-02-TH	●			22.5						4.19	23.85	24.64	25.79	27.05	29.98
ETR4010-25-02-TH	●			25			70			3.90	26.41	27.37	28.64	30.04	33.30
ETR4010-27.5-02-TH	●			27.5						3.65	28.97	30.09	31.49	33.03	36.62
ETR4010-30-02-TH	●			30						3.44	31.52	32.82	34.34	36.02	39.94
ETR40125-5-02-TH	●			5						8.38	5.81	6.03	6.22	6.39	6.79
ETR40125-10-02-TH	●			10			50			6.42	11.00	11.33	11.59	12.12	13.42
ETR40125-15-02-TH	●	1.25	0.2	15	1.25	1.18	60	6	4	5.20	16.16	16.56	17.26	18.10	20.06
ETR40125-20-02-TH	●			20						4.37	21.30	21.95	22.97	24.09	26.69
ETR40125-25-02-TH	●			25			70			3.77	26.42	27.39	28.67	30.07	33.33
ETR40125-30-02-TH	●			30						3.31	31.54	32.84	34.37	36.05	39.97
ETR4015-5-03-TH	●			5			50			8.28	5.83	6.05	6.23	6.40	6.79
ETR4015-10-03-TH	●			10						6.28	11.02	11.34	11.60	12.13	13.42
ETR4015-15-03-TH	●	1.5	0.3	15	1.5	1.42	60	6	4	5.05	16.18	16.57	17.28	18.11	20.06
ETR4015-20-03-TH	●			20						4.23	21.31	21.96	22.98	24.09	26.69
ETR4015-25-03-TH	●			25			70			3.63	26.43	27.41	28.68	30.08	33.33
ETR4015-30-03-TH	●			30						3.19	31.55	32.86	34.38	36.06	39.97
ETR40175-10-03-TH	●			10			50			6.09	11.06	11.37	11.63	12.18	13.48
ETR40175-20-03-TH	●	1.75	0.3	20	1.75	1.65	60	6	4	4.07	21.34	22.01	23.03	24.15	26.76
ETR40175-30-03-TH	●			30			70			3.05	31.57	32.91	34.44	36.12	40.03
ETR40175-40-03-TH	●			40			80			2.44	41.94	43.80	45.84	48.08	No interference
ETR4020-10-05-TH	●			10			50			5.98	11.01	11.33	11.59	12.09	13.36
ETR4020-15-05-TH	●			15						4.75	16.17	16.56	17.25	18.07	19.99
ETR4020-20-05-TH	●			20			60			3.94	21.31	21.95	22.95	24.06	26.63
ETR4020-25-05-TH	●	2	0.5	25	2	1.92	70	6	4	3.36	26.43	27.39	28.65	30.04	33.27
ETR4020-30-05-TH	●			30						2.93	31.54	32.84	34.36	36.02	No interference
ETR4020-35-05-TH	●			35						2.60	36.67	38.29	40.06	42.00	No interference
ETR4020-40-05-TH	●			40			80			2.34	41.88	43.73	45.76	47.99	No interference
ETR4025-10-05-TH	●			10			50			5.57	11.05	11.36	11.61	12.15	13.42
ETR4025-20-05-TH	●			20			60			3.59	21.34	22.00	23.00	24.11	26.96
ETR4025-30-05-TH	●	2.5	0.5	30	2.5	2.4	70	6	4	2.64	31.57	32.89	34.41	36.08	No interference
ETR4025-40-05-TH	●			40			80			2.09	41.93	43.79	45.81	48.04	No interference
ETR4025-50-05-TH	●			50			90			1.73	52.36	54.68	57.22	No interference	No interference
ETR4030-10-08-TH	●			10			50			5.17	11.12	11.40	11.66	12.20	13.45
ETR4030-20-08-TH	●			20			60			3.23	21.39	22.07	23.07	24.17	26.72
ETR4030-30-08-TH	●	3	0.8	30	3	2.86	70	6	4	2.35	31.61	32.97	34.47	36.13	No interference
ETR4030-40-08-TH	●			40			80			1.85	42.02	43.86	45.88	No interference	No interference
ETR4030-50-08-TH	●			50			90			1.52	52.45	54.76	57.28	No interference	No interference

● : Stocked Items.

END MILL

ดอกเอ็นมิลล์



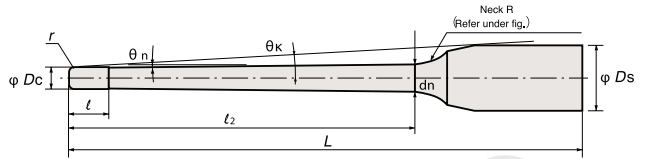
ดอกเอ็นมิลล์

EPOCH TURBO RIB

ETRP4 -TH



4Flutes



Pencil Neck



±0.01



h5 0~-0.005

(mm)

Suppresses chattering to enable deeper, faster machining.

Order No.	Stock	Size (mm)										The effective under-neck length for the various draft angles				
		Dc Mill Dia.	r Corner radius	L2 Under Neck Length	theta_n Neck angle	L Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	Neck R	theta_k Interference Angle	0.5°	1°	1.5°	2°	3°
ETRP4010-5-0902-TH	●			5			1.066	60		4	8.67	2.91	5.70	5.96	6.17	6.51
ETRP4010-7.5-0902-TH	★			7.5			1.144	60		7	7.61	2.91	8.50	8.97	9.34	9.93
ETRP4010-10-0902-TH	●			10			1.223	60			6.78	2.91	11.04	11.60	12.03	12.70
ETRP4010-15-0902-TH	●			15			1.380	60			5.57	2.91	16.35	17.25	17.89	18.89
ETRP4010-20-0902-TH	●			20			1.537	70			4.72	2.91	21.42	22.49	23.22	24.80
ETRP4010-25-0902-TH	●			25			1.694	70			4.10	2.91	26.49	27.70	28.52	30.95
ETRP4010-30-0902-TH	●	1	0.2	30	0.9	1	1.851	80	6	10	3.62	2.91	31.55	32.90	33.79	37.09
ETRP4010-35-0902-TH	●			35			2.008	80			3.24	2.91	36.61	38.08	39.03	43.24
ETRP4010-40-0902-TH	●			40			2.165	90			2.94	2.91	41.67	43.25	44.54	No interference
ETRP4010-45-0902-TH	●			45			2.322	90			2.68	2.91	46.73	48.41	50.08	No interference
ETRP4010-50-0902-TH	●			50			2.480	100			2.47	2.91	51.78	53.56	55.62	No interference
ETRP40125-10-0902-TH	●			10			1.455	60		7	6.62	3.47	11.10	11.65	12.06	12.73
ETRP40125-15-0902-TH	★			15			1.612	60			5.41	3.47	16.42	17.29	17.92	18.91
ETRP40125-20-0902-TH	●			20			1.769	70			4.57	3.47	21.49	22.52	23.25	24.86
ETRP40125-30-0902-TH	●	1.25	0.2	30	0.9	1.25	2.083	80	6	10	3.49	3.47	31.61	32.93	33.81	37.15
ETRP40125-40-0902-TH	●			40			2.397	90			2.82	3.47	41.73	43.28	44.59	No interference
ETRP40125-50-0902-TH	●			50			2.712	100			2.37	3.47	51.83	53.59	55.67	No interference
ETRP4015-10-0903-TH	●			10			1.687	60		7	6.47	4.04	11.15	11.67	12.08	12.74
ETRP4015-15-0903-TH	★			15			1.844	60			5.26	4.04	16.21	16.89	17.40	18.73
ETRP4015-20-0903-TH	●			20			2.001	70			4.43	4.04	21.54	22.55	23.27	24.88
ETRP4015-30-0903-TH	●	1.5	0.3	30	0.9	1.5	2.315	80	6	10	3.36	4.04	31.66	32.95	33.83	37.17
ETRP4015-40-0903-TH	●			40			2.630	90			2.71	4.04	41.77	43.30	44.62	No interference
ETRP4015-50-0903-TH	●			50			2.944	100			2.24	4.04	51.88	53.60	55.70	No interference
ETRP40175-10-0903-TH	●			10			1.909	60		7	6.28	4.93	11.24	11.74	12.13	12.77
ETRP40175-15-0903-TH	★			15			2.066	60			5.07	4.93	16.29	16.95	17.44	18.82
ETRP40175-20-0903-TH	●			20			2.223	70			4.26	4.93	21.64	22.61	23.32	24.97
ETRP40175-30-0903-TH	●	1.75	0.3	30	0.9	1.75	2.538	80	6	10	3.22	4.93	31.75	33.00	33.86	37.26
ETRP40175-40-0903-TH	●			40			2.852	90			2.59	4.93	41.86	43.34	44.70	No interference
ETRP40175-50-0903-TH	●			50			3.166	100			2.16	4.93	51.95	53.64	55.78	No interference
ETRP4020-15-0905-TH	●			15			2.328	60		7	4.95	4.54	16.23	16.91	17.40	18.72
ETRP4020-20-0905-TH	●			20			2.486	70			4.12	4.54	21.29	22.10	22.67	24.86
ETRP4020-25-0905-TH	●			25			2.643	70			3.54	4.54	26.63	27.77	28.57	31.01
ETRP4020-30-0905-TH	●			30			2.800	80			3.1	4.54	31.69	32.96	33.83	37.16
ETRP4020-35-0905-TH	●	2	0.5	35	0.9	2	2.957	80	6	10	2.75	4.54	36.75	38.14	39.09	No interference
ETRP4020-40-0905-TH	●			40			3.114	90			2.48	4.54	41.80	43.31	44.63	No interference
ETRP4020-45-0905-TH	●			45			3.271	90			2.25	4.54	46.85	48.46	50.17	No interference
ETRP4020-50-0905-TH	●			50			3.428	100			2.07	4.54	51.90	53.61	55.71	No interference
ETRP4020-55-0905-TH	●			55			3.585	100			1.91	4.54	56.95	58.75	No interference	No interference
ETRP4020-60-0905-TH	●			60			3.742	110			1.77	4.54	62.00	63.89	No interference	No interference
ETRP4025-20-0905-TH	●			20			2.950	70		7	3.76	5.68	21.39	22.16	22.72	24.98
ETRP4025-30-0905-TH	●			30			3.264	80			2.79	5.68	31.80	33.02	33.88	No interference
ETRP4025-40-0905-TH	●	2.5	0.5	40	0.9	2.5	3.578	90	6	10	2.22	5.68	41.90	43.36	44.73	No interference
ETRP4025-50-0905-TH	●			50			3.892	100			1.85	5.68	52.00	53.66	No interference	No interference
ETRP4025-60-0905-TH	●			60			4.207	110			1.58	5.68	62.09	63.93	No interference	No interference
ETRP4030-20-0908-TH	●			20			3.394	70		7	3.39	7.45	21.50	22.22	22.76	25.05
ETRP4030-30-0908-TH	●			30			3.708	80			2.49	7.45	31.59	32.54	33.74	No interference
ETRP4030-40-0908-TH	●	3	0.8	40	0.9	3	4.022	90	6	10	1.96	7.45	42.03	43.42	No interference	No interference
ETRP4030-50-0908-TH	●			50			4.337	100			1.62	7.45	52.12	53.72	No interference	No interference
ETRP4030-60-0908-TH	●			60			4.651	110			1.37	7.45	62.20	No interference	No interference	No interference

★: Stocked Items of New Products.

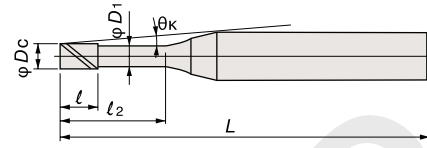
●: Stocked item



ดอกเอ็นมิลล์

EPOCH DEEP SQUARE EVOLUTION
EPDSE2 0.0-0.0-ATH

2 Flutes



Ø0.1~Ø0.5 : 0~-0.007
Ø0.6~Ø0.9 : 0~-0.01
Ø1 ~ Ø6 : 0~-0.015



h5 0~-0.005

(mm)

Improved flute tip shape and neck shape suppresses warping to enable high-accuracy cutting. Use of ATH and PN coatings further extends tool life.

Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		Dc Tool Dia.	Under Neck Length	Flute Length	D1 Neck Dia.	L Overall Length	Shank Dia.	Neck R	θ K Interference Angle	0.5°	1°	1.5°	2°	3°
EPDSE2001-0.3-ATH	●		0.3						11.58	0.46	0.49	0.51	0.53	0.58
EPDSE2001-0.5-ATH	●	0.1	0.5	0.15	0.08	45	4	1	11.35	0.67	0.71	0.74	0.76	0.82
EPDSE2001-1-ATH	●		1						10.81	1.20	1.25	1.29	1.33	1.39
EPDSE2002-0.5-ATH	●		0.5						11.30	0.70	0.73	0.76	0.78	0.83
EPDSE2002-1-ATH	●		1						10.75	1.22	1.27	1.31	1.34	1.42
EPDSE2002-1.5-ATH	●	0.2	1.5	0.3	0.17	50	4	1	10.25	1.74	1.80	1.85	1.89	2.08
EPDSE2002-2-ATH	●		2						9.80	2.26	2.32	2.38	2.47	2.74
EPDSE2002-3-ATH	●		3						9.00	3.29	3.37	3.50	3.67	4.07
EPDSE2003-1-ATH	●		1						10.72	1.32	1.39	1.45	1.51	1.62
EPDSE2003-1.5-ATH	●		1.5						10.21	1.85	1.93	2.01	2.08	2.21
EPDSE2003-2-ATH	●	0.3	2	0.45	0.27	50	4	2	9.75	2.37	2.47	2.56	2.64	2.78
EPDSE2003-2.5-ATH	●		2.5						9.32	2.89	3.01	3.11	3.20	3.41
EPDSE2003-3-ATH	●		3						8.93	3.42	3.54	3.65	3.75	4.07
EPDSE2004-1-ATH	●		1						10.69	1.32	1.39	1.45	1.51	1.62
EPDSE2004-1.5-ATH	●		1.5						10.17	1.85	1.93	2.01	2.08	2.21
EPDSE2004-2-ATH	●		2						9.70	2.37	2.47	2.56	2.64	2.78
EPDSE2004-2.5-ATH	●		2.5						9.27	2.89	3.01	3.11	3.20	3.41
EPDSE2004-3-ATH	●		3						8.87	3.42	3.54	3.65	3.75	4.07
EPDSE2004-3.5-ATH	●	0.4	3.5	0.6	0.37	50	4	2	8.51	3.94	4.08	4.19	4.29	4.73
EPDSE2004-4-ATH	●		4						8.17	4.46	4.61	4.73	4.87	5.40
EPDSE2004-5-ATH	●		5						7.58	5.49	5.66	5.79	6.06	6.72
EPDSE2004-6-ATH	●		6						7.06	6.53	6.71	6.96	7.26	8.05
EPDSE2004-8-ATH	●		8						6.22	8.59	8.80	9.20	9.65	10.71
EPDSE2004-10-ATH	●		10						5.55	10.64	10.97	11.48	12.05	13.36
EPDSE2005-1-ATH	●		1						10.66	1.32	1.39	1.45	1.51	1.62
EPDSE2005-1.5-ATH	●		1.5						10.13	1.85	1.93	2.01	2.08	2.21
EPDSE2005-2-ATH	●		2						9.64	2.37	2.47	2.56	2.64	2.78
EPDSE2005-2.5-ATH	●		2.5						9.21	2.89	3.01	3.11	3.20	3.41
EPDSE2005-3-ATH	●	0.5	3	0.75	0.47	50	4	2	8.81	3.42	3.54	3.65	3.75	4.07
EPDSE2005-4-ATH	●		4						8.10	4.46	4.61	4.73	4.87	5.40
EPDSE2005-5-ATH	●		5						7.50	5.49	5.66	5.79	6.06	6.72
EPDSE2005-6-ATH	●		6						6.98	6.53	6.71	6.92	7.26	8.05
EPDSE2005-8-ATH	●		8						6.13	8.59	8.80	9.20	9.65	10.71
EPDSE2005-10-ATH	●		10						5.47	10.64	10.97	11.48	12.05	13.36
EPDSE2006-2-ATH	●		2						9.59	2.54	2.70	2.84	2.96	3.19
EPDSE2006-3-ATH	●		3						8.74	3.60	3.80	3.96	4.11	4.37
EPDSE2006-4-ATH	●		4						8.02	4.66	4.89	5.07	5.24	5.53
EPDSE2006-5-ATH	●		5						7.42	5.71	5.96	6.17	6.35	6.72
EPDSE2006-6-ATH	●	0.6	6	0.9	0.57	50	4	4	6.90	6.76	7.04	7.26	7.45	8.05
EPDSE2006-7-ATH	●		7						6.44	7.81	8.10	8.34	8.55	9.38
EPDSE2006-8-ATH	●		8						6.04	8.85	9.17	9.42	9.65	10.71
EPDSE2006-9-ATH	●		9						5.69	9.89	10.22	10.49	10.85	12.03
EPDSE2006-10-ATH	●		10						5.38	10.93	11.28	11.56	12.05	13.36
EPDSE2007-2-ATH	●		2						9.53	2.54	2.70	2.84	2.96	3.19
EPDSE2007-4-ATH	●		4						7.94	4.66	4.89	5.07	5.24	5.53
EPDSE2007-6-ATH	●	0.7	6	1.05	0.67	50	4	4	6.81	6.76	7.04	7.26	7.45	8.05
EPDSE2007-8-ATH	●		8						5.95	8.85	9.17	9.42	9.65	10.71
EPDSE2007-10-ATH	●		10						5.29	10.93	11.28	11.56	12.05	13.36
EPDSE2008-2-ATH	★		2						9.47	2.54	2.70	2.84	2.96	3.19
EPDSE2008-4-ATH	●		4						7.86	4.66	4.89	5.07	5.24	5.53
EPDSE2008-6-ATH	●	0.8	6	1.2	0.77	50	4	4	6.72	6.76	7.04	7.26	7.45	8.05
EPDSE2008-8-ATH	●		8						5.86	8.85	9.17	9.42	9.65	10.71
EPDSE2008-10-ATH	●		10						5.20	10.93	11.28	11.56	12.05	13.36
EPDSE2008-12-ATH	●		12			55			4.67	13.00	13.38	13.76	14.44	16.02

● : Stocked Items.

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

DEEP SERIES
ตระกูลดีฟ

Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		Dc Tool Dia.	ℓ ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle	0.5°	1°	1.5°	2°	3°
EPDSE2009-2-ATH	★		2						9.38	2.58	2.73	2.86	2.98	3.21
EPDSE2009-4-ATH	★		4						7.76	4.69	4.91	5.09	5.26	5.54
EPDSE2009-6-ATH	●	0.9	6	1.35	0.86	50	4	4	6.61	6.79	7.06	7.28	7.47	8.08
EPDSE2009-8-ATH	●		8						5.76	8.87	9.18	9.43	9.68	10.74
EPDSE2009-10-ATH	●		10						5.10	10.95	11.30	11.57	12.07	13.39
EPDSE2009-12-ATH	●		12			55			4.58	13.02	13.40	13.79	14.47	16.05
EPDSE2010-2-ATH	●		2						9.31	2.58	2.73	2.86	2.98	3.21
EPDSE2010-3-ATH	●		3						8.41	3.64	3.82	3.99	4.13	4.39
EPDSE2010-4-ATH	●		4						7.67	4.69	4.91	5.09	5.26	5.54
EPDSE2010-5-ATH	●		5						7.04	5.74	5.99	6.19	6.37	6.76
EPDSE2010-6-ATH	●		6			50			6.51	6.79	7.06	7.28	7.47	8.08
EPDSE2010-7-ATH	●		7						6.06	7.83	8.12	8.36	8.56	9.41
EPDSE2010-8-ATH	●	1	8	1.5	0.96		4	4	5.66	8.87	9.18	9.43	9.68	10.74
EPDSE2010-9-ATH	●		9						5.31	9.91	10.24	10.50	10.88	12.07
EPDSE2010-10-ATH	●		10						5.00	10.95	11.30	11.57	12.07	13.39
EPDSE2010-12-ATH	●		12						4.48	13.02	13.40	13.79	14.47	16.05
EPDSE2010-14-ATH	●		14			55			4.06	15.09	15.49	16.07	16.86	18.70
EPDSE2010-16-ATH	●		16						3.71	17.15	17.58	18.35	19.25	21.36
EPDSE2010-20-ATH	●		20			60			3.17	21.26	21.89	22.91	24.04	26.66
EPDSE2010-25-ATH	●		25			65			2.68	26.39	27.33	28.61	30.02	No interference
EPDSE2012-4-ATH	★		2						7.46	4.72	4.93	5.11	5.27	5.55
EPDSE2012-6-ATH	●		6						6.29	6.81	7.08	7.29	7.48	8.11
EPDSE2012-8-ATH	●	1.2	8	1.8	1.15	50	4	4	5.44	8.90	9.20	9.45	9.71	10.77
EPDSE2012-10-ATH	●		10						4.80	10.97	11.31	11.58	12.10	13.42
EPDSE2012-12-ATH	●		12			55			4.29	13.04	13.41	13.82	14.49	16.08
EPDSE2012-16-ATH	●		16						3.53	17.16	17.59	18.38	19.28	21.39
EPDSE2014-6-ATH	●		6			50			6.06	6.84	7.09	7.31	7.50	8.15
EPDSE2014-12-ATH	●	1.4	12	2.1	1.34	55	4	4	4.08	13.06	13.43	13.84	14.52	16.11
EPDSE2015-4-ATH	●		4						7.11	4.75	4.95	5.13	5.29	5.57
EPDSE2015-6-ATH	●		6						5.94	6.84	7.09	7.31	7.50	8.15
EPDSE2015-8-ATH	●		8			50			5.10	8.92	9.22	9.46	9.74	10.80
EPDSE2015-10-ATH	●		10						4.47	10.99	11.33	11.59	12.13	13.45
EPDSE2015-12-ATH	●		12						3.97	13.06	13.43	13.84	14.52	16.11
EPDSE2015-14-ATH	●		14			55			3.58	15.12	15.52	16.12	16.92	18.76
EPDSE2015-16-ATH	●	1.5	16	2.25	1.44		4	4	3.25	17.18	17.60	18.40	19.31	21.42
EPDSE2015-18-ATH	●		18						2.98	19.24	19.76	20.69	21.70	No interference
EPDSE2015-20-ATH	●		20			60			2.76	21.29	21.94	22.97	24.10	No interference
EPDSE2015-25-ATH	●		25			65			2.31	26.42	27.39	28.67	30.08	No interference
EPDSE2015-30-ATH	●		30			70			1.99	31.53	32.83	34.37	No interference	No interference
EPDSE2015-35-ATH	●		35			75			1.75	36.64	38.28	40.07	No interference	No interference
EPDSE2015-40-ATH	●		40			80			1.56	41.85	43.73	45.78	No interference	No interference
EPDSE2016-6-ATH	●		6			50			5.82	6.84	7.09	7.31	7.50	8.15
EPDSE2016-8-ATH	●	1.6	8	2.4	1.54	50	4	4	4.98	8.92	9.22	9.46	9.74	10.80
EPDSE2018-6-ATH	●		6			50			5.55	6.86	7.11	7.32	7.51	8.18
EPDSE2018-8-ATH	●	1.8	8	2.7	1.73	50	4	4	4.72	8.94	9.23	9.47	9.76	10.83
EPDSE2020-4-ATH	●		4			50			6.42	4.80	5.00	5.17	5.32	5.59
EPDSE2020-6-ATH	●		6			50			5.25	6.88	7.13	7.34	7.52	8.21
EPDSE2020-8-ATH	●		8			50			4.44	8.96	9.25	9.49	9.79	10.86
EPDSE2020-10-ATH	●		10			50			3.85	11.03	11.35	11.62	12.19	13.52
EPDSE2020-12-ATH	●		12			55			3.39	13.10	13.45	13.90	14.58	16.17
EPDSE2020-14-ATH	●		14			55			3.03	15.16	15.54	16.18	16.97	18.83
EPDSE2020-16-ATH	●		16			55			2.75	17.21	17.63	18.46	19.37	No interference
EPDSE2020-18-ATH	●	2	18	3	1.92	60	4	4	2.51	19.27	19.81	20.74	21.76	No interference
EPDSE2020-20-ATH	●		20			60			2.31	21.32	21.99	23.02	24.15	No interference
EPDSE2020-25-ATH	●		25			65			1.92	26.44	27.44	28.72	No interference	No interference
EPDSE2020-30-ATH	●		30			70			1.65	31.55	32.88	34.42	No interference	No interference
EPDSE2020-35-ATH	●		35			75			1.44	36.69	38.33	No interference	No interference	No interference
EPDSE2020-40-ATH	●		40			80			1.28	41.90	43.78	No interference	No interference	No interference
EPDSE2020-50-ATH	●		50			90			1.05	52.33	54.67	No interference	No interference	No interference
EPDSE2025-8-ATH	●		8			50			3.65	9.00	9.28		9.51	10.93
EPDSE2025-12-ATH	●		12			55			2.73	13.13	13.48	13.95	14.64	No interference
EPDSE2025-16-ATH	●		16			55			2.18	17.25	17.68	18.51	19.42	No interference
EPDSE2025-20-ATH	●	2.5	20	3.75	2.4	60	4	4	1.81	21.35	22.04	23.07	No interference	No interference
EPDSE2025-30-ATH	●		30			70			1.28	31.58	32.94	No interference	No interference	No interference
EPDSE2025-40-ATH	●		40			80			0.99	41.95	No interference	No interference	No interference	No interference
EPDSE2025-50-ATH	●		50			90			0.80	52.38	No interference	No interference	No interference	No interference
EPDSE2030-8-ATH	●		8			55			5.59	9.04	9.31	9.54	9.91	10.99
EPDSE2030-12-ATH	●		12			60			4.44	13.16	13.50	14.00	14.69	16.30
EPDSE2030-16-ATH	●		16			60			3.68	17.28	17.73	18.57	19.48	21.61
EPDSE2030-20-ATH	●		20			65			3.15	21.38	22.09	23.13	24.26	26.91
EPDSE2030-25-ATH	●	3	25	4.5	2.88	70	6	4	2.66	26.49	27.54	28.83	30.25	No interference
EPDSE2030-30-ATH	●		30			75			2.31	31.60	32.99	34.53	36.23	No interference
EPDSE2030-40-ATH	●		40			90			1.82	42.00	43.88	45.94	No interference	No interference
EPDSE2030-50-ATH	●		50			100			1.50	52.43	54.78	No interference	No interference	No interference
EPDSE2040-12-ATH	●		12			60			3.36	13.21	13.54	14.08	14.78	16.39
EPDSE2040-16-ATH	●		16			60			2.72	17.32	17.81	18.65	19.56	No interference
EPDSE2040-20-ATH	●	4	20	6	3.85	70	6	4	2.29	21.42	22.17	23.21	24.35	No interference
EPDSE2040-25-ATH	●		25			70			1.91	26.53	27.62	28.91	No interference	No interference

● : Stocked Items.



Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		Dc Tool Dia.	Under Neck Length	Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	Neck R	θ κ Interference Angle					
										0.5°	1°	1.5°	2°	3°
EPDSE2040-30-ATH	●		30			80			1.64	31.65	33.06	34.61	No interference	No interference
EPDSE2040-35-ATH	●		35			80			1.44	36.86	38.51	No interference	No interference	No interference
EPDSE2040-40-ATH	●	4	40	6	3.85	90	6	4	1.28	42.08	43.96	No interference	No interference	No interference
EPDSE2040-50-ATH	●		50			100			1.05	52.50	54.85	No interference	No interference	No interference
EPDSE2050-20-ATH	●		20			70			1.27	21.42	22.17	No interference	No interference	No interference
EPDSE2050-25-ATH	●		25			70			1.04	26.53	27.62	No interference	No interference	No interference
EPDSE2050-30-ATH	●	5	30	7.5	4.85	80	6	4	0.88	31.65	No interference	No interference	No interference	No interference
EPDSE2050-40-ATH	●		40			90			0.68	42.08	No interference	No interference	No interference	No interference
EPDSE2050-50-ATH	●		50			100			0.55	52.50	No interference	No interference	No interference	No interference
EPDSE2060-20-ATH	●		20			70			0	No interference	No interference	No interference	No interference	No interference
EPDSE2060-30-ATH	●		30			80			0	No interference	No interference	No interference	No interference	No interference
EPDSE2060-40-ATH	●	6	40	9	5.85	90	6	-	0	No interference	No interference	No interference	No interference	No interference
EPDSE2060-50-ATH	●		50			100			0	No interference	No interference	No interference	No interference	No interference

● : Stocked Items.

Recommended cutting conditions

EPDSE-ATH

High efficiency cutting condition

High accuracy cutting condition

Recommended range			ATH series											
Work material			1		2		3		4		5		6	
			Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill Dia. (mm)	Under neck Length (mm)	a _p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
0.1	0.3	0.006	50,000	500	50,000	500	50,000	475	48,600	348	42,750	255	40,050	208
	0.5	0.004	50,000	500	50,000	500	50,000	475	48,600	348	42,750	255	40,050	208
	1	0.003	50,000	455	50,000	455	48,600	430	43,700	315	38,500	232	36,050	187
0.2	0.5	0.02	50,000	708	45,000	638	40,500	574	38,250	403	33,750	301	31,500	242
	1	0.014	50,000	708	45,000	638	40,500	574	38,250	403	33,750	301	31,500	242
	1.5	0.008	48,600	630	40,500	525	36,450	472	34,425	362	30,375	271	28,350	218
	2	0.005	43,200	504	36,000	420	32,400	378	30,600	286	27,000	214	25,200	172
0.3	3	0.003	43,200	454	36,000	378	32,400	340	30,600	257	27,000	193	25,200	155
	1	0.021	48,000	680	40,000	567	36,000	510	34,000	358	30,000	267	28,000	216
	1.5	0.021	48,000	680	40,000	567	36,000	510	34,000	358	30,000	267	28,000	216
	2	0.012	43,200	560	36,000	467	32,400	420	30,600	322	27,000	241	25,200	194
0.4	2.5	0.01	43,200	560	36,000	467	32,400	420	30,600	322	27,000	241	25,200	194
	3	0.008	43,200	560	36,000	467	32,400	420	30,600	322	27,000	241	25,200	194
	1	0.04	38,400	847	32,000	706	28,800	635	27,200	446	24,000	333	22,400	268
	1.5	0.028	38,400	847	32,000	706	28,800	635	27,200	446	24,000	333	22,400	268
0.4	2	0.028	38,400	847	32,000	706	28,800	635	27,200	446	24,000	333	22,400	268
	2.5	0.022	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
	3	0.016	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
	3.5	0.012	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
	4	0.01	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
	5	0.01	30,720	542	25,600	452	23,040	406	21,760	260	19,200	230	17,920	181
	6	0.006	30,720	542	25,600	452	23,040	406	21,760	260	19,200	230	17,920	181
	8	0.003	26,880	413	22,400	344	20,160	310	19,040	200	16,800	172	15,680	131
	10	0.002	23,040	304	19,200	253	17,280	228	16,320	147	14,400	127	13,440	96
	1	0.05	38,400	847	32,000	706	28,800	635	27,200	535	24,000	333	22,400	268
0.5	1.5	0.05	38,400	847	32,000	706	28,800	635	27,200	535	24,000	333	22,400	268
	2	0.035	38,400	847	32,000	706	28,800	635	27,200	535	24,000	333	22,400	268
	2.5	0.03	34,560	697	28,800	581	25,920	523	24,480	441	21,600	299	20,160	241
	3	0.02	34,560	697	28,800	581	25,920	523	24,480	441	21,600	299	20,160	241
	4	0.02	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
	5	0.013	34,560	697	28,800	581	25,920	523	24,480	401	21,600	299	20,160	241
	6	0.013	30,720	542	25,600	452	23,040	406	21,760	260	19,200	230	17,920	181
	8	0.008	30,720	464	25,600	387	23,040	348	21,760	247	19,200	194	17,920	147
	10	0.004	26,880	360	22,400	300	20,160	270	19,040	174	16,800	150	15,680	114
	2	0.042	38,400	1,210	32,000	1,008	28,800	907	27,200	636	24,000	475	22,400	383
0.6	3	0.035	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	4	0.024	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	5	0.02	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	6	0.015	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	7	0.015	30,720	859	25,600	716	23,040	644	21,760	494	19,200	369	17,920	298
	8	0.015	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
	9	0.012	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
	10	0.009	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258

END MILL

ดอกเอ็นมิลล์



DEEP SERIES
ตระกูลดีฟ

DEEP SERIES
เอ็นมิลล์ตระกูลดีฟ

CBN END MILL
CBN เอ็นมิลล์

Carbide Endmill
เอ็นมิลล์คาร์ไบด์

HSS Endmill
เอ็นมิลล์ไฮสปีด

Ball
หัวบอล

Radius
หัวกึ่งมุม R

Square
หัวสี่

Taper Ball
หัวตaperบอล

Roughing

Recommended range			ATH series											
Work material			1		2		3		4		5		6	
			Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill Dia. (mm)	Under neck Length (mm)	a _p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
0.7	2	0.07	38,400	1,210	32,000	1,008	28,800	907	27,200	636	24,000	475	22,400	384
	4	0.049	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	6	0.018	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	8	0.018	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
0.8	10	0.018	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
	2	0.08	38,400	1,210	32,000	1,008	28,800	907	27,200	780	24,000	688	22,400	422
	4	0.056	38,400	1,210	32,000	1,008	28,800	907	27,200	780	24,000	688	22,400	422
	6	0.032	34,560	995	28,800	829	25,920	746	24,480	678	24,000	665	20,160	379
0.9	8	0.02	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	10	0.02	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
	12	0.012	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
	2	0.09	38,400	1,326	32,000	1,205	28,800	1,085	27,200	833	24,000	674	22,400	502
1	4	0.063	38,400	1,326	32,000	1,205	28,800	1,085	27,200	833	24,000	674	22,400	502
	6	0.036	34,560	1,094	28,800	994	25,920	895	24,480	687	21,600	556	20,160	414
	8	0.023	34,560	1,094	28,800	911	25,920	820	24,480	630	21,600	513	20,160	379
	10	0.023	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
1.2	12	0.023	30,720	774	25,600	645	23,040	581	21,760	372	19,200	328	17,920	258
	2	0.1	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1,150	22,930	1,008	20,160	846
	3	0.085	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1,150	22,930	1,008	20,160	846
	4	0.07	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1,077	22,930	963	20,160	766
1.4	5	0.055	34,560	1,628	28,800	1,356	25,920	1,220	24,480	1,028	22,930	871	20,160	685
	6	0.04	31,104	1,344	25,920	1,120	23,328	1,008	22,032	903	20,700	745	18,144	465
	7	0.04	31,104	1,344	25,920	1,120	23,328	1,008	22,032	837	20,700	703	18,144	465
	8	0.04	31,104	1,344	25,920	1,120	23,328	1,008	22,032	837	20,700	622	18,144	465
1.6	9	0.033	31,104	1,344	25,920	1,120	23,328	1,008	22,032	773	19,440	577	18,144	465
	10	0.025	31,104	1,344	25,920	1,120	23,328	1,008	22,032	773	19,440	577	18,144	465
	12	0.025	27,648	1,045	23,040	871	20,736	784	19,584	502	17,280	443	16,128	348
	14	0.025	27,648	1,045	23,040	871	20,736	784	19,584	502	17,280	443	16,128	348
1.8	16	0.015	27,648	896	23,040	746	20,736	672	19,584	476	17,280	373	16,128	283
	20	0.01	24,828	732	20,690	610	22,345	549	17,587	348	15,518	305	14,483	226
	25	0.005	21,000	569	17,500	474	18,900	427	14,875	270	13,125	237	12,250	175
	4	0.09	30,720	1,452	25,600	1,210	23,040	1,089	21,760	870	19,200	570	17,920	460
2	6	0.084	30,720	1,452	25,600	1,210	23,040	1,089	21,760	870	19,200	570	17,920	460
	8	0.048	27,648	1,194	23,040	995	20,736	896	19,584	783	17,280	513	16,128	414
	10	0.03	27,648	1,194	23,040	995	20,736	896	19,584	744	17,280	513	16,128	414
	12	0.03	27,648	1,194	23,040	995	20,736	896	19,584	684	17,280	513	16,128	414
2.5	16	0.02	24,576	1,061	20,480	884	18,432	796	17,408	611	15,360	456	14,336	368
	6	0.1	26,880	1,270	22,400	1,058	20,160	953	19,040	668	16,800	499	15,680	403
	12	0.035	24,192	1,045	20,160	871	18,144	784	17,136	601	15,120	449	14,112	362
	4	0.11	26,880	1,397	22,400	1,163	20,160	1,048	19,040	801	16,800	648	15,680	482
3	6	0.11	26,880	1,397	22,400	1,163	20,160	1,048	19,040	801	16,800	623	15,680	482
	8	0.08	24,192	1,149	20,160	958	18,144	940	17,136	721	15,120	538	14,112	416
	10	0.06	24,192	1,149	20,160	871	18,144	862	17,136	721	15,120	538	14,112	416
	12	0.06	24,192	1,045	20,160	871	18,144	784	17,136	721	15,120	449	14,112	362
4	14	0.038	24,192	1,045	20,160	871	18,144	784	17,136	721	15,120	449	14,112	362
	16	0.038	21,504	813	17,920	677	16,128	610	15,232	391	13,440	345	12,544	271
	18	0.038	21,504	813	17,920	677	16,128	610	15,232	391	13,440	345	12,544	271
	20	0.038	21,504	813	17,920	677	16,128	610	15,232	391	13,440	345	12,544	271
5	25	0.023	16,128	523	13,440	435	12,096	392	11,424	278	10,080	218	9,408	165
	30	0.015	13,440	355	11,200	296	12,096	266	9,520	178	8,400	139	7,840	112
	35	0.01	13,440	355	11,200	296	12,096	266	9,520	178	8,400	139	7,840	112
	40	0.005	10,752	190	8,960	158	8,064	142	7,616	95	6,720	74	6,272	60
6	6	0.11	24,960	1,310	20,800	1,201	18,720	1,130	17,680	759	15,600	566	14,560	456
	8	0.11	24,960	1,310	20,800	1,201	18,720	983	17,680	690	15,600	566	14,560	456
	6	0.13	24,960	1,310	20,800	1,201	18,720	1,179	17,680	759	15,600	618	14,560	498
	8	0.13	24,960	1,310	20,800	1,201	18,720	1,081	17,680	690	15,600	618	14,560	498
7	4	0.2	20,160	1,397	16,800	1,174	15,120	1,048	14,280	734	12,600	548	11,760	443
	6	0.2	20,160	1,397	16,800	1,174	15,120	1,048	14,280	734	12,600	548	11,760	443
	8	0.14	20,160	1,397	16,800	1,174	15,120	1,048	14,280	734	12,600	548	11,760	443
	10	0.14	20,160	1,397	16,800	1,174	15,120	1,048	14,280	734	12,600	548	11,760	443
8	12	0.1	18,144	1,149	15,120	958	13,608	862	12,852	661	11,340	493	10,584	398
	14	0.08	18,144	1,149	15,120	958	13,608	862	12,852	661	11,340	493	10,584	362
	16	0.08	18,144	1,045	15,120	914	13,608	862	12,852	601	11,340	449	10,584	362
	18	0.05	18,144	1,045	15,120	914	13,608	862	12,852	601	11,340	449	10,584	362
9	20	0.05	18,144	1,045	15,120	871	13,608	784	12,852	601	11,340	449	10,584	362
	25	0.05	16,128	813	13,440	677	12,096	610	11,424	391	10,080	345	9,408	271
	30	0.03	16,128	813	13,440	677	12,096	610	11,424	391	10,080	345	9,408	271
	35	0.02	14,112	583	11,760	486	10,584	437	9,996	282	8,820	228	8,232	185
10	40	0.01	14,112	583	11,760	486	10,584	437	9,996	282	8,820	228	8,232	185
	50	0.005	12,096	355	10,080	296	9,072	266	8,568	172	7,560	139	7,056	112
	8	0.18	17,280	1,497	14,400	1,247	12,960	1,123	12,240	787	10,800	642	10,080	474
	12	0.18	17,280	1,260	14,400	1,247	12,960	1,123	12,240	716	10,800	588	10,080	431
11	16	0.1	15,552	1,120	12,960	1,073	11,664	966	11,016	644	9,720	529	9,072	388
	20	0.1	15,552	1,120	12,960	933	11,664	840	11,016	644	9,720	529	9,072	388
	30	0.06	13,824	870	11,520	725	10,368	653	9,792	435	8,640	341	8,064	276
	40	0.03	13,824	870	11,520	725	10,368	653	9,792	435	8,640	341	8,064	276



Recommended range			ATH series											
Work material			1 Copper		2 Carbon Steels, Alloy Steels (180 ~ 250HB)		3 Stainless Steel, Tool Steels (25 ~ 35HRC)		4 Pre-hardened Steels (35 ~ 45HRC)		5 Hardened Steels (45 ~ 55HRC)		6 Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill Dia. (mm)	Under neck Length (mm)	a_p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
2.5	40	0.03	12,096	625	10,080	521	9,072	469	8,568	313	7,560	245	7,056	198
	50	0.01	12,096	625	10,080	521	9,072	469	8,568	313	7,560	245	7,056	198
3	8	0.3	15,360	1,331	12,800	1,108	11,520	997	10,880	699	10,600	570	8,960	422
	12	0.21	15,360	1,331	12,800	1,108	11,520	997	10,880	699	10,600	570	8,960	422
	16	0.15	13,824	1,144	11,520	994	10,368	820	9,792	630	9,450	513	8,064	379
	20	0.12	13,824	995	11,520	911	10,368	820	9,792	630	9,450	513	8,064	379
	25	0.08	13,824	995	11,520	911	10,368	820	9,792	630	9,450	513	8,064	379
	30	0.08	13,824	995	11,520	829	10,368	746	9,792	630	9,450	513	8,064	347
	40	0.05	12,288	884	10,240	737	9,216	663	8,704	509	7,680	380	7,168	307
	50	0.02	10,752	556	8,960	463	8,064	417	7,616	278	6,720	218	6,272	176
4	12	0.4	11,500	2,300	9,400	1,880	8,460	1,524	7,990	1,358	7,050	902	6,580	728
	16	0.28	11,500	2,300	9,400	1,880	8,460	1,524	7,990	1,358	7,050	902	6,580	728
	20	0.28	10,350	2,070	8,460	1,692	7,614	1,371	7,191	1,222	6,345	812	5,922	655
	25	0.16	10,350	1,863	8,460	1,524	7,614	1,233	7,191	1,100	6,345	812	5,922	655
	30	0.16	10,350	1,863	8,460	1,524	7,614	1,233	7,191	1,100	6,345	812	5,922	655
	35	0.1	9,137	1,645	7,614	1,371	6,853	1,110	6,472	990	5,711	731	5,330	589
	45	0.1	9,137	1,645	7,614	1,371	6,853	1,110	6,472	990	5,711	731	5,330	589
	50	0.06	7,896	1,128	6,580	940	5,922	846	5,593	658	4,935	442	4,606	357
5	20	0.3	9,014	1,802	7,512	1,652	6,761	1,487	6,385	1,051	5,634	706	5,258	571
	25	0.3	8,112	1,621	6,760	1,351	6,084	1,216	5,746	946	5,070	635	4,732	513
	30	0.2	8,112	1,461	6,760	1,217	6,084	1,094	5,746	851	5,070	573	4,732	462
	40	0.15	7,301	1,315	6,084	1,096	5,476	986	5,171	767	4,563	515	4,259	416
	50	0.1	7,301	1,315	6,084	1,096	5,476	986	5,171	767	4,563	515	4,259	416
	20	0.5	7,418	1,629	6,182	1,481	5,564	1,333	5,255	1,036	4,637	766	4,327	562
6	30	0.4	6,744	1,480	5,620	1,346	5,058	1,212	4,777	942	4,215	696	3,934	511
	40	0.3	6,744	1,332	5,620	1,109	5,058	998	4,777	847	4,215	625	3,934	459
	50	0.2	6,000	1,090	5,000	986	4,500	887	4,250	690	3,750	515	3,500	379

* a_p is shown as the criteria for Group 2 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.

[NOTE]

① PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.

② Use the appropriate coolant for the work material and machining shape.

③ 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.

④ If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.

Recommended cutting conditions

EPDSE-ATH

High efficiency cutting condition

High accuracy cutting condition

Recommended range			ATH series											
Work material			1 Copper		2 Carbon Steels, Alloy Steels (180 ~ 250HB)		3 Stainless Steel, Tool Steels (25 ~ 35HRC)		4 Pre-hardened Steels (35 ~ 45HRC)		5 Hardened Steels (45 ~ 55HRC)		6 Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill Dia. (mm)	Under neck Length (mm)	a_p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
0.1	0.3	0.006	50,000	350	50,000	350	50,000	332	48,600	242	42,750	178	40,050	144
	0.5	0.004	50,000	350	50,000	350	50,000	332	48,600	242	42,750	178	40,050	144
	1	0.003	50,000	318	50,000	318	48,600	301	43,700	220	38,500	162	36,050	129
0.2	0.5	0.015	50,000	495	45,000	446	40,500	401	38,250	282	33,750	210	31,500	169
	1	0.011	50,000	495	45,000	446	40,500	401	38,250	282	33,750	210	31,500	169
	1.5	0.006	48,600	441	40,500	367	36,450	330	34,425	253	30,375	189	28,350	152
	2	0.004	43,200	352	36,000	294	32,400	264	30,600	200	27,000	165	25,200	147
	3	0.002	43,200	317	36,000	264	32,400	238	30,600	179	27,000	165	25,200	133
0.3	1	0.021	48,000	544	40,000	453	36,000	408	34,000	286	30,000	240	28,000	193
	1.5	0.021	48,000	544	40,000	453	36,000	408	34,000	286	30,000	240	28,000	193
	2	0.012	43,200	448	36,000	373	32,400	336	30,600	257	27,000	192	25,200	155
	2.5	0.01	43,200	448	36,000	373	32,400	336	30,600	257	27,000	192	25,200	155
	3	0.008	43,200	448	36,000	373	32,400	336	30,600	257	27,000	180	25,200	145
0.4	1	0.04	38,400	762	32,000	635	28,800	571	27,200	401	24,000	297	22,400	241
	1.5	0.028	38,400	762	32,000	635	28,800	571	27,200	401	24,000	297	22,400	241
	2	0.028	38,400	762	32,000	635	28,800	571	27,200	401	24,000	297	22,400	241
	2.5	0.022	34,560	557	28,800	464	25,920	418	24,480	320	21,600	239	20,160	192
	3	0.016	34,560	557	28,800	464	25,920	418	24,480	320	21,600	239	20,160	192

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

DEEP SERIES
ตระกูลตีฟ

Recommended range			ATH series											
Work material			1 Copper		2 Carbon Steels, Alloy Steels (180 ~ 250HB)		3 Stainless Steel, Tool Steels (25 ~ 35HRC)		4 Pre-hardened Steels (35 ~ 45HRC)		5 Hardened Steels (45 ~ 55HRC)		6 Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill Dia. (mm)	Under neck Length (mm)	a _p (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
0.4	3.5	0.012	34,560	557	28,800	464	25,920	418	24,480	320	21,600	239	20,160	192
	4	0.01	34,560	557	28,800	464	25,920	418	24,480	320	21,600	239	20,160	192
	5	0.01	30,720	406	25,600	316	23,040	284	21,760	208	19,200	184	17,920	144
	6	0.006	30,720	406	25,600	316	23,040	284	21,760	208	19,200	184	17,920	144
	8	0.003	26,880	289	22,400	240	20,160	217	19,040	160	16,800	141	15,680	128
	10	0.002	23,040	212	19,200	177	17,280	159	16,320	117	14,400	103	13,440	94
0.5	1	0.05	38,400	762	32,000	635	28,800	571	27,200	446	24,000	299	22,400	241
	1.5	0.05	38,400	762	32,000	635	28,800	571	27,200	446	24,000	299	22,400	241
	2	0.035	38,400	762	32,000	635	28,800	571	27,200	446	24,000	299	22,400	241
	2.5	0.03	34,560	557	28,800	464	25,920	418	24,480	354	21,600	239	20,160	192
	3	0.02	34,560	557	28,800	464	25,920	418	24,480	354	21,600	239	20,160	192
	4	0.02	34,560	557	28,800	464	25,920	418	24,480	320	21,600	239	20,160	192
	5	0.013	34,560	557	28,800	464	25,920	418	24,480	320	21,600	239	20,160	192
	6	0.013	30,720	433	25,600	361	23,040	324	21,760	208	19,200	184	17,920	144
	8	0.008	30,720	371	25,600	309	23,040	278	21,760	172	19,200	155	17,920	117
	10	0.004	26,880	288	22,400	240	20,160	216	19,040	121	16,800	105	15,680	79
0.6	2	0.042	38,400	1,089	32,000	907	28,800	816	27,200	572	24,000	427	22,400	344
	3	0.035	34,560	895	28,800	746	25,920	671	24,480	515	21,600	385	20,160	310
	4	0.024	34,560	895	28,800	746	25,920	671	24,480	515	21,600	385	20,160	310
	5	0.02	34,560	796	28,800	663	25,920	596	24,480	458	21,600	342	20,160	276
	6	0.015	34,560	796	28,800	663	25,920	596	24,480	458	21,600	342	20,160	276
	7	0.015	30,720	687	25,600	572	23,040	515	21,760	395	19,200	295	17,920	238
	8	0.015	30,720	595	25,600	516	23,040	464	21,760	297	19,200	262	17,920	206
	9	0.012	30,720	595	25,600	516	23,040	464	21,760	297	19,200	262	17,920	206
	10	0.009	30,720	595	25,600	516	23,040	464	21,760	297	19,200	262	17,920	206
	2	0.07	38,400	1,089	32,000	907	28,800	816	27,200	572	24,000	427	22,400	344
0.7	4	0.049	34,560	796	28,800	663	25,920	596	24,480	458	21,600	342	20,160	276
	6	0.018	34,560	796	28,800	663	25,920	596	24,480	458	21,600	342	20,160	276
	8	0.018	30,720	541	25,600	451	23,040	406	21,760	260	19,200	229	17,920	180
	10	0.018	30,720	541	25,600	451	23,040	406	21,760	260	19,200	229	17,920	180
0.8	2	0.08	38,400	1,089	32,000	907	28,800	816	27,200	636	24,000	475	22,400	383
	4	0.056	38,400	1,089	32,000	907	28,800	816	27,200	636	24,000	475	22,400	383
	6	0.032	34,560	796	28,800	663	25,920	596	24,480	573	21,600	428	20,160	345
	8	0.02	34,560	796	28,800	663	25,920	596	24,480	458	21,600	342	20,160	276
	10	0.02	30,720	541	25,600	451	23,040	406	21,760	260	19,200	229	17,920	180
	12	0.012	30,720	541	25,600	451	23,040	406	21,760	260	19,200	229	17,920	180
0.9	2	0.09	38,400	1,206	32,000	1,005	28,800	904	27,200	695	24,000	519	22,400	418
		0.003	38,400	1,206	32,000	1,005	28,800	904	27,200	695	24,000	519	22,400	417
	6	0.036	34,560	995	28,800	829	25,920	746	24,480	573	21,600	428	20,160	345
	8	0.023	34,560	995	28,800	746	25,920	746	24,480	573	21,600	428	20,160	345
	10	0.023	30,720	619	25,600	516	23,040	464	21,760	297	19,200	262	17,920	206
	12	0.023	30,720	541	25,600	451	23,040	414	21,760	297	19,200	262	17,920	206
1	2	0.09	34,560	1,465	28,800	1,220	25,920	1,098	24,480	936	21,600	699	20,160	563
	3	0.07	34,560	1,465	28,800	1,220	25,920	1,098	24,480	936	21,600	699	20,160	563
	4	0.065	34,560	1,465	28,800	1,220	25,920	1,098	24,480	936	21,600	699	20,160	563
	5	0.05	34,560	1,465	28,800	1,220	25,920	1,098	24,480	936	21,600	699	20,160	563
	6	0.035	31,104	1,276	25,920	1,008	23,328	907	22,032	773	19,440	577	18,144	418
	7	0.035	31,104	1,276	25,920	1,008	23,328	907	22,032	773	19,440	577	18,144	418
	8	0.035	31,104	1,209	25,920	1,008	23,328	907	22,032	773	19,440	577	18,144	418
	9	0.03	31,104	1,209	25,920	1,008	23,328	907	22,032	695	19,440	461	18,144	372
	10	0.022	31,104	1,209	25,920	896	23,328	816	22,032	695	19,440	461	18,144	372
	12	0.022	27,648	836	23,040	696	20,736	627	19,584	401	17,280	354	16,128	278
1	14	0.022	27,648	836	23,040	696	20,736	627	19,584	401	17,280	354	16,128	278
	16	0.012	27,648	716	23,040	596	20,736	537	19,584	380	17,280	298	16,128	226
	20	0.008	24,828	586	20,690	488	18,621	439	17,587	278	15,518	213	14,483	158
	25	0.005	21,000	455	17,500	379	15,750	341	14,875	216	13,125	165	12,250	122
	4	0.09	30,720	1,306	25,600	1,089	23,040	980	21,760	760	19,200	513	17,920	414
1.2	6	0.084	30,720	1,306	25,600	1,089	23,040	980	21,760	760	19,200	513	17,920	414
	8	0.048	27,648	1,074	23,040	895	20,736	806	19,584	684	17,280	461	16,128	372
	10	0.03	27,648	1,074	23,040	895	20,736	806	19,584	684	17,280	461	16,128	372
	12	0.03	27,648	955	23,040	716	20,736	642	19,584	549	17,280	410	16,128	331
	16	0.02	24,576	848	20,480	707	18,432	557	17,408	488	15,360	364	14,336	294
	6	0.1	26,880	1,143	22,400	952	20,160	857	19,040	601	16,800	449	15,680	361
1.4	12	0.035	24,192	940	20,160	783	18,144	705	17,136	540	15,120	404	14,112	325



Recommended range			ATH series											
Work material			1		2		3		4		5		6	
			Copper		Carbon Steels, Alloy Steels (180 ~ 250HB)		Stainless Steel, Tool Steels (25 ~ 35HRC)		Pre-hardened Steels (35 ~ 45HRC)		Hardened Steels (45 ~ 55HRC)		Hardened Steels (55 ~ 65HRC)	
Ratio to standard depth of cut			120%		100%		90%		70%		50%		45%	
Mill Dia. (mm)	Under neck Length (mm)	a _p (mm)	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	Revolution n min ⁻¹	Feed rate Vf mm/min
1.5	4	0.11	26,880	1,270	22,400	1,058	20,160	953	19,040	668	16,800	499	15,680	402
	6	0.11	26,880	1,143	22,400	952	20,160	866	19,040	668	16,800	499	15,680	402
	8	0.06	24,192	1,045	20,160	871	18,144	784	17,136	601	15,120	449	14,112	362
	10	0.06	24,192	1,045	20,160	783	18,144	705	17,136	601	15,120	449	14,112	362
	12	0.06	24,192	940	20,160	783	18,144	705	17,136	601	15,120	404	14,112	325
	14	0.038	24,192	940	20,160	783	18,144	705	17,136	601	15,120	404	14,112	325
	16	0.038	21,504	731	17,920	609	16,128	549	15,232	351	13,440	310	12,544	243
	18	0.038	21,504	731	17,920	609	16,128	549	15,232	351	13,440	310	12,544	243
	20	0.038	21,504	731	17,920	609	16,128	488	15,232	312	13,440	276	12,544	216
	25	0.023	16,128	470	13,440	391	12,096	313	11,424	222	10,080	174	9,408	132
	30	0.015	13,440	319	11,200	266	12,096	212	9,520	149	8,400	111	7,840	89
	35	0.01	13,440	284	11,200	236	12,096	186	9,520	149	8,400	111	7,840	89
	40	0.005	10,752	152	8,960	126	8,064	113	7,616	76	6,720	59	6,272	48
1.6	6	0.11	24,960	1,179	20,800	977	18,720	884	17,680	690	15,600	515	14,560	415
	8	0.11	24,960	1,179	20,800	977	18,720	884	17,680	621	15,600	515	14,560	415
1.8	6	0.13	24,960	1,179	20,800	997	18,720	884	17,680	690	15,600	515	14,560	415
	8	0.13	24,960	1,179	20,800	997	18,720	884	17,680	621	15,600	515	14,560	415
2	4	0.2	20,160	1,270	16,800	952	15,120	861	14,280	655	12,600	499	11,760	402
	6	0.2	20,160	1,270	16,800	952	15,120	861	14,280	655	12,600	499	11,760	402
	8	0.14	20,160	1,270	16,800	952	15,120	861	14,280	655	12,600	499	11,760	402
	10	0.14	20,160	1,270	16,800	952	15,120	861	14,280	655	12,600	499	11,760	402
	12	0.08	18,144	1,045	15,120	871	13,608	784	12,852	590	11,340	449	10,584	362
	14	0.08	18,144	1,045	15,120	871	13,608	784	12,852	590	11,340	449	10,584	325
	16	0.08	18,144	940	15,120	783	13,608	707	12,852	540	11,340	426	10,584	325
	18	0.05	18,144	940	15,120	783	13,608	707	12,852	540	11,340	404	10,584	289
	20	0.05	18,144	888	15,120	696	13,608	627	12,852	480	11,340	359	10,584	289
	25	0.05	16,128	731	13,440	609	12,096	549	11,424	312	10,080	310	9,408	232
	30	0.03	16,128	650	13,440	541	12,096	488	11,424	273	10,080	276	9,408	216
	35	0.02	14,112	466	11,760	388	10,584	349	9,996	225	8,820	182	8,232	148
2.5	40	0.01	14,112	408	11,760	340	10,584	306	9,996	197	8,820	159	8,232	129
	50	0.005	12,096	284	10,080	236	9,072	186	8,568	120	7,560	97	7,056	78
	8	0.18	17,280	1,361	14,400	1,134	12,960	1,021	12,240	716	10,800	535	10,080	431
	12	0.18	17,280	1,134	14,400	1,020	12,960	933	12,240	644	10,800	520	10,080	387
	16	0.1	15,552	1,008	12,960	839	11,664	758	11,016	579	9,720	450	9,072	349
	20	0.1	15,552	840	12,960	794	11,664	711	11,016	515	9,720	450	9,072	310
3	30	0.06	13,824	696	11,520	580	10,368	457	9,792	348	8,640	272	8,064	220
	40	0.03	12,096	437	10,080	364	9,072	328	8,568	250	7,560	196	7,056	158
	50	0.01	12,096	375	10,080	338	9,072	304	8,568	203	7,560	171	7,056	138
	8	0.3	15,360	1,210	12,800	1,008	11,520	907	10,880	636	9,600	475	8,960	383
	12	0.21	15,360	1,210	12,800	1,008	11,520	907	10,880	636	9,600	475	8,960	383
	16	0.12	13,824	995	11,520	829	10,368	746	9,792	573	8,640	428	8,064	344
	20	0.12	13,824	895	11,520	787	10,368	705	9,792	573	8,640	428	8,064	344
	25	0.08	13,824	895	11,520	787	10,368	705	9,792	573	8,640	428	8,064	344
	30	0.08	13,824	796	11,520	663	10,368	601	9,792	573	8,640	428	8,064	310
	40	0.05	12,288	618	10,240	515	9,216	464	8,704	356	7,680	304	7,168	245
4	50	0.02	10,752	389	8,960	347	8,064	291	7,616	194	6,720	152	6,272	123
	12	0.4	11,500	2,070	9,400	1,692	8,460	1,370	7,990	1,222	7,050	811	6,580	654
	16	0.28	11,500	2,070	9,400	1,692	8,460	1,370	7,990	1,222	7,050	811	6,580	654
	20	0.28	10,350	1,863	8,460	1,522	7,614	1,233	7,191	1,099	6,345	730	5,922	588
	25	0.16	10,350	1,676	8,460	1,370	7,614	1,109	7,191	990	6,345	730	5,922	588
	30	0.16	10,350	1,676	8,460	1,370	7,614	1,109	7,191	880	6,345	649	5,922	588
	35	0.1	9,137	1,316	7,614	1,096	6,853	888	6,472	792	5,711	584	5,330	471
	40	0.1	9,137	1,151	7,614	959	6,853	777	6,472	693	5,711	511	5,330	412
5	50	0.06	7,896	789	6,580	658	7,106	592	5,593	460	4,935	309	4,606	249
	20	0.3	9,014	1,621	7,512	1,351	6,761	1,216	6,385	945	5,634	635	5,258	513
	25	0.3	8,112	1,458	6,760	1,215	6,084	1,094	5,746	850	5,070	571	4,732	461
	30	0.2	8,112	1,313	6,760	1,094	6,084	984	5,746	765	5,070	514	4,732	415
	40	0.15	7,301	1,052	6,084	876	5,476	788	5,171	613	4,563	412	4,259	332
	50	0.1	7,301	986	6,084	876	5,476	690	5,171	575	4,563	360	4,259	291
6	20	0.5	7,418	1,481	6,182	1,234	5,564	1,111	5,255	864	4,637	580	4,327	469
	30	0.4	6,744	1,346	5,620	1,122	5,058	1,010	4,777	785	4,215	527	3,934	426
	40	0.3	6,744	1,211	5,620	1,009	5,058	908	4,777	706	4,215	474	3,934	383
	50	0.2	6,000	981	5,000	817	4,500	735	4,250	636	3,750	427	3,500	345

※ a_p is shown as the criteria for Group 2 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.

[NOTE]

- ① PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
- ② Use the appropriate coolant for the work material and machining shape.
- ③ 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.
- ④ If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.

END MILL

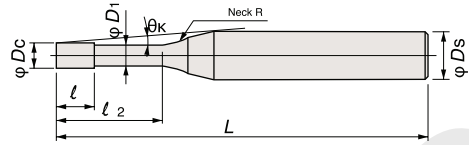
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH SD(S-DLC) DEEP SQUARE
EPDS2 〇〇-〇〇-SD

2Flutes



$D_c \leq 0.5$: 0 ~ -0.007
 $0.5 < D_c < 1$: 0 ~ -0.010
 $1 \leq D_c$: 0 ~ -0.015



0 ~ -0.005

(mm)

High welding resistance makes it ideal for machining aluminum alloys and copper. DLC coating.

Order No.	Stock	Size (mm)								The effective under-neck length for the various draft angles				
		Dc Tool Dia.	l_2 Under Neck Dia.	l Flute Length	D1 Neck Dia.	L Overall length	Ds shank Dia.	Neck R	θ_K Interference Angle	0.5°	1°	1.5°	2°	3°
EPDS2005-2-SD	●		2						9.64	2.89	3.18	3.44	3.69	4.14
EPDS2005-4-SD	●	0.5	4	0.75	0.47	50	4	10	8.1	5.08	5.48	5.82	6.12	6.67
EPDS2005-6-SD	●		6						6.98	7.27	7.72	8.12	8.47	9.09
EPDS2006-2-SD	●		2						9.59	2.89	3.18	3.44	3.69	4.14
EPDS2006-4-SD	●	0.6	4	0.9	0.57	50	4	10	8.02	5.08	5.48	5.82	6.12	6.67
EPDS2006-6-SD	●		6						6.9	7.24	7.72	8.12	8.47	9.09
EPDS2008-4-SD	●		4						7.86	5.08	5.48	5.82	6.12	6.67
EPDS2008-6-SD	●	0.8	6	1.2	0.77	50	4	10	6.72	7.24	7.72	8.12	8.47	9.09
EPDS2008-8-SD	●		8						5.86	9.38	9.93	10.37	10.76	11.45
EPDS2010-4-SD	●		4						7.67	5.13	5.52	5.85	6.15	6.69
EPDS2010-8-SD	●	1	8	1.5	0.96	50	4	10	5.66	9.42	9.95	10.4	10.78	11.46
EPDS2010-12-SD	●		12			55			4.48	13.66	14.3	14.82	15.28	16.06
EPDS2015-6-SD	●		6			50			5.94	7.37	7.81	8.19	8.54	9.15
EPDS2015-12-SD	●	1.5	12	2.25	1.44	55	4	10	3.97	13.72	14.35	14.86	15.31	16.11
EPDS2015-18-SD	●		18			60			2.98	20.01	20.77	21.38	21.9	No interference
EPDS2020-8-SD	●		8			50			4.44	9.56	10.06	10.48	10.86	11.53
EPDS2020-16-SD	●	2	16	3	1.92	55	4	10	2.75	17.97	18.68	19.25	19.75	No interference
EPDS2020-24-SD	●		24			60			1.99	26.3	27.16	27.84	干渉無し	No interference
EPDS2030-12-SD	●		12			60			4.44	13.89	14.48	14.97	15.4	16.3
EPDS2030-24-SD	●	3	24	4.5	2.88	65	6	10	2.75	26.39	27.22	27.89	29.05	No interference
EPDS2030-36-SD	●		36			80			1.99	38.79	39.81	41.38	No interference	No interference
EPDS2040-16-SD	●		16			60			2.72	18.14	18.81	19.36	19.84	No interference
EPDS2040-32-SD	●	4	32	6	3.85	80	6	10	1.55	34.72	35.66	36.89	No interference	No interference
EPDS2040-48-SD	●		48			90			1.08	51.18	52.67	No interference	No interference	No interference

● : Stocked Items.



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐาน R

Square

หัวตัด

Taper Ball

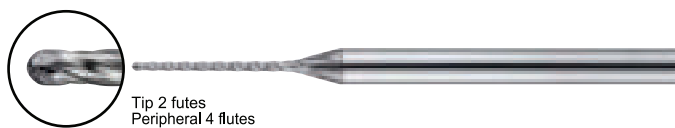
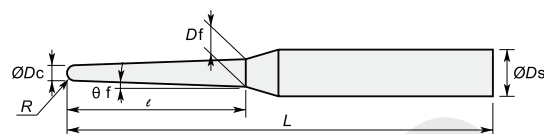
หัวเตเปอร์บอล

Roughing

ดอกเอ็นมิลล์

EPOCH COMBINATION RIB BALL

ECRB ○○○-○-PN

Tip 2 flutes
Peripheral 4 flutes

±0.02



0~-0.005

(mm)

Order No.	Stock	Size (mm)						θf Taper angle on side
		R Ball radius	Dc Tool Dia.	Df Large edge dia.	ℓ Flute Length	Ds Shank Dia.	L Overall length	
ECRB0809-6-PN	★	0.4	0.8	0.9	6	4	60	(0.51)
ECRB0809-8-PN	★	0.4	0.8	0.9	8	4	60	(0.38)
ECRB0809-10-PN	★	0.4	0.8	0.9	10	4	60	(0.30)
ECRB0809-12-PN	★	0.4	0.8	0.9	12	4	60	(0.25)
ECRB0810-6-PN	★	0.4	0.8	1.0	6	4	60	(1.02)
ECRB0810-8-PN	★	0.4	0.8	1.0	8	4	60	(0.75)
ECRB0810-10-PN	★	0.4	0.8	1.0	10	4	60	(0.60)
ECRB0810-12-PN	★	0.4	0.8	1.0	12	4	60	(0.49)
ECRB1012-6-PN	★	0.5	1	1.2	6	4	60	(1.04)
ECRB1012-8-PN	★	0.5	1	1.2	8	4	60	(0.76)
ECRB1012-10-PN	★	0.5	1	1.2	10	4	60	(0.60)
ECRB1012-12-PN	★	0.5	1	1.2	12	4	60	(0.50)
ECRB1012-14-PN	★	0.5	1	1.2	14	4	60	(0.42)
ECRB1012-16-PN	★	0.5	1	1.2	16	4	60	(0.37)

★: Stocked Items of New Products.

END MILL

ดอกเอ็นมิลล์

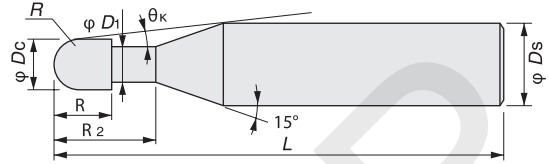


ดอกเอ็นมิลล์

EPOCH CBN HIGH PRECISION BALL END MILL CBN-EHB2 000-00.00



Includes actual measured mill diameter value.



$R \leq 0.3$: ± 0.003
 $0.3 < R$: ± 0.005



0 ~ -0.004

(mm)

High-quality CBN ball end mill to provide high-accuracy cutting

Actual measured mill diameter value is shown on case. Please contact our sales department for regrinding.

Item Code	Stock	Size (mm)		Display of actual measured mill dia. for all tools						The effective under-neck length for the various draft angles				
		R Ball radius	Dc Tool Dia.	2 Under Neck Length	Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	θκ Interference Angle	0.5°	1°	1.5°	2°	3°
CBN-EHB2002-0.5	●			0.5	0.12	0.18	50	4	14.15	0.55	0.56	0.58	0.60	0.64
CBN-EHB2002-0.75	●			0.75	0.12	0.18	50	4	13.71	0.81	0.83	0.86	0.89	0.95
CBN-EHB2002-1	●	0.1	0.2	1	0.12	0.18	50	4	13.30	1.06	1.10	1.13	1.17	1.26
CBN-EHB2002-1.5	●			1.5	0.12	0.18	50	4	12.55	1.58	1.63	1.69	1.75	1.88
CBN-EHB2002-2	●			2	0.12	0.18	50	4	11.88	2.10	2.17	2.24	2.32	2.50
CBN-EHB2003-0.5	●			0.5	0.18	0.27	50	4	14.17	0.56	0.58	0.60	0.61	0.65
CBN-EHB2003-0.75	●			0.75	0.18	0.27	50	4	13.72	0.82	0.85	0.87	0.90	0.96
CBN-EHB2003-1	●	0.15	0.3	1	0.18	0.27	50	4	13.30	1.08	1.11	1.15	1.19	1.27
CBN-EHB2003-1.5	●			1.5	0.18	0.27	50	4	12.53	1.60	1.65	1.70	1.76	1.89
CBN-EHB2003-2	●			2	0.18	0.27	50	4	11.84	2.12	2.18	2.26	2.34	2.52
CBN-EHB2003-3	●			3	0.18	0.27	50	4	10.67	3.15	3.25	3.37	3.49	3.76
CBN-EHB2004-0.75	●			0.75	0.4	0.37	50	4	13.77	0.82	0.84	0.87	0.89	0.95
CBN-EHB2004-1	●			1	0.4	0.37	50	4	13.33	1.08	1.11	1.14	1.18	1.26
CBN-EHB2004-1.5	●	0.2	0.4	1.5	0.4	0.37	50	4	12.54	1.60	1.65	1.70	1.75	1.88
CBN-EHB2004-2	●			2	0.4	0.37	50	4	11.83	2.11	2.18	2.25	2.33	2.50
CBN-EHB2004-3	●			3	0.4	0.37	50	4	10.63	3.15	3.25	3.36	3.48	3.75
CBN-EHB2005-1	●			1	0.5	0.47	50	4	13.37	1.08	1.11	1.14	1.17	1.25
CBN-EHB2005-1.5	●	0.25	0.5	1.5	0.5	0.47	50	4	12.55	1.60	1.64	1.69	1.75	1.87
CBN-EHB2005-2.5	●			2.5	0.5	0.47	50	4	11.18	2.63	2.71	2.80	2.90	3.11
CBN-EHB2005-3	●			3	0.5	0.47	50	4	10.59	3.15	3.25	3.36	3.47	3.73
CBN-EHB2006-1	●			1	0.55	0.57	50	4	13.40	1.08	1.10	1.13	1.17	1.24
CBN-EHB2006-1.5	●	0.3	0.6	1.5	0.55	0.57	50	4	12.56	1.59	1.64	1.69	1.74	1.86
CBN-EHB2006-3	●			3	0.55	0.57	50	4	10.55	3.14	3.24	3.35	3.46	3.72
CBN-EHB2008-1.5	●			1.5	0.7	0.77	50	4	12.58	1.59	1.63	1.68	1.73	1.83
CBN-EHB2008-2.5	●	0.4	0.8	2.5	0.7	0.77	50	4	11.09	2.62	2.70	2.79	2.88	3.08
CBN-EHB2008-4	●			4	0.7	0.77	50	4	9.41	4.17	4.31	4.45	4.60	4.94
CBN-EHB2010-1.5	●			1.5	1	0.96	50	4	12.57	1.61	1.64	1.69	1.73	1.83
CBN-EHB2010-2.5	●	0.5	1	2.5	1	0.96	50	4	11.00	2.64	2.71	2.80	2.88	3.08
CBN-EHB2010-4	●			4	1	0.96	50	4	9.25	4.19	4.32	4.46	4.61	4.94
CBN-EHB2010-5	●			5	1	0.96	50	4	8.36	5.22	5.39	5.57	5.76	6.19
CBN-EHB2015-2.5	●			2.5	1.35	1.45	50	4	10.76	2.65	2.72	2.79	2.87	3.04
CBN-EHB2015-5	●	0.75	1.5	5	1.35	1.45	50	4	7.86	5.23	5.39	5.56	5.74	6.15
CBN-EHB2015-7.5	●			7.5	1.35	1.45	50	4	6.18	7.82	8.07	8.33	8.62	9.26
CBN-EHB2020-2.5	●			2.5	1.65	1.94	50	4	10.43	2.66	2.72	2.78	2.85	3.01
CBN-EHB2020-5	●	1	2	5	1.65	1.94	50	4	7.21	5.25	5.39	5.55	5.73	6.11
CBN-EHB2020-7.5	●			7.5	1.65	1.94	50	4	5.50	7.83	8.07	8.32	8.60	9.22
CBN-EHB2020-10	●			10	1.65	1.94	50	4	4.44	10.41	10.74	11.10	11.48	12.33

● : Stocked Items.



ดอกเอ็นมิลล์

EPOCH CBN SUPER BALL END MILL
CNB-EPSB2 000-000-S/F

Includes actual measured mill diameter value.



± 0.005



0 ~ -0.004

(mm)

New-concept CBN end mill providing both good cutting performance and strong flute edges
Actual measured mill diameter value is show on case.

Item Code Strong (S) Type	Stock	Item Code Fine (F) Type	Stock	Size (mm)									The effective under-neck length for the various draft angles				
				Display of actual measured mill dia. for all tools													
				R Ball radius	Dc Tool Dia.	2 Under Neck Length	Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	R Neck	θk Interference Angle	0.5°	1°	1.5°	2°	3°
CBN-EPSB2002-0.5-S	●	CBN-EPSB2002-0.5-F	●	0.1	0.2	0.5	0.12	0.18	50	4	1	11.45	0.67	0.7	0.72	0.75	0.8
CBN-EPSB2002-1-S	●	CBN-EPSB2002-1-F	●			1	0.12	0.18	50	4	1	10.88	1.19	1.24	1.28	1.32	1.38
CBN-EPSB2003-0.75-S	●	CBN-EPSB2003-0.75-F	●	0.15	0.3	0.75	0.18	0.27	50	4	1	11.17	0.95	0.99	1.02	1.05	1.1
CBN-EPSB2003-1.5-S	●	CBN-EPSB2003-1.5-F	●			1.5	0.18	0.27	50	4	1	10.36	1.73	1.79	1.83	1.88	2.03
CBN-EPSB2004-1-S	●	CBN-EPSB2004-1-F	●	0.2	0.4	1	0.24	0.37	50	4	1	10.91	1.21	1.25	1.29	1.32	1.38
CBN-EPSB2004-2-S	●	CBN-EPSB2004-2-F	●			2	0.24	0.37	50	4	1	9.88	2.25	2.31	2.37	2.43	2.68
CBN-EPSB2005-1.5-S	●	CBN-EPSB2005-1.5-F	●	0.25	0.5	1.5	0.3	0.47	50	4	1	10.39	1.73	1.78	1.83	1.87	2
CBN-EPSB2005-3-S	●	CBN-EPSB2005-3-F	●			3	0.3	0.47	50	4	1	9	3.28	3.36	3.46	3.62	3.99
CBN-EPSB2006-1.5-S	●	CBN-EPSB2006-1.5-F	●	0.3	0.6	1.5	0.36	0.57	50	4	1	10.4	1.73	1.78	1.82	1.86	1.98
CBN-EPSB2006-3-S	●	CBN-EPSB2006-3-F	●			3	0.36	0.57	50	4	1	8.98	3.28	3.36	3.46	3.61	3.97
CBN-EPSB2008-2.5-S	●	CBN-EPSB2008-2.5-F	●	0.4	0.8	2.5	0.48	0.77	50	4	1	9.37	2.76	2.83	2.89	2.99	3.28
CBN-EPSB2008-5-S	●	CBN-EPSB2008-5-F	●			5	0.48	0.77	50	4	1	7.48	5.33	5.48	5.72	5.99	6.6
CBN-EPSB2010-2.5-S	●	CBN-EPSB2010-2.5-F	●	0.5	1	2.5	0.6	0.96	50	4	1	9.31	2.77	2.84	2.89	3	3.28
CBN-EPSB2010-5-S	●	CBN-EPSB2010-5-F	●			5	0.6	0.96	50	4	1	7.34	5.34	5.5	5.74	5.99	6.6
CBN-EPSB2010-10-S	●	CBN-EPSB2010-10-F	●			10	0.6	0.96	50	4	1	5.15	10.5	10.95	11.44	11.98	13.23
CBN-EPSB2015-5-S	●	CBN-EPSB2015-5-F	●	0.75	1.5	5	0.9	1.44	50	4	1	6.94	5.36	5.53	5.75	6	6.58
CBN-EPSB2015-10-S	●	CBN-EPSB2015-10-F	●			10	0.9	1.44	50	4	1	4.68	10.54	10.98	11.46	11.98	13.22
CBN-EPSB2020-5-S	●	CBN-EPSB2020-5-F	●	1.0	2	5	1.2	1.92	50	4	1	6.42	5.38	5.56	5.77	6.01	6.56
CBN-EPSB2020-10-S	●	CBN-EPSB2020-10-F	●			10	1.2	1.92	50	4	1	4.12	10.58	11.01	11.48	11.99	13.2
CBN-EPSB2020-20-S	●	CBN-EPSB2020-20-F	●			20	1.2	1.92	55	4	1	2.4	21	21.9	22.88	23.96	No interference

● : Stocked Items. [Basic recommendation] F type : L/D (under neck length/mill dia) ≤ 5, S type : L/D (under neck length/mill dia) > 5

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



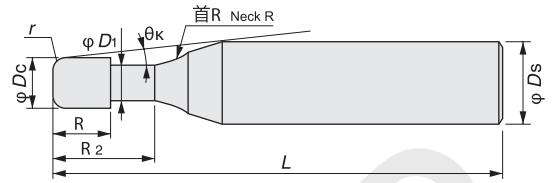
ดอกเอ็นมิลล์

EPOCH CBN SUPER RADIUS END MILL

CNB-EPSR2 000-00.0-000



Includes actual measured mill diameter value.



± 0.005
(central axis)



0~-0.004

(mm)

New-concept CBN end mill providing both good cutting performance and strong flute edges
Actual measured mill diameter value is show on case.

Item Code	Stock	Size (mm) Display of actual measured mill dia. for all tools									The effective under-neck length for the various draft angles				
		Dc Tool Dia.	r	φ2 Under Neck Length	φ Flute Length	D1 Neck Dia.	L Overall Length	Ds Shank Dia.	R Neck	θk Interference Angle	0.5°	1°	1.5°	2°	3°
CBN-EPSR2002-0.5-005	●	0.2	0.05	0.5	0.07	0.18	50	4	1	11.39	0.67	0.7	0.73	0.76	0.81
CBN-EPSR2002-1-005	●			1	0.07	0.18	50	4	1	10.83	1.19	1.24	1.28	1.32	1.39
CBN-EPSR2003-0.5-005	●	0.3	0.05	0.5	0.11	0.27	50	4	1	11.35	0.7	0.73	0.75	0.78	0.82
CBN-EPSR2003-0.75-005	●			0.75	0.11	0.27	50	4	1	11.05	0.96	0.99	1.03	1.06	1.12
CBN-EPSR2003-1.5-005	●	0.4	0.05	1.5	0.11	0.27	50	4	1	10.26	1.74	1.79	1.84	1.89	2.06
CBN-EPSR2003-2-005	●			2	0.11	0.27	50	4	1	9.79	2.25	2.32	2.38	2.46	2.73
CBN-EPSR2004-0.5-005	●	0.4	0.05	0.5	0.14	0.37	50	4	1	11.33	0.7	0.73	0.75	0.78	0.82
CBN-EPSR2004-1-005	●			1	0.14	0.37	50	4	1	10.75	1.22	1.26	1.3	1.34	1.4
CBN-EPSR2004-2-005	●	0.5	0.05	2	0.14	0.37	50	4	1	9.74	2.25	2.32	2.38	2.46	2.73
CBN-EPSR2005-0.5-005	●			0.5	0.18	0.47	50	4	1	11.31	0.7	0.73	0.75	0.78	0.82
CBN-EPSR2005-1.5-005	●	0.5	0.05	1.5	0.18	0.47	50	4	1	10.18	1.74	1.79	1.84	1.89	2.06
CBN-EPSR2005-3-005	●			3	0.18	0.47	50	4	1	8.84	3.29	3.37	3.49	3.66	4.05
CBN-EPSR2005-0.5-01	●	0.6	0.1	0.5	0.18	0.47	50	4	1	11.37	0.7	0.72	0.75	0.77	0.82
CBN-EPSR2005-1.5-01	●			1.5	0.18	0.47	50	4	1	10.23	1.74	1.79	1.84	1.88	2.05
CBN-EPSR2005-3-01	●	0.6	0.1	3	0.18	0.47	50	4	1	8.88	3.28	3.37	3.48	3.65	4.04
CBN-EPSR2006-1.5-01	●			1.5	0.21	0.57	50	4	1	10.18	1.74	1.79	1.84	1.88	2.05
CBN-EPSR2006-3-01	●	0.8	0.1	3	0.21	0.57	50	4	1	8.82	3.28	3.37	3.48	3.65	4.04
CBN-EPSR2008-2.5-01	●			2.5	0.28	0.77	50	4	1	9.1	2.77	2.84	2.91	3.05	3.37
CBN-EPSR2008-5-01	●	0.8	0.1	5	0.28	0.77	50	4	1	7.3	5.34	5.51	5.76	6.04	6.69
CBN-EPSR2010-1-005	●			1	0.35	0.96	50	4	1	10.5	1.24	1.28	1.32	1.35	1.43
CBN-EPSR2010-2.5-005	●	1	0.05	2.5	0.35	0.96	50	4	1	8.88	2.79	2.86	2.95	3.09	3.42
CBN-EPSR2010-5-005	●			5	0.35	0.96	50	4	1	7.07	5.35	5.54	5.8	6.08	6.74
CBN-EPSR2010-1-01	●	1	0.1	1	0.35	0.96	50	4	1	10.56	1.24	1.28	1.31	1.35	1.42
CBN-EPSR2010-2.5-01	●			2.5	0.35	0.96	50	4	1	8.93	2.79	2.86	2.94	3.08	3.41
CBN-EPSR2010-5-01	●	0.2	0.1	5	0.35	0.96	50	4	1	7.1	5.35	5.54	5.79	6.07	6.72
CBN-EPSR2010-2.5-02	●			2.5	0.35	0.96	50	4	1	9.02	2.78	2.85	2.93	3.06	3.37
CBN-EPSR2010-5-02	●	0.2	0.2	5	0.35	0.96	50	4	1	7.16	5.35	5.53	5.78	6.05	6.69
CBN-EPSR2010-10-02	●			10	0.35	0.96	50	4	1	5.06	10.51	10.97	11.48	12.03	13.33
CBN-EPSR2015-2-005	●	0.05	0.05	2	0.53	1.44	50	4	1	8.92	2.31	2.36	2.43	2.55	2.82
CBN-EPSR2015-5-005	●			5	0.53	1.44	50	4	1	6.5	5.38	5.59	5.85	6.14	6.8
CBN-EPSR2015-2-01	●	1.5	0.1	2	0.53	1.44	50	4	1	8.97	2.31	2.36	2.42	2.54	2.8
CBN-EPSR2015-5-01	●			5	0.53	1.44	50	4	1	6.53	5.38	5.59	5.84	6.13	6.79
CBN-EPSR2015-5-02	●	0.2	0.2	5	0.53	1.44	50	4	1	6.59	5.38	5.58	5.83	6.11	6.75
CBN-EPSR2015-10-02	●			10	0.53	1.44	50	4	1	4.52	10.56	11.03	11.53	12.09	13.39
CBN-EPSR2020-3-005	●	0.05	0.05	3	0.7	1.92	50	4	1	7.27	3.36	3.46	3.62	3.8	4.21
CBN-EPSR2020-5-005	●			5	0.7	1.92	50	4	1	5.81	5.4	5.64	5.91	6.19	6.87
CBN-EPSR2020-10-005	●	0.2	0.1	10	0.7	1.92	50	4	1	3.86	10.62	11.09	11.61	12.18	13.5
CBN-EPSR2020-3-01	●			3	0.7	1.92	50	4	1	7.32	3.36	3.46	3.62	3.79	4.19
CBN-EPSR2020-5-01	●	2	0.1	5	0.7	1.92	50	4	1	5.84	5.4	5.64	5.9	6.18	6.85
CBN-EPSR2020-10-01	●			10	0.7	1.92	50	4	1	3.87	10.62	11.09	11.6	12.17	13.49
CBN-EPSR2020-5-02	●	0.2	0.2	5	0.7	1.92	50	4	1	5.9	5.4	5.63	5.88	6.16	6.82
CBN-EPSR2020-10-02	●			10	0.7	1.92	50	4	1	3.9	10.61	11.08	11.59	12.15	13.45
CBN-EPSR2020-20-02	●	0.5	0.1	20	0.7	1.92	55	4	1	2.32	21.04	21.97	22.99	24.11	No interference
CBN-EPSR2030-6-005	●			6	1.05	2.86	50	4	1	3.32	6.59	6.89	7.21	7.56	8.38
CBN-EPSR2030-6-01	●	3	0.1	6	1.05	2.86	50	4	1	3.34	6.59	6.88	7.2	7.55	8.36
CBN-EPSR2030-6-05	●			6	1.05	2.86	50	4	1	3.5	6.57	6.85	7.14	7.47	8.24

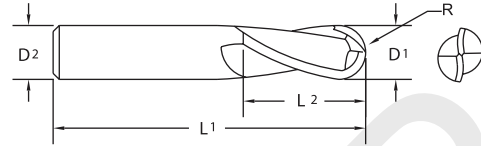
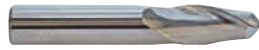
● : Stocked Items.



เอ็นมิลล์ - รุ่น 150

TuffCut® GP

ENDMILLS - STANDARD LENGTH SERIES 150



Manufacturing with a full ball radius end. Designed for milling fillets or similar rounded corners in the bottom of cut. Ideal for most ferrous metal applications.

Order No.	EDP	Diameter		Shank	OAL	Flute Length
		D1		D2	L1	L2
		mm	Decimal	mm	mm	mm
15001570	15032	0.4	.0157	3	38	1.2
15001960	15040	0.5	.0196	3	38	1.5
15002360	15042	0.6	.0236	3	38	1.8
15002750	15044	0.7	.0275	3	38	2.1
15003150	15046	0.8	.0315	3	38	2.4
15003540	15048	0.9	.0354	3	38	2.7
15003940	15003	1.0	.0394	3	38	3.0
15004330	15052	1.1	.0433	3	38	3.3
15004720	15054	1.2	.0472	3	38	3.6
15005120	15056	1.3	.0512	3	38	3.9
15005510	15058	1.4	.0551	3	38	4.2
15005910	15007	1.5	.0591	3	38	6.0
15005911	15060	1.5	.0591	3	38	4.5
15006300	15062	1.6	.0630	3	38	4.8
15006690	15064	1.7	.0669	3	38	5.1
15007090	15066	1.8	.0709	3	38	5.4
15007480	15068	1.9	.0748	3	38	5.7
15007870	15013	2.0	.0787	3	38	9.0
15007871	15070	2.0	.0787	3	38	6.0
15009840	15017	2.5	.0984	3	38	12.0

Order No.	EDP	Diameter		Shank	OAL	Flute Length
		D1		D2	L1	L2
		mm	Decimal	mm	mm	mm
15011810	15023	3.0	.1181	3	38	12.0
15013780	15027	3.5	.1378	4	51	12.0
15015750	15031	4.0	.1575	4	51	14.0
15017720	15033	4.5	.1772	5	51	14.0
15019680	15037	5.0	.1968	5	51	20.0
15021650	15039	5.5	.2165	6	64	20.0
15023620	15043	6.0	.2362	6	64	20.0
15027560	15047	7.0	.2756	8	64	20.0
15031500	15053	8.0	.3150	8	64	20.0
15035430	15055	9.0	.3543	9	64	20.0
15039370	15059	10.0	.3937	10	70	25.0
15043310	15061	11.0	.4331	11	70	25.0
15047240	15065	12.0	.4724	12	76	25.0
15055120	15069	14.0	.5512	14	89	30.0
15062990	15075	16.0	.6299	16	89	30.0
15070870	15079	18.0	.7087	18	102	35.0
15078740	15083	20.0	.7874	20	102	38.0
15086620	15085	22.0	.8662	22	102	40.0
15098430	15089	25.0	.9843	25	102	40.0

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวตเปอร์บอล

Roughing

D1	Tolerance h10
0.40-0.50	+0.000/-0.025
0.60-3.00	+0.000/-0.040
>3.00-6.00	+0.000/-0.048
>6.00-10.00	+0.000/-0.058
>10.00-18.00	+0.000/-0.070
>18.00-25.00	+0.000/-0.084

R	Tolerance
≤1.5	+0.025/-0.025
1.6-3.0	+0.050/-0.050
>3.0	+0.075/-0.075

END MILL

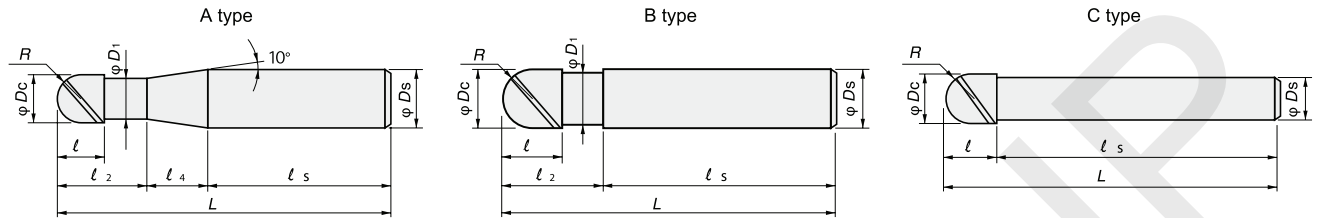
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

**EPOCH FINE BALL -Migaki-
EFB2**

2Flutes



±0.005



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

(mm)

Ideal for finish machining

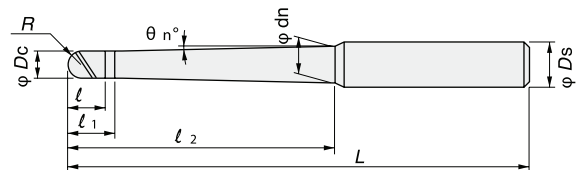
Item Code	Stock	Size (mm)									Type
		R Ball radius	Dc Tool Dia.	ℓ Flute Length	D1 Neck Dia.	ℓ ₂ Under Neck Dia.	ℓ ₄ Neck Taper Length	ℓ _s Shank Length	L Overall length	Ds shank Dia.	
EFB2010	●	0.5	1	1	0.95	2.2	8.6	39.2	50	4	A
EFB2015	●	0.75	1.5	1.5	1.4	3	7.4	39.6	50	4	A
EFB2020	●	1	2	2	1.9	4	11.6	34.4	50	6	A
EFB2025	●	1.25	2.5	2.5	2.4	5	10.2	34.8	50	6	A
EFB2030	●	1.5	3	3	2.9	6	8.8	55.2	70	6	A
EFB2040	●	2	4	4	3.9	8	6.0	56	70	6	A
EFB2050	●	2.5	5	5	4.9	10	3.1	66.9	80	6	A
EFB2060	●	3	6	6	5.9	12	-	78	90	6	B
EFB2070	●	3.5	7	7	-	-	-	83	90	6	C
EFB2080	●	4	8	8	7.9	16	-	84	100	8	B
EFB2100	●	5	10	10	9.9	20	-	80	100	10	B
EFB2120	●	6	12	12	11.9	24	-	86	110	12	B

● : Stocked Items.

ดอกเอ็นมิลล์

**EPOCH PENCIL NECK BALL
EPBPN2**

2Flutes



Pencil Regular Neck



±0.01



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds : 0 ~ -0.011

(mm)

Item Code	Stock	Size (mm)								
		R Ball radius	Dc Tool Dia.	θ _n Neck Angle	ℓ Flute Length	L Overall length	Ds shank Dia.	ℓ ₂ Below shank	ℓ ₁ Under Neck Parallel Length	dn Neck Dia.
EPBPN2010-15	●	0.5	1	1°30'	2.5	60	6	20	4	1.8
EPBPN2010-30	●	0.5	1	3°	2.5	80	6	40	4	4.8
EPBPN2010-50	●	0.5	1	5°	2.5	60	6	20	4	3.8
EPBPN2020-15	●	1.0	2	1°30'	5	60	6	20	7	2.7
EPBPN2020-30	●	1.0	2	3°	5	80	6	40	7	5.5
EPBPN2020-50	●	1.0	2	5°	5	60	6	20	7	4.3

● : Stocked Items.



Item Code	Stock	Size (mm)								
		R Ball radius	Dc Tool Dia.	θ_n Neck Angle	ℓ Flute Length	L Overall length	Ds shank Dia.	ℓ_2 Below shank	ℓ_1 Under Neck Parallel Length	dn Neck Dia.
EPBPN2030-15	●	1.5	3	1°30'	8	90	6	50	10	5.1
EPBPN2030-30	●	1.5	3	3°	8	70	6	30	10	5.1
EPBPN2040-15	●	2	4	1°30'	8	90	6	48.2	10	6
EPBPN2040-30	●	2	4	3°	8	70	6	29.1	10	6
EPBPN2050-15	●	2.5	5	1°30'	10	110	8	60	12	7.5
EPBPN2050-30	●	2.5	5	3°	10	90	8	40.6	12	8
EPBPN2060-15	●	3	6	1°30'	12	110	8	52.2	14	8
EPBPN2060-30	●	3	6	3°	12	90	8	33.1	14	8
EPBPN2070-15	●	3.5	7	1°30'	14	120	10	60	16	9.3
EPBPN2070-30	●	3.5	7	3°	14	100	10	40	16	9.5
EPBPN2080-15	●	4	8	1°30'	14	120	10	54.2	16	10
EPBPN2080-30	●	4	8	3°	14	100	10	35.1	16	10
EPBPN2100-15	●	5	10	1°30'	18	130	12	58.2	20	12
EPBPN2100-30	●	5	10	3°	18	110	12	39.1	20	12
EPBPN2120-15	●	6	12	1°30'	22	160	16	80	25	14.9
EPBPN2120-30	●	6	12	3°	22	140	16	63.2	25	16

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐาน R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

หัวหยาบ

Finish

หัวละเอียด

Drill

หัวเจาะ

Reamer

หัวเจียร

Tap

หัวตอก

Bore

หัวกลึง

Turn

หัวกลึง

Grind

หัวกลึง

Honing

หัวกลึง

Polishing

หัวกลึง

Lapping

หัวกลึง

Electro

หัวกลึง

Machining

หัวกลึง

Bore

หัวกลึง

Turn

หัวกลึง

Grind

หัวกลึง

Honing

หัวกลึง

Polishing

หัวกลึง

Lapping

หัวกลึง

Electro

หัวกลึง

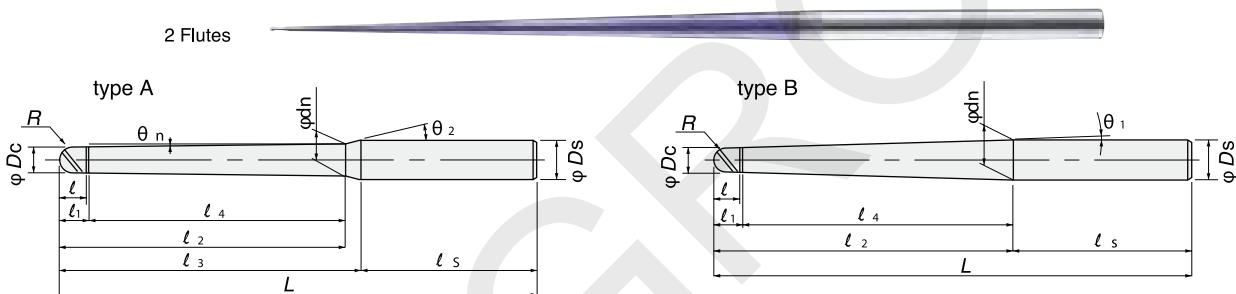
Machining

หัวกลึง

ดอกเอ็นมิลล์

EPOCH PENCIL LONG NECK BALL

EPBPX2 ○○ - ○○



Pencil Long Neck



±0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds : 0 ~ -0.011

(mm)

Item Code	Stock	Size (mm)												
		R Ball radius	Dc Tool Dia.	θ_1 Neck Angle	θ_2 Neck Angle	ℓ Flute Length	ℓ_1 Under Neck Parallel Length	ℓ_2 Below Shank Length	ℓ_4 Below Neck Length	dn Neck Dia.	ℓ_3 Below Shank length	ℓ_s Shank Length	L Overall Length	DS Shank Dia.
EPBPX2010-05	●			30°	20	1.5	2	70	68	2.19	75.25	74.77	150	6
EPBPX2010-10	●	0.5	1	1°	20	1.5	2	70	68	3.37	73.61	76.39	150	6
EPBPX2010-15	●			1°30'	-	1.5	2	97.47	95.47	6	-	52.53	150	6
EPBPX2020-05	●			30°	20	2.5	3.5	80	76.5	3.34	83.65	66.35	150	6
EPBPX2020-10	●	1	2	1°	20	2.5	3.5	80	76.5	4.67	81.83	68.17	150	6
EPBPX2020-15	●			1°30'	-	2.5	3.5	79.88	76.38	6	-	70.12	150	6
EPBPX2030-05	●			30°	20	3.5	4.5	87	82.5	4.44	89.14	60.86	150	6
EPBPX2030-10	●	1.5	3	1°	-	3.5	4.5	90.43	85.93	6	-	59.57	150	6
EPBPX2030-15	●			1°30'	-	3.5	4.5	99.97	95.47	8	-	50.03	150	8
EPBPX2040-05	●			30°	20	4.5	5.5	100	94.5	5.65	103.23	76.77	180	8
EPBPX2040-10	●	2	4	1°	-	4.5	5.5	120.08	114.58	8	-	59.92	180	8
EPBPX2040-15	●			1°30'	-	4.5	5.5	81.88	76.38	8	-	98.12	180	8
EPBPX2050-05	●			30°	20	5.5	6.5	110	103.5	6.81	111.63	68.37	180	8
EPBPX2050-10	●	2.5	5	1°	-	5.5	6.5	92.43	85.93	8	-	87.57	180	8
EPBPX2050-15	●			1°30'	-	5.5	6.5	101.97	95.47	10	-	78.03	180	10
EPBPX2060-05	●			30°	-	6.5	7.5	122.09	114.59	8	-	77.91	200	8
EPBPX2060-10	●	3	6	1°	-	6.5	7.5	122.08	114.58	10	-	77.92	200	10
EPBPX2060-15	●			1°30'	-	6.5	7.5	122.07	114.57	12	-	77.93	200	12
EPBPX2080-05	●			30°	-	8.5	9.5	124.09	114.59	10	-	75.91	200	10
EPBPX2080-10	●	4	8	1°	-	8.5	9.5	124.08	114.58	12	-	75.92	200	12

● : Stocked Items.

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

Item Code	Stock	Size (mm)													Type
		R Ball radius	Dc Tool Dia.	θ ₁ Neck Angle	θ ₂ Neck Angle	ℓ Flute Length	ℓ ₁ Under Neck Parallel Length	ℓ ₂ Below Shank Length	ℓ ₄ Below Neck Length	d _n Neck Dia.	ℓ ₃ Below Shank length	ℓ _s Shank Length	L Overall Length	DS Shank Dia.	
EPBPX2080-15	●	4	8	1°30'	-	8.5	9.5	124.07	114.57	14	-	75.93	200	14	B
EPBPX2100-05	●			30°	-	10.5	11.5	126.09	114.59	12	-	73.91	200	12	B
EPBPX2100-10	●	5	10	1°	-	10.5	11.5	126.08	114.58	14	-	73.92	200	14	B
EPBPX2100-15	●			1°30'	-	10.5	11.5	126.07	114.57	16	-	73.93	200	16	B
EPBPX2120-05	●			30°	-	12.5	13.5	128.09	114.59	14	-	71.91	200	14	B
EPBPX2120-10	●	6	12	1°	-	12.5	13.5	128.08	114.58	16	-	71.92	200	16	B
EPBPX2120-15	●			1°30'	-	12.5	13.5	128.07	114.57	18	-	71.93	200	18	B

● : Stocked Items.

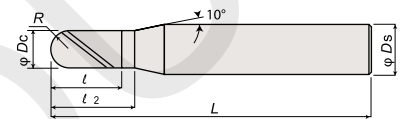
ดอกเอ็นมิลล์

**EPOCH PANACEA BALL
HGOB2 (-)-PN**

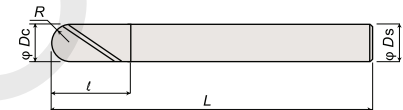
2Flutes



A type



B type



Regular



R0.15 ~ R6 : ±0.005
R8 ~ R10 : ±0.01



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

(mm)

Provides good machined surface finish for rough machining with high cutting depth. Enables machining of a wide variety of subject materials.

Order No.	Stock	Size (mm)						No. of flutes	Type
		R Ball radius	Dc Mill Dia.	ℓ Flute Length	ℓ ₂ Under Neck Dia.	L Overall length	DS Shank Dia.		
HGOB2003-PN	●	0.15	0.3	0.6	0.9	50	4	2	A
HGOB2004-PN	●	0.2	0.4	0.8	1.1	50	4	2	A
HGOB2005-PN	●	0.25	0.5	1	1.3	50	4	2	A
HGOB2006-PN	●	0.3	0.6	1.2	1.5	50	4	2	A
HGOB2008-PN	●	0.4	0.8	1.6	1.9	50	4	2	A
HGOB2010-PN	●	0.5	1	2.5	3.5	50	4	2	A
HGOB2015-PN	●	0.75	1.5	4	5	50	4	2	A
HGOB2020-PN	●	1	2	5	6	50	6	2	A
HGOB2025-PN	●	1.25	2.5	7	8	50	6	2	A
HGOB2030-PN	●	1.5	3	8	9	70	6	2	A
HGOB2040-4-PN	●	2	4	8	-	70	4	2	B
HGOB2040-PN	●	2	4	8	9	70	6	2	A
HGOB2050-PN	●	2.5	5	10	11	80	6	2	A
HGOB2060-PN	●	3	6	12	-	90	6	2	B
HGOB2080-PN	●	4	8	14	-	100	8	2	B
HGOB2100-PN	●	5	10	18	-	100	10	2	B
HGOB2120-PN	●	6	12	22	-	110	12	2	B
HGOB2160-PN	●	8	16	30	-	140	16	2	B
HGOB2200-PN	●	10	20	38	-	160	20	2	B

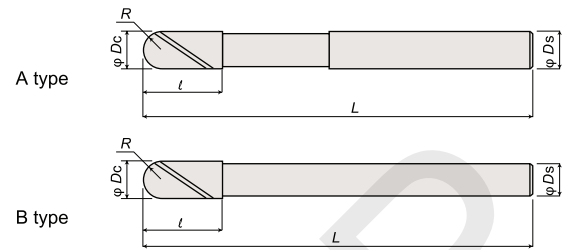
● : Stocked Items.



ดอกเอ็นมิลล์

**EPOCH PANACEA BALL LONG SHANK
HGOBLS2 (-)-PN**

2Flutes



Long shank



R3 ~ R6 : ±0.005
R8 ~ R10 : ±0.01



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

(mm)

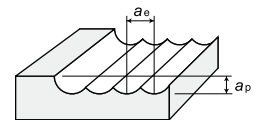
Provides good machined surface finish for rough machining with high cutting depth. Enables machining of a wide variety of subject materials.

Order No.	Stock	Size (mm)						No. of flutes	Type
		R Ball radius	Dc Mill Dia.	ℓ Flute Length	ℓ ₂ Under Neck Dia.	L Overall length	Ds Shank Dia.		
HGOBLS2060-45-PN	●	3	6	9	45	115	6	2	A
HGOBLS2060-75-PN	●	3	6	9	75	150	6	2	A
HGOBLS2080-55-PN	●	4	8	12	55	125	8	2	A
HGOBLS2080-105-PN	●	4	8	12	105	180	8	2	A
HGOBLS2100-PN	●	5	10	15	-	200	9	2	B
HGOBLS2120-PN	●	6	12	18	-	220	11	2	B
HGOBLS2160-PN	●	8	16	24	-	250	14	2	B
HGOBLS2200-PN	●	10	20	30	-	250	18	2	B

● : Stocked items.

Recommended cutting conditions**HGOB-PN**

Twice the cutting depth enables high-efficiency cutting!



Cutting segment	R Ball radius	Dc Tool dia.	ℓ Flute length	Copper Alloy, Aluminium alloy				Cast Iron, Carbon Steel (150 ~ 200HB) FC250, S50C, S55C				Stainless Steels (25 ~ 35HRC) SUS304, SUS316			
				Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm	Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm	Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm
Roughing	0.15	0.3	0.6	35,032	2,102	0.039	0.117	31,847	1,911	0.039	0.117	28,662	1,720	0.038	0.112
	0.2	0.4	0.8	35,032	2,102	0.052	0.156	31,847	1,911	0.052	0.156	28,662	1,720	0.050	0.150
	0.25	0.5	1	35,032	2,102	0.065	0.195	31,847	1,911	0.065	0.195	28,662	1,720	0.063	0.187
	0.3	0.6	1.2	29,193	2,335	0.078	0.234	26,539	2,123	0.078	0.234	23,885	1,911	0.075	0.225
	0.4	0.8	1.6	26,274	2,102	0.104	0.312	23,885	1,911	0.104	0.312	21,497	1,720	0.100	0.300
	0.5	1	2.5	28,025	2,803	0.130	0.390	25,478	2,548	0.130	0.390	22,930	2,293	0.125	0.375
	0.75	1.5	4	25,690	3,083	0.195	0.585	23,355	2,803	0.195	0.585	21,019	2,522	0.188	0.562
	1	2	5	24,522	3,433	0.260	0.780	22,293	3,121	0.260	0.780	20,064	2,809	0.250	0.750
	1.25	2.5	7	22,450	3,587	0.325	0.975	20,382	3,261	0.325	0.975	18,344	2,935	0.313	0.937
	1.5	3	8	21,019	3,783	0.390	1.170	19,108	3,439	0.390	1.170	17,197	3,096	0.375	1.125
	2	4	8	20,143	4,029	0.520	1.560	18,312	3,662	0.520	1.560	16,481	3,296	0.500	1.500
	2	4	8	20,143	4,834	0.520	1.560	18,312	4,395	0.520	1.560	16,481	3,955	0.500	1.500
	2.5	5	10	18,217	5,101	0.650	1.950	16,561	4,637	0.650	1.950	14,904	4,173	0.625	1.875
	3	6	12	15,764	5,045	0.780	2.340	14,331	4,586	0.780	2.340	12,898	4,127	0.750	2.250
	4	8	14	12,699	4,572	1.040	3.120	11,545	4,156	1.040	3.120	10,390	3,740	1.000	3.000
Finishing	5	10	18	10,860	4,344	1.300	3.900	9,873	3,949	1.300	3.900	8,885	3,554	1.250	3.750
	6	12	22	9,634	4,239	1.560	4.680	8,758	3,854	1.560	4.680	7,882	3,468	1.500	4.500
	8	16	30	7,444	3,573	2.080	6.240	6,768	3,248	2.080	6.240	6,091	2,924	2.000	6.000
	10	20	38	5,955	3,097	2.600	7.800	5,414	2,815	2.600	7.800	4,873	2,534	2.500	7.500
	0.15	0.3	0.6	44,586	1,783	0.015	0.015	37,155	1,486	0.015	0.015	33,439	1,204	0.015	0.015
	0.2	0.4	0.8	42,994	1,720	0.020	0.020	35,828	1,433	0.020	0.020	32,245	1,161	0.020	0.020
Finishing	0.25	0.5	1	42,038	1,682	0.025	0.025	35,032	1,401	0.025	0.025	31,529	1,135	0.025	0.025
	0.3	0.6	1.2	35,032	2,102	0.030	0.030	29,193	1,752	0.030	0.030	26,274	1,419	0.030	0.030
	0.4	0.8	1.6	31,051	1,863	0.040	0.040	25,876	1,553	0.040	0.040	23,288	1,258	0.040	0.040
	0.5	1	2.5	30,573	1,834	0.050	0.050	25,478	1,529	0.050	0.050	22,930	1,238	0.050	0.050

END MILL

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Cutting segment	R Ball radius	Dc Tool dia.	ℓ Flute length	Copper Alloy, Aluminium alloy				Cast Iron, Carbon Steel (150 ~ 200HB) FC250, S50C, S55C				Stainless Steels (25 ~ 35HRC) SUS304, SUS316			
				Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm	Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm	Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm
Finishing	0.75	1.5	4	29,299	1,758	0.075	0.075	24,416	1,465	0.075	0.075	21,975	1,187	0.075	0.075
	1	2	5	29,618	2,369	0.100	0.100	24,682	1,975	0.100	0.100	22,213	1,599	0.100	0.100
	1.25	2.5	7	28,280	2,262	0.125	0.125	23,567	1,885	0.125	0.125	21,210	1,527	0.125	0.125
	1.5	3	8	26,115	2,089	0.150	0.150	21,762	1,741	0.150	0.150	19,586	1,410	0.150	0.150
	2	4	8	24,363	1,949	0.200	0.200	20,303	1,624	0.200	0.200	18,272	1,316	0.200	0.200
	2	4	8	24,363	2,436	0.200	0.200	20,303	2,030	0.200	0.200	18,272	1,645	0.200	0.200
	2.5	5	10	22,548	2,255	0.250	0.250	18,790	1,879	0.250	0.250	16,911	1,522	0.250	0.250
	3	6	12	19,427	2,331	0.300	0.300	16,189	1,943	0.300	0.300	14,570	1,574	0.300	0.300
	4	8	14	16,003	1,920	0.400	0.400	13,336	1,600	0.400	0.400	12,002	1,296	0.400	0.400
	5	10	18	14,713	2,060	0.500	0.500	12,261	1,717	0.500	0.500	11,035	1,390	0.500	0.500
HSS Endmill	6	12	22	13,535	2,436	0.600	0.600	11,279	2,030	0.600	0.600	10,151	1,645	0.600	0.600
	8	16	30	10,868	2,174	0.800	0.800	9,057	1,811	0.800	0.800	8,151	1,467	0.800	0.800
	10	20	38	7,739	1,548	1.000	1.000	6,449	1,290	1.000	1.000	5,804	1,045	1.000	1.000

Cutting segment	R Ball radius	Dc Tool dia.	ℓ Flute length	Alloy Steel (25 ~ 35HRC) HPM7, SKD61, SKT4				Pre-hardened Steel (35 ~ 45HB) HPM-MAGIC, CENA1, NAK80				Hardened Steel (45 ~ 52HRC) SKD61, HPM38, DAC-MAGIC			
				Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm	Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm	Revolution min ⁻¹	Feed rate mm/min	ap mm	ae mm
Roughing	0.15	0.3	0.6	28,662	1,634	0.036	0.108	25,796	1,393	0.035	0.103	22,930	1,176	0.033	0.099
	0.2	0.4	0.8	28,662	1,634	0.048	0.144	25,796	1,393	0.046	0.138	22,930	1,176	0.044	0.132
	0.25	0.5	1	28,662	1,634	0.060	0.180	25,796	1,393	0.058	0.172	22,930	1,176	0.055	0.165
	0.3	0.6	1.2	23,885	1,815	0.072	0.216	21,497	1,548	0.069	0.207	19,108	1,307	0.066	0.198
	0.4	0.8	1.6	21,497	1,634	0.096	0.288	19,347	1,393	0.092	0.276	17,197	1,176	0.088	0.264
	0.5	1	2.5	22,930	2,178	0.120	0.360	20,637	1,857	0.115	0.345	18,344	1,568	0.110	0.330
	0.75	1.5	4	21,019	2,396	0.180	0.540	18,917	2,043	0.173	0.517	16,815	1,725	0.165	0.495
	1	2	5	20,064	2,668	0.240	0.720	18,057	2,275	0.230	0.690	16,051	1,921	0.220	0.660
	1.25	2.5	7	18,344	2,788	0.300	0.900	16,510	2,377	0.288	0.862	14,675	2,008	0.275	0.825
	1.5	3	8	17,197	2,941	0.360	1.080	15,478	2,507	0.345	1.035	13,758	2,117	0.330	0.990
	2	4	8	16,481	3,131	0.480	1.440	14,833	2,670	0.460	1.380	13,185	2,255	0.440	1.320
	2	4	8	16,481	3,758	0.480	1.440	14,833	3,204	0.460	1.380	13,185	2,706	0.440	1.320
	2.5	5	10	14,904	3,965	0.600	1.800	13,414	3,380	0.575	1.725	11,924	2,855	0.550	1.650
	3	6	12	12,898	3,921	0.720	2.160	11,608	3,343	0.690	2.070	10,318	2,823	0.660	1.980
	4	8	14	10,390	3,553	0.960	2.880	9,351	3,030	0.920	2.760	8,312	2,558	0.880	2.640
	5	10	18	8,885	3,376	1.200	3.600	7,997	2,879	1.150	3.450	7,108	2,431	1.100	3.300
	6	12	22	7,882	3,295	1.440	4.320	7,094	2,809	1.380	4.140	6,306	2,372	1.320	3.960
	8	16	30	6,091	2,777	1.920	5.760	5,482	2,368	1.840	5.520	4,873	2,000	1.760	5.280
	10	20	38	4,873	2,407	2.400	7.200	4,385	2,052	2.300	6.900	3,898	1,733	2.200	6.600
Finishing	0.15	0.3	0.6	33,439	1,204	0.012	0.012	30,096	975	0.009	0.009	26,752	770	0.009	0.009
	0.2	0.4	0.8	32,245	1,161	0.016	0.016	29,021	940	0.012	0.012	25,796	743	0.012	0.012
	0.25	0.5	1	31,529	1,135	0.020	0.020	28,376	919	0.015	0.015	25,223	726	0.015	0.015
	0.3	0.6	1.2	26,274	1,419	0.024	0.024	23,646	1,149	0.018	0.018	21,019	908	0.018	0.018
	0.4	0.8	1.6	23,288	1,258	0.032	0.032	20,959	1,019	0.024	0.024	18,631	805	0.024	0.024
	0.5	1	2.5	22,930	1,238	0.040	0.040	20,637	1,003	0.030	0.030	18,344	792	0.030	0.030
	0.75	1.5	4	21,975	1,187	0.060	0.060	19,777	961	0.045	0.045	17,580	759	0.045	0.045
	1	2	5	22,213	1,599	0.080	0.080	19,992	1,295	0.060	0.060	17,771	1,024	0.060	0.060
	1.25	2.5	7	21,210	1,527	0.100	0.100	19,089	1,237	0.075	0.075	16,968	977	0.075	0.075
	1.5	3	8	19,586	1,410	0.120	0.120	17,627	1,142	0.090	0.090	15,669	903	0.090	0.090
	2	4	8	18,272	1,316	0.160	0.160	16,445	1,066	0.120	0.120	14,618	842	0.120	0.120
	2	4	8	18,272	1,645	0.160	0.160	16,445	1,332	0.120	0.120	14,618	1,052	0.120	0.120
	2.5	5	10	16,911	1,522	0.200	0.200	15,220	1,233	0.150	0.150	13,529	974	0.150	0.150
	3	6	12	14,570	1,574	0.240	0.240	13,113	1,275	0.180	0.180	11,656	1,007	0.180	0.180
	4	8	14	12,002	1,296	0.320	0.320	10,802	1,050	0.240	0.240	9,602	830	0.240	0.240
	5	10	18	11,035	1,390	0.400	0.400	9,932	1,126	0.300	0.300	8,828	890	0.300	0.300
	6	12	22	10,151	1,645	0.480	0.480	9,136	1,332	0.360	0.360	8,121	1,052	0.360	0.360
	8	16	30	8,151	1,467	0.640	0.640	7,336	1,188	0.480	0.480	6,521	939	0.480	0.480
	10	20	38	5,804	1,045	0.800	0.800	5,224	846	0.600	0.600	4,643	669	0.600	0.600

[NOTE]

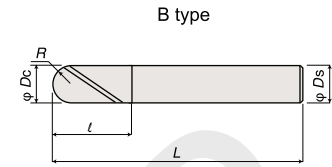
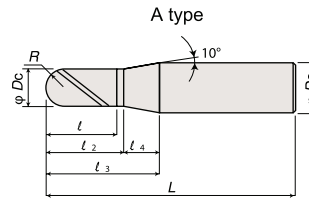
- ① PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
- ② Use the appropriate coolant for the work material and machining shape.
- ③ Use a highly rigid and accurate machine as possible.
- ④ The pick feed in the table is a general condition; please select the ae according to the cusp height requested.
- ⑤ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- ⑥ If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.



ดอกเอ็นมิลล์

EPOCH TH HARD BALL
EPBT2 (·)

2Flutes

R0.5~R6 : ±0.005
R8 ~R10 : ±0.01Ds ≤ 6 : 0~-0.005
6 < Ds ≤ 10 : 0~-0.006
10 < Ds ≤ 18 : 0~-0.008
18 < Ds : 0~-0.009

(mm)

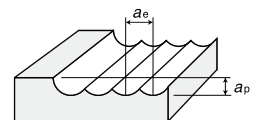
For high-hardness materials (Ideal for materials with hardnesses of 40HRC or higher)

Item Code	Stock	Size (mm)								Type
		R Ball radius	Dc Tool Dia.	ℓ Flute Length	ℓ ₂ Below Shank	ℓ ₃	ℓ ₄ Neck Taper Length	L Overall length	Ds Shank Dia.	
EPBT2010	●	0.5	1	1.5	2.5	11	8.5	50	4	A
EPBT2015	●	0.75	1.5	2.5	3.5	10.6	7.1	50	4	A
EPBT2020	●	1	2	3	4	15.3	11.3	50	6	A
EPBT2025	●	1.25	2.5	4	5	14.9	9.9	50	6	A
EPBT2030	●	1.5	3	4.5	5.5	14	8.5	70	6	A
EPBT2040-4	●	2	4	6	-	-	-	70	4	B
EPBT2040	●	2	4	6	7	12.7	5.7	70	6	A
EPBT2050	●	2.5	5	7.5	8.5	11.3	2.8	80	6	A
EPBT2060	●	3	6	9	-	-	-	90	6	B
EPBT2080	●	4	8	12	-	-	-	100	8	B
EPBT2100	●	5	10	15	-	-	-	100	10	B
EPBT2120	●	6	12	18	-	-	-	110	12	B
EPBT2160	●	8	16	24	-	-	-	140	16	B
EPBT2200	●	10	20	30	-	-	-	160	20	B

● : Stocked Items.

Recommended cutting conditions

EPBT



Roughing

Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	R x Dc Tool Dia. (mm)									
				R0.5x1	R1x2	R1.5x3	R2x4	R3x6	R4x8	R5x10	R6x12	R8x16	R10x20
Tool Steels (25 ~ 35HRC) SKD	High Speed	a _p =0.1Dc	min ⁻¹	50,000	48,000	32,000	24,000	16,000	12,000	10,000	8,000	6,000	4,800
		a _e =0.3Dc	mm/min	1,800	3,170	3,260	3,360	3,360	3,600	3,600	3,100	2,580	2,060
	General	a _p =0.1Dc	min ⁻¹	20,000	20,000	16,000	12,000	8,000	6,000	4,800	4,000	3,000	2,400
		a _e =0.3Dc	mm/min	720	1,320	1,630	1,680	1,680	1,800	1,730	1,550	1,290	1,030
Pre-Harden Steels (35 ~ 45HRC) CEN 1, NAK80	High Speed	a _p =0.1Dc	min ⁻¹	50,000	48,000	32,000	24,000	16,000	12,000	10,000	8,000	6,000	4,800
		a _e =0.3Dc	mm/min	1,600	2,780	2,880	2,930	2,940	3,020	3,120	2,690	2,220	1,780
	General	a _p =0.1Dc	min ⁻¹	20,000	20,000	16,000	12,000	8,000	6,000	4,800	4,000	3,000	2,400
		a _e =0.3Dc	mm/min	640	1,160	1,440	1,460	1,470	1,510	1,500	1,340	1,110	890
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	a _p =0.08Dc	min ⁻¹	50,000	38,000	25,000	19,000	13,000	10,000	7,600	6,400	4,800	3,800
		a _e =0.24Dc	mm/min	1,500	1,980	2,100	2,170	2,240	2,320	2,170	1,970	1,630	1,290
	General	a _p =0.1Dc	min ⁻¹	20,000	16,000	11,000	8,000	5,300	4,000	3,200	2,700	2,000	1,600
		a _e =0.3Dc	mm/min	540	750	830	820	820	840	820	750	610	490
Hardened Steels (55 ~ 65HRC) SKD11, SKH51	High Speed	a _p =0.05Dc	min ⁻¹	50,000	29,000	19,000	14,000	9,600	7,200	5,700	4,800	3,600	2,900
		a _e =0.15Dc	mm/min	1,300	1,390	1,440	1,460	1,500	1,510	1,480	1,340	1,110	890
	General	a _p =0.07Dc	min ⁻¹	20,000	13,000	8,500	6,400	4,200	3,200	2,500	2,100	1,600	1,300
		a _e =0.21Dc	mm/min	470	560	580	600	590	600	590	530	440	360
Hardened Steels (65 ~ 72HRC) SKH, HAP	High Speed	a _p =0.05Dc	min ⁻¹	38,000	19,000	13,000	10,000	6,400	4,800	3,800	3,200	2,400	1,900
		a _e =0.15Dc	mm/min	990	910	990	1,040	1,000	1,010	990	900	740	590
	General	a _p =0.07Dc	min ⁻¹	16,000	8,000	5,300	4,000	2,700	2,000	1,600	1,300	1,000	800
		a _e =0.21Dc	mm/min	370	350	360	370	380	380	370	330	280	220

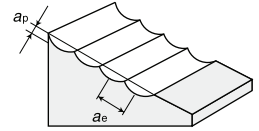
[Note] ① Use a highly rigid and accurate machine as possible.
 ② Use the appropriate coolant for the work material and machining shape.
 ③ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions
 ④ If the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

END MILL

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Finishing

Work material (Hardness)	Condition Range	ap: Finishing cut amount ae: Pick feed (mm)	Cutting Conditions	R x Dc Tool Dia. (mm)									
				R0.5x1	R1x2	R1.5x3	R2x4	R3x6	R4x8	R5x10	R6x12	R8x16	R10x20
DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	High Speed	$ap=0.05 \sim 0.1$	min^{-1}	50,000	32,000	25,000	22,000	16,000	12,000	10,000	8,000	6,000	4,800
		$ae=0.02Dc$	mm/min	5,000	3,840	3,500	3,740	3,520	2,880	2,600	2,160	1,680	1,340
CBN END MILL CBN เอ็นมิลล์	General	$ap=0.05 \sim 0.1$	min^{-1}	20,000	20,000	17,000	13,000	8,500	6,400	5,100	4,200	3,200	2,500
		$ae=0.02Dc$	mm/min	2,000	2,400	2,380	2,210	1,870	1,540	1,330	1,130	900	700
Carbide Endmill เอ็นมิลล์คาร์ไบด์	High Speed	$ap=0.05 \sim 0.1$	min^{-1}	50,000	32,000	25,000	22,000	16,000	12,000	10,000	8,000	6,000	4,800
		$ae=0.02Dc$	mm/min	5,000	3,840	3,500	3,740	3,520	2,880	2,600	2,160	1,680	1,340
HSS Endmill เอ็นมิลล์ไฮสปีด	General	$ap=0.05 \sim 0.1$	min^{-1}	20,000	20,000	17,000	13,000	8,500	6,400	5,100	4,200	3,200	2,500
		$ae=0.02Dc$	mm/min	2,000	2,400	2,380	2,210	1,870	1,540	1,330	1,130	900	700
Ball หัวบอล	High Speed	$ap=0.05 \sim 0.1$	min^{-1}	50,000	32,000	24,000	20,000	13,000	10,000	8,000	6,600	5,000	4,000
		$ae=0.02Dc$	mm/min	4,000	3,200	2,880	3,200	2,730	2,300	2,000	1,720	1,350	1,080
Radius หัวก้นมุม R	General	$ap=0.05 \sim 0.1$	min^{-1}	20,000	20,000	14,000	10,000	6,900	5,200	4,100	3,500	2,600	2,100
		$ae=0.02Dc$	mm/min	1,600	2,000	1,680	1,600	1,450	1,200	1,030	910	700	570
Square หัวสี่	High Speed	$ap=0.05 \sim 0.1$	min^{-1}	50,000	32,000	21,000	16,000	11,000	8,000	6,400	5,300	4,000	3,200
		$ae=0.02Dc$	mm/min	2,500	2,880	2,520	2,400	2,200	1,760	1,540	1,330	1,040	830
Taper Ball หัวเตเปอร์บอล	General	$ap=0.05 \sim 0.1$	min^{-1}	15,000	15,000	13,000	9,600	6,400	4,800	3,800	3,200	2,400	1,900
		$ae=0.02Dc$	mm/min	750	1,350	1,560	1,440	1,280	1,060	910	800	620	490
Roughing	High Speed	$ap=0.05 \sim 0.1$	min^{-1}	48,000	24,000	16,000	12,000	8,000	6,000	4,800	4,000	3,000	2,400
		$ae=0.02Dc$	mm/min	2,400	2,160	1,920	1,800	1,600	1,320	1,150	1,000	780	620
Hardened Steels (65 ~ 72HRC) SKH, HAP	General	$ap=0.05 \sim 0.1$	min^{-1}	15,000	14,000	10,000	7,200	4,800	3,600	2,900	2,400	1,800	1,400
		$ae=0.02Dc$	mm/min	750	1,260	1,200	1,080	960	790	700	600	470	360

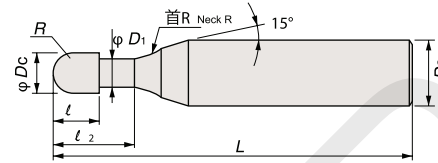
- [Note]**
- ① Use a highly rigid and accurate machine as possible.
 - ② "ae" (pick feed) figures in the above table are for general guidance. When making an actual selection, please refer to the cusp height table on A181.
 - ③ Use the appropriate coolant for the work material and machining shape.
 - ④ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
 - ⑤ If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.



ดอกเอ็นมิลล์

**EPOCH SHRINK MASTER BALL
ESHB2 - H - ATH**

2Flutes



High-accuracy rating product

Inspection certificate included

High accuracy rating product



+0.001 ~ -0.003

Ds ≤ 10 : 0 ~ -0.004
10 < Ds : 0 ~ -0.005

(mm)

Ideal for press-fit holders. High-accuracy rating product.

Item Code	Stock	Size (mm)								θ κ Interference Angle	Effective length (Effective length for work angle)					
		R Ball radius	Dc Tool Dia.	ℓ Flute Length	D1 Neck Dia.	ℓ2 Under Neck length	Neck R	L Overall length	Ds Shank Dia.		0°	0.5°	1°	1.5°	2°	3°
ESHB2010-H-TH	●	0.5	1	1	0.95	2.5	4	40	4	11.04	2.94	3.11	3.26	3.39	3.51	3.73
ESHB2015-H-TH	●	0.75	1.5	1.5	1.45	3.75	4	40	4	9.16	4.19	4.42	4.60	4.76	4.90	5.16
ESHB2020-H-TH	●	1	2	2	1.95	5	4	45	6	9.82	5.44	5.72	5.93	6.11	6.27	6.56
ESHB2025-H-TH	●	1.25	2.5	2.5	2.45	6.25	4	45	6	8.57	6.69	7.02	7.26	7.46	7.63	7.94
ESHB2030-H-TH	●	1.5	3	3	2.9	7.5	4	45	6	7.26	8.13	8.43	8.67	8.87	9.05	9.37
ESHB2035-H-TH	●	1.75	3.5	3.5	3.4	8.75	4	45	6	6.03	9.38	9.72	9.98	10.19	10.39	10.72
ESHB2040-H-TH	●	2	4	4	3.9	10	4	45	6	4.80	10.63	11.00	11.28	11.51	11.72	12.18
ESHB2050-H-TH	●	2.5	5	5	4.9	12.5	4	50	6	2.38	13.13	13.57	13.88	14.14	14.37	-
ESHB2060-H-TH	●	3	6	6	5.9	15	-	50	6	-	15.00	-	-	-	-	-
ESHB2080-H-TH	●	4	8	8	7.9	20	-	60	8	-	20.00	-	-	-	-	-
ESHB2100-H-TH	●	5	10	10	9.9	25	-	70	10	-	25.00	-	-	-	-	-
ESHB2120-H-TH	●	6	12	12	11.9	30	-	75	12	-	30.00	-	-	-	-	-

● : Stocked Items.

ดอกเอ็นมิลล์

**EPOCH SHRINK MASTER BALL
ESHB2 - N - ATH**

Standard rating product



±0.005

Ds ≤ 10 : 0 ~ -0.004
10 < Ds : 0 ~ -0.005

(mm)

Ideal for press-fit holders. Standard rating product

Item Code	Stock	Size (mm)								θ κ Interference Angle	Effective length (Effective length for work angle)					
		R Ball radius	Dc Tool Dia.	ℓ Flute Length	D1 Neck Dia.	ℓ2 Under Neck length	Neck R	L Overall length	Ds Shank Dia.		0°	0.5°	1°	1.5°	2°	3°
ESHB2010-N-TH	●	0.5	1	1	0.95	2.5	4	40	4	11.04	2.94	3.11	3.26	3.39	3.51	3.73
ESHB2015-N-TH	●	0.75	1.5	1.5	1.45	3.75	4	40	4	9.16	4.19	4.42	4.60	4.76	4.90	5.16
ESHB2020-N-TH	●	1	2	2	1.95	5	4	45	6	9.82	5.44	5.72	5.93	6.11	6.27	6.56
ESHB2025-N-TH	●	1.25	2.5	2.5	2.45	6.25	4	45	6	8.57	6.69	7.02	7.26	7.46	7.63	7.94
ESHB2030-N-TH	●	1.5	3	3	2.9	7.5	4	45	6	7.26	8.13	8.43	8.67	8.87	9.05	9.37
ESHB2035-N-TH	●	1.75	3.5	3.5	3.4	8.75	4	45	6	6.03	9.38	9.72	9.98	10.19	10.39	10.72
ESHB2040-N-TH	●	2	4	4	3.9	10	4	45	6	4.80	10.63	11.00	11.28	11.51	11.72	12.18
ESHB2050-N-TH	●	2.5	5	5	4.9	12.5	4	50	6	2.38	13.13	13.57	13.88	14.14	14.37	-
ESHB2060-N-TH	●	3	6	6	5.9	15	-	50	6	-	15.00	-	-	-	-	-
ESHB2080-N-TH	●	4	8	8	7.9	20	-	60	8	-	20.00	-	-	-	-	-
ESHB2100-N-TH	●	5	10	10	9.9	25	-	70	10	-	25.00	-	-	-	-	-
ESHB2120-N-TH	●	6	12	12	11.9	30	-	75	12	-	30.00	-	-	-	-	-

● : Stocked Items.

END MILL

ดอกเอ็นมิลล์

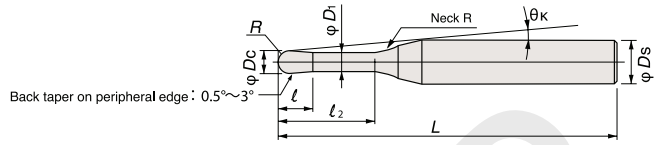


ดอกเอ็นมิลล์

EPOCH SUPER HARD BALL EVOLUTION EPSBE2 000-00.00-TH



Standard rating product
R accuracy
+0.003mm~ -0.007mm



Standard rating product



+0.003 ~ -0.007



0 ~ -0.004

(mm)

For machining of high-hardness materials. Ideal for materials with hardnesses of 50HRC and higher.

Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		R Ball Radius	Dc Tool Dia.	ℓ Flute Length	D1 Neck Dia.	ℓ2 Under Neck length.	L Overall length	Ds Shank Dia.	Neck R	θκ Interference Angle	0.5°	1°	1.5°	2°	3°
EPSBE2001-0.15-TH	●					0.15				11.82	0.30	0.32	0.33	0.35	0.38
EPSBE2001-0.3-TH	●	0.05	0.1	0.08	0.08	0.3	45	4	1	11.64	0.46	0.48	0.50	0.52	0.57
EPSBE2001-0.75-TH	●					0.75				11.12	0.93	0.97	1.01	1.04	1.10
EPSBE2002-0.3-TH	●					0.3				11.66	0.49	0.50	0.52	0.54	0.58
EPSBE2002-0.6-TH	●					0.6				11.30	0.80	0.83	0.86	0.88	0.93
EPSBE2002-1-TH	●	0.1	0.2	0.15	0.17	0.6	45	4	1	10.86	1.22	1.26	1.30	1.33	1.39
EPSBE2002-1.5-TH	●					1.5				10.35	1.74	1.79	1.84	1.88	2.05
EPSBE2002-2-TH	●					2				9.88	2.25	2.32	2.37	2.45	2.71
EPSBE2003-0.45-TH	●					0.45				11.53	0.73	0.77	0.80	0.84	0.91
EPSBE2003-0.9-TH	●					0.9				11.00	1.21	1.27	1.32	1.37	1.47
EPSBE2003-1.5-TH	●	0.15	0.3	0.25	0.27	1.5	45	4	2	10.36	1.84	1.92	1.99	2.06	2.18
EPSBE2003-2-TH	●					2				9.83	2.36	2.46	2.55	2.62	2.76
EPSBE2003-3-TH	●					3				9.05	3.41	3.53	3.64	3.73	4.02
EPSBE2004-0.6-TH	●					0.6				11.39	0.88	0.93	0.97	1.01	1.09
EPSBE2004-1.2-TH	●					1.2				10.69	1.52	1.59	1.65	1.71	1.82
EPSBE2004-2-TH	●	0.2	0.4	0.3	0.37	2	45	4	2	9.88	2.36	2.46	2.54	2.62	2.75
EPSBE2004-3-TH	●					3				9.03	3.41	3.53	3.63	3.73	4.01
EPSBE2004-3.5-TH	●					3.5				8.65	3.93	4.06	4.18	4.27	4.67
EPSBE2004-4-TH	●					4				8.30	4.45	4.59	4.71	4.83	5.33
EPSBE2005-0.75-TH	●					0.75				11.25	1.04	1.09	1.13	1.18	1.27
EPSBE2005-1.5-TH	●	0.25	0.5	0.35	0.47	1.5	45	4	2	10.39	1.83	1.91	1.98	2.05	2.17
EPSBE2005-3-TH	●					3				9.00	3.41	3.53	3.63	3.72	3.99
EPSBE2005-5-TH	●					5				7.64	5.48	5.65	5.78	6.01	6.65
EPSBE2006-0.9-TH	●					0.9				11.10	1.33	1.42	1.51	1.59	1.75
EPSBE2006-1.8-TH	●					1.8				10.08	2.30	2.44	2.56	2.68	2.88
EPSBE2006-3-TH	●	0.3	0.6	0.4	0.57	3	45	4	4	8.98	3.58	3.77	3.93	4.07	4.32
EPSBE2006-5-TH	●					5				7.59	5.70	5.94	6.14	6.32	6.63
EPSBE2006-6-TH	●					6				7.04	6.75	7.02	7.23	7.42	7.96
EPSBE2008-1.2-TH	●	0.4	0.8	0.5	0.77	1.2	45	4	4	10.79	1.65	1.75	1.84	1.93	2.11
EPSBE2008-2.4-TH	●					2.4				9.47	2.94	3.10	3.24	3.36	3.59
EPSBE2010-1.5-TH	●					1.5				11.01	2.01	2.12	2.21	2.31	2.49
EPSBE2010-3-TH	●					3	45			9.88	3.61	3.78	3.93	4.06	4.30
EPSBE2010-6-TH	●	0.5	1	0.8	0.96	6		6	4	8.20	6.76	7.02	7.23	7.42	7.92
EPSBE2010-8-TH	●					8				7.36	8.85	9.15	9.40	9.61	10.58
EPSBE2010-10-TH	●					10	50			6.68	10.93	11.27	11.54	11.98	13.23
EPSBE2012-1.8-TH	●	0.6	1.2	1.1	1.15	1.8	45	6	4	10.78	2.36	2.47	2.58	2.68	2.86
EPSBE2012-3.6-TH	●					3.6				9.46	4.27	4.45	4.61	4.75	5.01
EPSBE2015-2.25-TH	●					2.25				10.43	2.87	2.99	3.10	3.20	3.40
EPSBE2015-4.5-TH	●	0.75	1.5	1.35	1.44	4.5	45	6	4	8.84	5.24	5.43	5.61	5.76	6.03
EPSBE2015-8-TH	●					8				7.14	8.89	9.17	9.41	9.61	10.56
EPSBE2015-12-TH	●					12	50			5.85	13.03	13.39	13.74	14.38	15.87
EPSBE2020-3-TH	●					3				9.79	3.71	3.84	3.96	4.07	4.29
EPSBE2020-6-TH	●					6	45			7.81	6.84	7.07	7.26	7.43	7.89
EPSBE2020-8-TH	●					8				6.88	8.92	9.19	9.42	9.61	10.54
EPSBE2020-12-TH	●	1	2	1.7	1.92	12		6	4	5.55	13.06	13.41	13.76	14.39	15.85
EPSBE2020-16-TH	●					16	50			4.65	17.19	17.59	18.32	19.17	21.16
EPSBE2020-20-TH	●					20				4.01	21.30	21.90	22.88	23.96	26.47

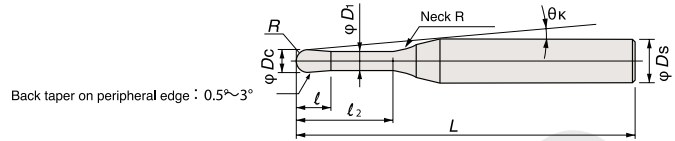
● : Stocked Items.



ดอกเอ็นมิลล์

EPOCH SUPER HARD BALL EVOLUTION
EPSBE2 0.05-0.08-H-TH

2Flutes



High-accuracy rating product

R accuracy
+0.001mm~-0.005mm

Inspection certificate included

High-accuracy rating product



+0.001 ~ -0.005



0 ~ -0.004

(mm)

For machining of high-hardness materials. Ideal for materials with hardnesses of 50HRC and higher. High-accuracy rating product.

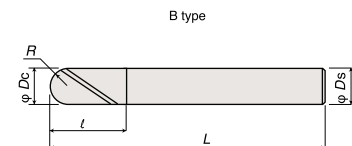
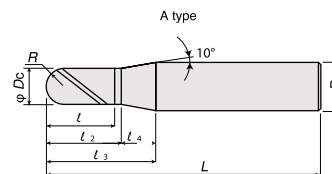
Order No.	Stock	Size (mm)									The effective under-neck length for the various draft angles				
		R	Dc Mill Dia.	ℓ Flute Length	D1 Neck Dia.	ℓ2 Under Neck Dia.	L Overall length	Ds Shank Dia.	Neck R	θκ Interference Angle	0.5°	1°	1.5°	2°	3°
EPSBE2001-0.15-H-TH	●	0.05	0.1	0.08	0.08	0.15	45	4	1	11.82	0.30	0.32	0.33	0.35	0.38
EPSBE2002-0.3-H-TH	●	0.1	0.2	0.15	0.17	0.3	45	4	1	11.66	0.49	0.50	0.52	0.54	0.58
EPSBE2003-0.45-H-TH	●	0.15	0.3	0.25	0.27	0.45	45	4	2	11.53	0.73	0.77	0.80	0.84	0.91
EPSBE2004-0.6-H-TH	●	0.2	0.4	0.3	0.37	0.6	45	4	2	11.39	0.88	0.93	0.97	1.01	1.09
EPSBE2005-0.75-H-TH	●	0.25	0.5	0.35	0.47	0.75	45	4	2	11.25	1.04	1.09	1.13	1.18	1.27
EPSBE2006-0.9-H-TH	●	0.3	0.6	0.4	0.57	0.9	45	4	4	11.10	1.33	1.42	1.51	1.59	1.75
EPSBE2008-1.2-H-TH	●	0.4	0.8	0.5	0.77	1.2	45	4	4	10.79	1.65	1.75	1.84	1.93	2.11
EPSBE2010-1.5-H-TH	●	0.5	1	0.8	0.96	1.5	45	6	4	11.01	2.01	2.12	2.21	2.31	2.49
EPSBE2012-1.8-H-TH	●	0.6	1.2	1.1	1.15	1.8	45	6	4	10.78	2.36	2.47	2.58	2.68	2.86
EPSBE2015-2.25-H-TH	●	0.75	1.5	1.35	1.44	2.25	45	6	4	10.43	2.87	2.99	3.10	3.20	3.40
EPSBE2020-3-H-TH	●	1	2	1.7	1.92	3	45	6	4	9.79	3.71	3.84	3.96	4.07	4.29

● : Stocked Items.

ดอกเอ็นมิลล์

EPOCH TH HARD BALL STRONG
EPBTS2 0.05 -TH

2Flutes



±0.005

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

(mm)

For machining of high-hardness materials. Ideal for materials with hardnesses of 50HRC and higher.

Item Code	Stock	Size (mm)								Type
		R Ball radius	Dc Tool Dia.	Flute Length	Under Neck length.	L3	L4	L Overall length	Shank Dia.	
EPBTS2030-TH	●	1.5	3	4.5	5.5	14.0	8.5	70	6	A
EPBTS2040-TH	●	2	4	6	7.0	12.7	5.7	70	6	A
EPBTS2050-TH	●	2.5	5	7.5	8.5	11.3	2.8	80	6	A
EPBTS2060-TH	●	3	6	9	-	-	-	90	6	B
EPBTS2080-TH	●	4	8	12	-	-	-	100	8	B
EPBTS2100-TH	●	5	10	15	-	-	-	100	10	B
EPBTS2120-TH	●	6	12	18	-	-	-	110	12	B

● : Stocked Items.

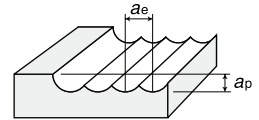
END MILL

ดอกเอ็นมิลล์



Recommended cutting conditions

EPBTS-TH

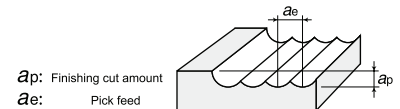


Roughing

Work material (Hardness)	Cutting range	Depth of cut (mm)	Cutting Conditions	R x Dc Tool Dia. (mm)						
				R1.5x3	R2x4	R2.5x5	R3x6	R4x8	R5x10	R6x12
Pre-Harden Steels (35 ~ 45HRC) CENA 1, NAK80	High Speed	$ap=0.12$ Dc	n (min ⁻¹)	37,700	28,300	22,800	19,200	14,700	11,800	9,800
		$ae=0.36$ Dc	V_f (mm/min)	3,620	3,620	3,650	3,690	3,760	3,780	3,650
	General	$ap=0.12$ Dc	n (min ⁻¹)	17,300	13,000	10,500	8,800	6,800	5,400	4,500
		$ae=0.36$ Dc	V_f (mm/min)	1,560	1,560	1,580	1,580	1,630	1,620	1,570
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	$ap=0.1$ Dc	n (min ⁻¹)	27,500	20,600	16,700	14,000	10,700	8,600	7,200
		$ae=0.3$ Dc	V_f (mm/min)	2,810	2,800	2,840	2,860	2,910	2,920	2,850
	General	$ap=0.1$ Dc	n (min ⁻¹)	14,300	10,700	8,600	7,300	5,600	4,500	3,700
		$ae=0.3$ Dc	V_f (mm/min)	1,030	1,030	1,030	1,050	1,080	1,080	1,030
Hardened Steels (55 ~ 65HRC) SKD11, SKH51	High Speed	$ap=0.06$ Dc	n (min ⁻¹)	22,400	16,800	13,600	11,400	8,800	7,000	5,800
		$ae=0.18$ Dc	V_f (mm/min)	2,280	2,280	2,310	2,330	2,390	2,380	2,300
	General	$ap=0.08$ Dc	n (min ⁻¹)	12,200	9,200	7,400	6,200	4,800	3,800	3,200
		$ae=0.24$ Dc	V_f (mm/min)	730	740	740	740	770	760	740
Hardened Steels (65 ~ 72HRC) SKH, HAP	High Speed	$ap=0.05$ Dc	n (min ⁻¹)	13,200	9,900	8,000	6,800	5,200	4,100	3,400
		$ae=0.15$ Dc	V_f (mm/min)	1,110	1,110	1,120	1,140	1,160	1,150	1,110
	General	$ap=0.07$ Dc	n (min ⁻¹)	7,100	5,300	4,300	3,600	2,800	2,200	1,900
		$ae=0.21$ Dc	V_f (mm/min)	340	340	340	350	360	350	350

[Note] ① Use the appropriate coolant for the work material and machining shape.
② 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.

Finishing



Work material (Hardness)	Cutting range	Depth of cut (mm)	Cutting Conditions	R x Dc Tool Dia. (mm)						
				R1.5x3	R2x4	R2.5x5	R3x6	R4x8	R5x10	R6x12
Pre-Harden Steels (35 ~ 45HRC) CENA 1, NAK80	High Speed	$ap=0.05 \sim 0.1$	n (min ⁻¹)	27,500	24,200	20,900	17,600	13,200	11,000	8,800
		$ae=0.02$ Dc	V_f (mm/min)	3,890	4,150	4,020	3,910	3,200	2,890	2,400
	General	$ap=0.05 \sim 0.1$	n (min ⁻¹)	17,000	13,000	10,500	8,500	6,400	5,100	4,200
		$ae=0.02$ Dc	V_f (mm/min)	2,620	2,430	2,260	2,060	1,690	1,460	1,240
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	$ap=0.05 \sim 0.1$	n (min ⁻¹)	26,400	22,000	18,150	14,300	11,000	8,800	7,260
		$ae=0.02$ Dc	V_f (mm/min)	3,200	3,550	3,310	3,030	2,550	2,220	1,910
	General	$ap=0.05 \sim 0.1$	n (min ⁻¹)	15,400	11,000	9,130	7,590	5,720	4,510	3,850
		$ae=0.02$ Dc	V_f (mm/min)	1,850	1,760	1,670	1,600	1,320	1,130	1,000
Hardened Steels (55 ~ 65HRC) SKD11, SKH51	High Speed	$ap=0.05 \sim 0.1$	n (min ⁻¹)	23,100	17,600	14,850	12,100	8,800	7,040	5,830
		$ae=0.02$ Dc	V_f (mm/min)	2,800	2,660	2,550	2,440	1,680	1,640	1,490
	General	$ap=0.05 \sim 0.1$	n (min ⁻¹)	14,300	10,560	7,040	5,280	4,180	3,520	2,640
		$ae=0.02$ Dc	V_f (mm/min)	1,720	1,580	1,440	1,410	1,170	1,000	880
Hardened Steels (65 ~ 72HRC) SKH, HAP	High Speed	$ap=0.05 \sim 0.1$	n (min ⁻¹)	17,600	13,200	11,000	8,800	6,600	5,280	4,400
		$ae=0.02$ Dc	V_f (mm/min)	2,130	2,000	1,910	1,780	1,470	1,280	1,110
	General	$ap=0.05 \sim 0.1$	n (min ⁻¹)	11,000	7,920	6,490	5,280	3,960	3,190	2,640
		$ae=0.02$ Dc	V_f (mm/min)	1,320	1,190	1,100	1,060	870	770	660

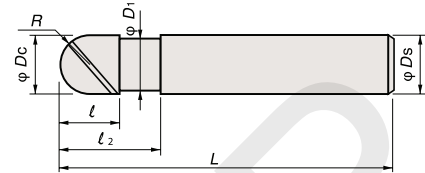
[Note] ① Use the appropriate coolant for the work material and machining shape.
② These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.



ดอกเอ็นมิลล์

EPOCH SD (S-DLC) Ball
EPAB2 - SD

2 Flutes



±0.005



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

(mm)

High welding resistance makes it ideal for machining aluminum alloys and copper. DLC coating.

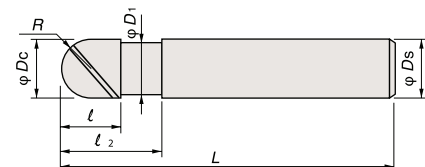
Item Code	Stock	Size (mm)						
		R Ball radius	Dc Tool Dia.	ℓ ₂ Under Neck length	ℓ Flute Length	D1 Neck dia.	L Overall length	Ds Shank Dia.
EPAB2060-SD	●	3	6	15	6	5.9	90	6
EPAB2080-SD	●	4	8	20	8	7.9	100	8
EPAB2100-SD	●	5	10	25	10	9.9	100	10
EPAB2120-SD	●	6	12	30	12	11.9	110	12

● : Stocked Items.

ดอกเอ็นมิลล์

EPOCH HD COATED BALL END MILL
EGB2 - HD

2 Flutes



Diamond Coating



Ds ≤ 6 : 0 ~ -0.005
6 < Ds : 0 ~ -0.006

(mm)

Ideal for machining of graphite, high-Si aluminum alloys, and FRP. Diamond coating.

Item Code	Stock	Size (mm)						
		R Ball radius	Dc Tool Dia.	ℓ ₂ Under Neck length	D1 Neck dia.	ℓ Flute Length	L Overall length	Ds Shank Dia.
EGB2040-HD	●	2	4	40	3.9	8	100	4
EGB2060-HD	●	3	6	60	5.9	12	120	6
EGB2080-HD	●	4	8	80	7.9	16	140	8
EGB2100-HD	●	5	10	100	9.9	20	150	10

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวคีมุม R

Square

หัวตัด

Taper Ball

หัวตเปเปอร์บอล

Roughing

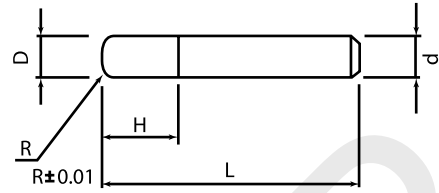
END MILL

ดอกเอ็นมิลล์

PROCH

ดอกเอ็นมิลล์คาร์ไบด์ 2 ฟัน

MICRO GRAIN CARBIDE END MILLS (2 Flute)



Order No.	R (mm) angle	H (mm) cutting edge length	L (mm) overall length	d (mm) shank dia.
PRV-R050M2	R0.5	2.0	50	4.0
PRV-R075M2	R0.75	3.0	50	4.0
PRV-R100M2	R1.0	4.0	50	4.0
PRV-R125M2	R1.25	5.0	50	4.0
PRV-R150M2	R1.5	6.0	50	4.0
PRV-R200M2	R2.0	8.0	50	4.0
PRV-R250M2	R2.5	10.0	50	6.0
PRV-R300M2	R3.0	12.0	60	6.0
PRV-R400M2-60	R4.0	16.0	60	8.0
PRV-R400M2-75	R4.0	16.0	75	8.0
PRV-R500M2	R5.0	20.0	75	10.0
PRV-R600M2	R6.0	20.0	75	12.0

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐาน R

Square

หัวสี่

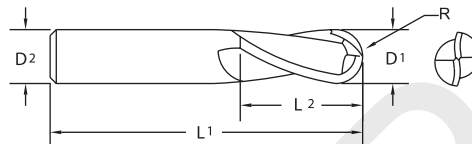
Taper Ball

หัวเตเปอร์บอล

Roughing



เอ็นมิลล์ - รุ่น 150

TuffCut® GP ENDMILLS - STANDARD LENGTH SERIES 150

Manufacturing with a full ball radius end. Designed for milling fillets or similar rounded corners in the bottom of cut. Ideal for most ferrous metal applications.

Order No.	EDP	Diameter		Shank	OAL	Flute Length
		D1		D2	L1	L2
		mm	Decimal	mm	mm	mm
15003940A	15050	1.0	.0394	3.0	38	3.0
15005910A	15080	1.5	.0591	3.0	38	6.0
15007870A	15082	2.0	.0787	3.0	38	9.0
15009840A	15084	2.5	.0984	3.0	38	12.0
15011810A	55040	3.0	.1181	3.0	38	12.0
15015750A	55042	4.0	.1575	4.0	51	14.0
15019680A	55044	5.0	.1968	5.0	51	20.0
15023620A	55045	6.0	.2362	6.0	64	20.0
15031500A	55048	8.0	.3150	8.0	64	20.0
15039370A	55050	10.0	.3937	10.0	70	25.0
15047240A	55052	12.0	.4724	12.0	76	25.0
15062990A	55055	16.0	.6299	16.0	89	30.0
15078740A	55057	20.0	.7874	20.0	102	38.0
15098430A	55098	25.0	.9843	25.0	102	40.0

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐาน R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

D1	Tolerance h10
0.40-0.50	+.000/- .025
0.60-3.00	+.000/- .040
>3.00-6.00	+.000/- .048
>6.00-10.00	+.000/- .058
>10.00-18.00	+.000/- .070
>18.00-25.00	+.000/- .084

R	Tolerance
≤1.5	+.025/- .025
1.6-3.0	+.050/- .050
>3.0	+.075/- .075

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

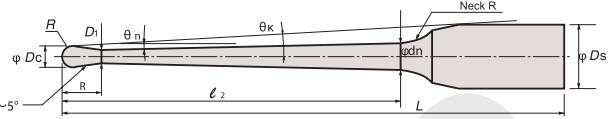
EPOCH MEGA FEED BALL EVOLUTION

EMBPE3 000-000-00-ATH

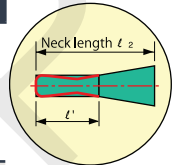
3Flutes

[Note] ※ : R2 or higher does not have backdraft shape.

Back taper on peripheral edge : 3~5°



Pencil Neck



R0.5 ~ R1.75 : ±0.005
R2~ R3 : ±0.007
R4~ R6 : ±0.010



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

(mm)

High helix ball flute shape that reduces cutting force and improves chip removal.

Order No.	Stock	81Size (mm)100											The effective under-neck length for the various draft angles					
		R Ball Radius	Dc Tool Dia.	θn Neck Angle	e ₂ Under Neck Length	ℓ Flute Length	D1 Neck Dia.	dn Under Neck Dia.	L Overall length	Ds Shank Dia.	Neck R	ℓ' Approx neck length	θ _k Interference Angle	0.75°	1°	1.5°	2°	3°
EMBPE3010-6-09-ATH	●			0.9	6	0.8	0.94	1.103	50	6	A	2.70	8.36	6.45	6.66	6.96	7.19	7.56
EMBPE3010-8-09-ATH	●			0.9	8	0.8	0.94	1.166	55	6	A	2.70	7.55	8.4	8.68	9.05	9.32	9.93
EMBPE3010-10-09-ATH	●			0.9	10	0.8	0.94	1.229	55	6	A	2.70	6.88	10.33	10.71	11.13	11.43	12.39
EMBPE3010-12-09-ATH	●			0.9	12	0.8	0.94	1.291	60	6	A	2.70	6.32	12.25	12.73	13.2	13.54	14.85
EMBPE3010-14-09-ATH	●			0.9	14	0.8	0.94	1.354	60	6	A	2.70	5.85	13.77	14.75	15.27	15.65	17.31
EMBPE3010-16-09-ATH	●			0.9	16	0.8	0.94	1.417	60	6	A	2.70	5.44	13.77	16.77	17.34	17.87	19.77
EMBPE3010-18-09-ATH	●			0.9	18	0.8	0.94	1.480	65	6	A	2.70	5.08	13.77	18.79	19.4	20.08	22.23
EMBPE3010-20-09-ATH	●	0.5	1	0.9	20	0.8	0.94	1.543	65	6	A	2.70	4.77	13.77	20.81	21.46	22.3	24.68
EMBPE3010-22-09-ATH	●			0.9	22	0.8	0.94	1.606	70	6	A	2.70	4.5	13.77	22.82	23.51	24.52	27.14
EMBPE3010-24-09-ATH	●			0.9	24	0.8	0.94	1.668	70	6	A	2.70	4.25	13.77	24.84	25.57	26.73	29.6
EMBPE3010-26-09-ATH	●			0.9	26	0.8	0.94	1.731	70	6	A	2.70	4.03	13.77	26.86	27.62	28.95	32.06
EMBPE3010-28-09-ATH	●			0.9	28	0.8	0.94	1.794	75	6	A	2.70	3.83	13.77	28.88	29.73	31.17	34.52
EMBPE3010-30-09-ATH	●			0.9	30	0.8	0.94	1.857	75	6	A	2.70	3.65	13.77	30.89	31.84	33.38	36.98
EMBPE3010-32-09-ATH	●			0.9	32	0.8	0.94	1.920	80	6	A	2.70	3.49	13.77	32.91	33.95	35.6	39.43
EMBPE3010-34-09-ATH	●			0.9	34	0.8	0.94	1.983	80	6	A	2.70	3.34	13.77	34.92	36.07	37.82	41.89
EMBPE3010-36-09-ATH	●			0.9	36	0.8	0.94	2.045	80	6	A	2.70	3.2	13.77	36.94	38.18	40.03	44.35
EMBPE3015-8-09-ATH	●			0.9	8	1.35	1.42	1.628	55	6	A	3.89	7.32	8.54	8.77	9.1	9.35	9.97
EMBPE3015-10-09-ATH	●			0.9	10	1.35	1.42	1.691	55	6	A	3.89	6.63	10.5	10.79	11.17	11.46	12.43
EMBPE3015-14-09-ATH	●			0.9	14	1.35	1.42	1.817	60	6	A	3.89	5.57	14.39	14.83	15.31	15.71	17.35
EMBPE3015-16-09-ATH	●			0.9	16	1.35	1.42	1.880	60	6	A	3.89	5.16	16.33	16.84	17.37	17.93	19.8
EMBPE3015-18-09-ATH	●			0.9	18	1.35	1.42	1.943	65	6	A	3.89	4.81	18.24	18.86	19.43	20.14	22.26
EMBPE3015-20-09-ATH	●			0.9	20	1.35	1.42	2.005	65	6	A	3.89	4.5	19.64	20.88	21.49	22.36	24.72
EMBPE3015-22-09-ATH	●			0.9	22	1.35	1.42	2.068	70	6	A	3.89	4.22	19.64	22.89	23.55	24.57	27.18
EMBPE3015-24-09-ATH	●	0.75	1.5	0.9	24	1.35	1.42	2.131	70	6	A	3.89	3.98	19.64	24.91	25.6	26.79	29.64
EMBPE3015-26-09-ATH	●			0.9	26	1.35	1.42	2.194	70	6	A	3.89	3.77	19.64	26.93	27.68	29.01	32.1
EMBPE3015-28-09-ATH	●			0.9	28	1.35	1.42	2.257	75	6	A	3.89	3.58	19.64	28.94	29.79	31.22	34.55
EMBPE3015-30-09-ATH	●			0.9	30	1.35	1.42	2.320	75	6	A	3.89	3.4	19.64	30.96	31.91	33.44	37.01
EMBPE3015-32-09-ATH	●			0.9	32	1.35	1.42	2.382	80	6	A	3.89	3.24	19.64	32.97	34.02	35.66	39.47
EMBPE3015-34-09-ATH	●			0.9	34	1.35	1.42	2.445	80	6	A	3.89	3.1	19.64	34.99	36.13	37.87	41.93
EMBPE3015-36-09-ATH	●			0.9	36	1.35	1.42	2.508	80	6	A	3.89	2.97	19.64	37	38.24	40.09	No interference
EMBPE3015-38-09-ATH	●			0.9	38	1.35	1.42	2.571	85	6	A	3.89	2.85	19.64	39.02	40.36	42.3	No interference
EMBPE3015-40-09-ATH	●			0.9	40	1.35	1.42	2.634	85	6	A	3.89	2.74	19.64	41.03	42.47	44.52	No interference
EMBPE3020-10-09-ATH	●			0.9	10	1.7	1.92	2.180	55	6	A	4.24	6.35	10.52	10.8	11.17	11.45	12.38
EMBPE3020-16-09-ATH	●			0.9	16	1.7	1.92	2.369	60	6	A	4.24	4.86	16.36	16.85	17.37	17.91	19.76
EMBPE3020-20-09-ATH	●			0.9	20	1.7	1.92	2.494	65	6	A	4.24	4.2	20.16	20.88	21.49	22.34	24.68
EMBPE3020-24-09-ATH	●			0.9	24	1.7	1.92	2.620	65	6	A	4.24	3.7	20.5	24.92	25.6	26.77	29.59
EMBPE3020-30-09-ATH	●	1	2	0.9	30	1.7	1.92	2.809	70	6	A	4.24	3.14	20.5	30.96	31.9	33.42	36.97
EMBPE3020-36-09-ATH	●			0.9	36	1.7	1.92	2.994	80	6	A	4.24	2.73	20.5	37.01	38.24	40.07	No interference
EMBPE3020-40-09-ATH	●			0.9	40	1.7	1.92	3.123	80	6	A	4.24	2.51	20.5	41.03	42.46	44.5	No interference
EMBPE3020-46-09-ATH	●			0.9	46	1.7	1.92	3.311	90	6	A	4.24	2.24	20.5	47.08	48.8	51.15	No interference
EMBPE3020-60-09-ATH	●			0.9	60	1.7	1.92	3.751	100	6	A	4.24	1.79	20.5	61.16	63.59	v	No interference
EMBPE3025-16-09-ATH	●			0.9	16	2	2.4	2.839	60	6	A	5.18	4.52	16.48	16.9	17.4	17.94	19.77
EMBPE3025-24-09-ATH	●			0.9	24	2	2.4	3.091	65	6	A	5.18	3.39	24.19	24.96	25.62	26.81	29.6
EMBPE3025-30-09-ATH	●	1.25	2.5	0.9	30	2	2.4	3.279	70	6	A	5.18	2.86	24.88	31.01	31.94	33.46	No interference
EMBPE3025-40-09-ATH	●			0.9	40	2	2.4	3.593	80	6	A	5.18	2.26	24.88	41.07	42.51	44.54	No interference
EMBPE3025-50-09-ATH	●			0.9	50	2	2.4	3.908	90	6	A	5.18	1.87	24.88	51.14	53.07	No interference	No interference

● : Stocked Items.



Order No.	Stock	81Size (mm)100											The effective under-neck length for the various draft angles					
		R Ball Radius	Dc Tool Dia.	θn Neck Angle	e ₂ Under Neck Length	Flute Length	D1 Neck Dia.	dn Under Neck Dia.	L Overall length	Ds Shank Dia.	Neck R	e' Approx neck length	θ κ Interference Angle	0.75°	1°	1.5°	2°	3°
EMBPE3030-16-09-ATH	●			0.9	16	2.5	2.86	3.284	55	6	A	6.95	4.11	16.67	17	17.46	18.05	19.87
EMBPE3030-20-09-ATH	●			0.9	20	2.5	2.86	3.409	60	6	A	6.95	3.5	20.59	21.03	21.57	22.48	24.78
EMBPE3030-24-09-ATH	●			0.9	24	2.5	2.86	3.535	65	6	A	6.95	3.04	24.51	25.06	25.72	26.92	29.7
EMBPE3030-30-09-ATH	●	1.5	3	0.9	30	2.5	2.86	3.724	70	6	A	6.95	2.54	30.35	31.1	32.06	33.56	No interference
EMBPE3030-40-09-ATH	●			0.9	40	2.5	2.86	4.038	80	6	A	6.95	2	34.28	41.16	42.62	No interference	No interference
EMBPE3030-50-09-ATH	●			0.9	50	2.5	2.86	4.352	90	6	A	6.95	1.65	34.28	51.22	53.18	No interference	No interference
EMBPE3030-60-09-ATH	●			0.9	60	2.5	2.86	4.666	100	6	A	6.95	1.4	34.28	61.28	No interference	No interference	No interference
EMBPE3035-20-09-ATH	●			0.9	20	2.75	3.36	3.901	60	6	A	7.20	3.09	20.6	21.03	21.56	22.46	24.73
EMBPE3035-30-09-ATH	●			0.9	30	2.75	3.36	4.216	70	6	A	7.20	2.21	30.36	31.1	32.05	33.54	No interference
EMBPE3035-40-09-ATH	●	1.75	3.5	0.9	40	2.75	3.36	4.530	80	6	A	7.20	1.72	34.53	41.16	42.61	No interference	No interference
EMBPE3035-50-09-ATH	●			0.9	50	2.75	3.36	4.844	90	6	A	7.20	1.41	34.53	51.22	No interference	No interference	No interference
EMBPE3035-60-09-ATH	●			0.9	60	2.75	3.36	5.158	100	6	B	7.20	1.19	34.53	61.27	No interference	No interference	No interference
EMBPE3040-20-09-ATH	●			0.9	20	6	3.9	4.339	70	6	A	-	2.62	20.77	21.13	21.62	22.58	No interference
EMBPE3040-30-09-ATH	●			0.9	30	6	3.9	4.654	80	6	A	-	1.84	30.61	31.19	32.18	No interference	No interference
EMBPE3040-40-09-ATH	●			0.9	40	6	3.9	4.968	90	6	B	-	1.42	40.38	41.25	No interference	No interference	No interference
EMBPE3040-50-09-ATH	●	2	4	0.9	50	6	3.9	5.282	100	6	B	-	1.16	45.15	51.3	No interference	No interference	No interference
EMBPE3040-60-09-ATH	●			0.9	60	6	3.9	5.596	110	6	B	-	0.97	45.15	No interference	No interference	No interference	No interference
EMBPE3040-70-09-ATH	●			0.9	70	6	3.9	5.910	120	8	A	-	1.58	45.15	71.4	74.43	No interference	No interference
EMBPE3040-80-09-ATH	●			0.9	80	6	3.9	6.224	130	8	A	-	1.4	45.15	81.45	No interference	No interference	No interference
EMBPE3050-30-09-ATH	●			0.9	30	7.5	4.9	5.606	80	8	A	-	2.6	30.72	31.24	32.24	33.7	No interference
EMBPE3050-40-09-ATH	●			0.9	40	7.5	4.9	5.921	90	8	A	-	2.03	40.54	41.29	42.8	44.78	No interference
EMBPE3050-50-09-ATH	●	2.5	5	0.9	50	7.5	4.9	6.235	100	8	A	-	1.67	50.24	51.35	53.36	No interference	No interference
EMBPE3050-60-09-ATH	●			0.9	60	7.5	4.9	6.549	110	8	A	-	1.42	51.67	61.4	No interference	No interference	No interference
EMBPE3050-70-09-ATH	●			0.9	70	7.5	4.9	6.863	120	8	A	-	1.23	51.67	71.45	No interference	No interference	No interference
EMBPE3050-80-09-ATH	●			0.9	80	7.5	4.9	7.177	130	8	B	-	1.09	51.67	81.49	No interference	No interference	No interference
EMBPE3060-30-09-ATH	●			0.9	30	9	5.9	6.559	80	8	A	-	1.89	30.81	31.29	32.29	No interference	No interference
EMBPE3060-40-09-ATH	●			0.9	40	9	5.9	6.873	90	8	B	-	1.45	40.66	41.34	No interference	No interference	No interference
EMBPE3060-50-09-ATH	●			0.9	50	9	5.9	7.188	100	8	B	-	1.18	50.46	51.39	No interference	No interference	No interference
EMBPE3060-60-09-ATH	●	3	6	0.9	60	9	5.9	7.502	110	8	B	-	0.99	58.18	No interference	No interference	No interference	No interference
EMBPE3060-70-09-ATH	●			0.9	70	9	5.9	7.816	120	10	A	-	1.59	58.18	71.48	74.54	No interference	No interference
EMBPE3060-80-09-ATH	●			0.9	80	9	5.9	8.130	130	10	A	-	1.41	58.18	81.53	No interference	No interference	No interference
EMBPE3060-100-09-ATH	●			0.9	100	9	5.9	8.759	150	10	A	-	1.15	58.18	101.61	No interference	No interference	No interference
EMBPE3060-120-09-ATH	●			0.9	120	9	5.9	9.387	200	10	B	-	0.97	58.18	No interference	No interference	No interference	No interference
EMBPE3080-40-09-ATH	●			0.9	40	12	7.9	8.779	100	10	A	-	1.48	40.85	41.42	No interference	No interference	No interference
EMBPE3080-50-09-ATH	●			0.9	50	12	7.9	9.093	110	10	B	-	1.2	50.71	51.47	No interference	No interference	No interference
EMBPE3080-60-09-ATH	●			0.9	60	12	7.9	9.408	120	10	B	-	1	60.53	No interference	No interference	No interference	No interference
EMBPE3080-70-09-ATH	●	4	8	0.9	70	12	7.9	9.722	130	10	B	-	0.86	70.22	No interference	No interference	No interference	No interference
EMBPE3080-80-09-ATH	●			0.9	80	12	7.9	10.036	140	12	A	-	1.43	71.21	81.6	No interference	No interference	No interference
EMBPE3080-100-09-ATH	●			0.9	100	12	7.9	10.664	160	12	A	-	1.16	71.21	101.76	No interference	No interference	No interference
EMBPE3080-120-09-ATH	●			0.9	120	12	7.9	11.293	200	12	B	-	0.98	71.21	No interference	No interference	No interference	No interference
EMBPE3100-50-09-ATH	●			0.9	50	15	9.9	10.999	120	12	B	-	1.21	50.89	51.55	No interference	No interference	No interference
EMBPE3100-60-09-ATH	●			0.9	60	15	9.9	11.313	130	12	B	-	1.02	60.76	61.59	No interference	No interference	No interference
EMBPE3100-75-09-ATH	●	5	10	0.9	75	15	9.9	11.785	140	12	B	-	0.81	75.49	No interference	No interference	No interference	No interference
EMBPE3100-81-09-ATH	●			0.9	81	15	9.9	12.000	150	12	C	-	0.76	81.04	No interference	No interference	No interference	No interference
EMBPE3100-100-09-ATH	●			0.9	100	15	9.9	12.570	170	16	D	-	1.73	84.25	101.07	103.56	No interference	No interference
EMBPE3100-120-09-ATH	●			0.9	120	15	9.9	13.198	200	16	D	-	1.45	84.25	121.17	No interference	No interference	No interference
EMBPE3120-60-09-ATH	●			0.9	60	18	11.9	13.219	140	16	D	-	1.99	60.27	60.96	62.38	No interference	No interference
EMBPE3120-80-09-ATH	●			0.9	80	18	11.9	13.847	160	16	D	-	1.49	80.12	81.06	No interference	No interference	No interference
EMBPE3120-100-09-ATH	●	6	12	0.9	100	18	11.9	14.476	180	16	D	-	1.2	97.28	101.16	No interference	No interference	No interference
EMBPE3120-120-09-ATH	●			0.9	120	18	11.9	15.104	200	16	D	-	1	97.28	No interference	No interference	No interference	No interference

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์

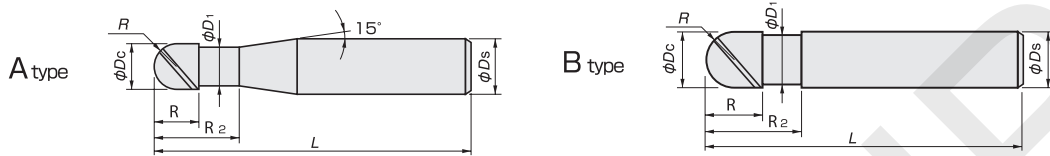


MOLDINO
The Edge To Innovation

ดอกเอ็นมิลล์

EPOCH MEGA FEED BALL EVOLUTION EMBE3 〰 (-S)-ATH

3Flutes



Straight Type



R0.5 ~ R1.75 : ± 0.005
R2 ~ R3 : ± 0.007
R4 ~ R6 : ± 0.010
R8 ~ R10 : ± 0.015



R0.5 ~ R1.75 : ± 0.010
R2 ~ R3 : ± 0.014
R4 ~ R6 : ± 0.020
R8 ~ R10 : ± 0.030



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

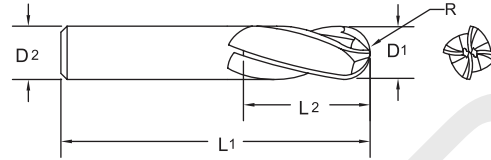
High helix ball flute shape that reduces cutting force and improves chip removal.

Item Code	Stock	Size (mm)							Type
		R Ball radius	Dc Tool Dia.	ℓ Flute Length	ℓ_2 Under Neck Dia.	D1 Neck dia.	L Overall length	Ds Shank Dia.	
EMBE3010-S4-ATH	●	0.5	1	1.5	3	0.95	50	4	A
EMBE3010-S6-ATH	●			1.5	3	0.95	50	6	A
EMBE3015-S4-ATH	●	0.75	1.5	2.5	4.5	1.43	50	4	A
EMBE3015-S6-ATH	●			2.5	4.5	1.43	50	6	A
EMBE3020-S4-ATH	●	1	2	3	6	1.9	50	4	A
EMBE3020-S6-ATH	●			3	6	1.9	50	6	A
EMBE3025-S4-ATH	●	1.25	2.5	4	7.5	2.38	50	4	A
EMBE3025-S6-ATH	●			4	7.5	2.38	50	6	A
EMBE3030-S4-ATH	●	1.5	3	4.5	9	2.9	70	4	A
EMBE3030-S6-ATH	●			4.5	9	2.9	70	6	A
EMBE3035-S4-ATH	●	1.75	3.5	5.5	10.5	3.4	70	4	A
EMBE3035-S6-ATH	●			5.5	10.5	3.4	70	6	A
EMBE3040-S4-ATH	●	2	4	6	12	3.9	70	4	B
EMBE3040-S6-ATH	●			6	12	3.9	70	6	A
EMBE3050-ATH	●	2.5	5	7.5	15	4.7	80	6	A
EMBE3060-ATH	●	3	6	9	18	5.7	90	6	B
EMBE3080-ATH	●	4	8	12	24	7.6	100	8	B
EMBE3100-ATH	●	5	10	15	30	9.5	100	10	B
EMBE3120-ATH	●	6	12	18	36	11.5	110	12	B
EMBE3160-ATH	●	8	16	24	48	15	140	16	B
EMBE3200-ATH	●	10	20	30	60	19	160	20	B

● : Stocked Items.



เอ็นมิลล์ - รุ่น 140

TuffCut® GP**ENDMILLS - STANDARD LENGTH SERIES 140**

Manufacturing with a full ball radius end. Designed for milling fillets or similar rounded corners in the bottom of cut. Ideal for most ferrous metal applications.

Order No.	EDP	Diameter		Shank	OAL	Flute Length
		D1		D2	L1	L2
		mm	Decimal	mm	mm	mm
14003940	14003	1.0	.0394	3.0	38	3.0
14005910	14007	1.5	.0591	3.0	38	6.0
14007870	14011	2.0	.0787	3.0	38	9.0
14009840	14017	2.5	.0984	3.0	38	12.0
14011810	14023	3.0	.1181	3.0	38	12.0
14013780	14027	3.5	.1378	4.0	51	12.0
14015750	14031	4.0	.1575	4.0	51	14.0
14017720	14033	4.5	.1772	5.0	51	14.0
14019680	14037	5.0	.1968	5.0	51	20.0
14021650	14039	5.5	.2165	6.0	64	20.0
14023620	14043	6.0	.2362	6.0	64	20.0
14027560	14049	7.0	.2756	8.0	64	20.0
14031500	14053	8.0	.3150	8.0	64	20.0
14035430	14055	9.0	.3543	9.0	64	20.0
14039370	14059	10.0	.3937	10.0	70	25.0
14043310	14061	11.0	.4331	11.0	70	25.0
14047240	14065	12.0	.4724	12.0	76	25.0
14055120	14069	14.0	.5512	14.0	89	30.0
14062990	14075	16.0	.6299	16.0	89	30.0
14070870	14079	18.0	.7087	18.0	102	35.0
14078740	14083	20.0	.7874	20.0	102	38.0
14086620	14085	22.0	.8662	22.0	102	40.0
14098430	14089	25.0	.9843	25.0	102	40.0

D1	Tolerance h10
1.00-3.00	+.000/-0.040
>3.00-6.00	+.000/-0.048
>6.00-10.00	+.000/-0.058
>10.00-18.00	+.000/-0.070
>18.00-25.00	+.000/-0.084

R	Tolerance
≤1.5	+.025/-0.025
1.6-3.0	+.050/-0.050
>3.0	+.075/-0.075

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

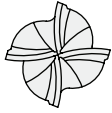
ดอกเอ็นมิลล์



MOLDINO
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ดอกเอ็นมิลล์

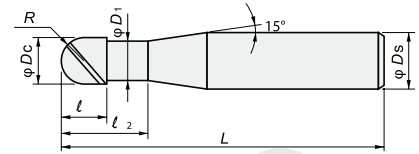
**EPOCH QUATTRO HIGH HARD BALL
EHHB4 (-S)-ATH**



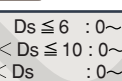
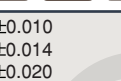
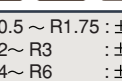
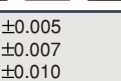
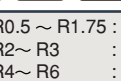
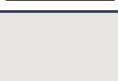
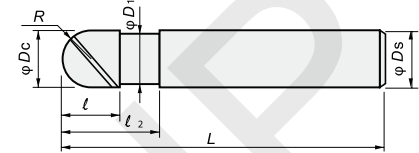
4Flutes



A type



B type



4 flutes provide cutting with even higher performance. New flute shape shows its power on hardened steels.

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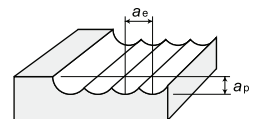
Item Code	Stock	Size (mm)							No. of flutes	Type
		R Ball radius	Dc Tool Dia.	ℓ Flute Length	ℓ ₂ Under Neck Dia.	D1 Neck dia.	L Overall length	Ds Shank Dia.		
EHHB4010-S4-ATH	●	0.5	1	1.5	3	0.95	50	4	4	A
EHHB4010-S6-ATH	●							6		
EHHB4015-S4-ATH	●	0.75	1.5	2.5	4.5	1.43	50	4	4	A
EHHB4015-S6-ATH	●							6		
EHHB4020-S4-ATH	●	1	2	3	6	1.9	50	4	4	A
EHHB4020-S6-ATH	●							6		
EHHB4025-S4-ATH	●	1.25	2.5	4	7.5	2.38	50	4	4	A
EHHB4025-S6-ATH	●							6		
EHHB4030-S4-ATH	●	1.5	3	4.5	9	2.9	70	4	4	A
EHHB4030-S6-ATH	●							6		
EHHB4040-S4-ATH	●	2	4	6	12	3.9	70	4	4	B
EHHB4040-S6-ATH	●							6		
EHHB4050-ATH	●	2.5	5	7.5	15	4.7	80	6	4	A
EHHB4060-ATH	●	3	6	9	18	5.7	90	6	4	B
EHHB4080-ATH	●	4	8	12	24	7.6	100	8	4	B
EHHB4100-ATH	●	5	10	15	30	9.5	100	10	4	B
EHHB4120-ATH	●	6	12	18	36	11.5	110	12	4	B

● : Stocked Items.

Recommended cutting conditions

EHHB-ATH

Roughing



R Ball radius	Dc Mill dia.	Hardened Steels (55 ~ 62HRC) SKD11, YXR3				Hardened Steels (62 ~ 66HRC) HAP40, YXR7, SKH51				Hardened Steels (66 ~ 72HRC) HAP70, HAP72			
		Vc=110m/min				Vc=90m/min				Vc=70m/min			
		n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm
0.5	1	35,000	1,930	0.08	0.23	28,700	1,340	0.06	0.18	22,300	860	0.05	0.14
0.75	1.5	23,400	1,760	0.11	0.34	19,100	1,220	0.09	0.27	14,900	780	0.07	0.20
1	2	17,500	1,750	0.15	0.45	14,300	1,220	0.12	0.36	11,100	780	0.09	0.27
1.25	2.5	14,000	1,650	0.19	0.56	11,500	1,150	0.15	0.45	8,900	730	0.11	0.34
1.5	3	11,700	1,650	0.23	0.68	9,600	1,150	0.18	0.54	7,400	730	0.14	0.41
2	4	8,800	1,670	0.30	0.90	7,200	1,160	0.24	0.72	5,600	740	0.18	0.54
2.5	5	7,000	1,700	0.38	1.13	5,700	1,170	0.30	0.90	4,500	760	0.23	0.68
3	6	5,800	1,690	0.45	1.35	4,800	1,190	0.36	1.08	3,700	750	0.27	0.81
4	8	4,400	1,760	0.60	1.80	3,600	1,220	0.48	1.44	2,800	780	0.36	1.08
5	10	3,500	1,750	0.75	2.25	2,900	1,230	0.60	1.80	2,200	770	0.45	1.35
6	12	2,900	1,650	0.90	2.70	2,400	1,160	0.72	2.16	1,900	760	0.54	1.62



Side Cutting

R Ball radius	Dc Mill dia.	Hardened Steels (55 ~ 62HRC) SKD11, YXR3				Hardened Steels (62 ~ 66HRC) HAP40, YXR7, SKH51				Hardened Steels (66 ~ 72HRC) HAP72			
		Vc=150m/min				Vc=125m/min				Vc=100m/min			
		n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm
0.5	1	47,800	2,630	1.00	0.02	39,800	1,750	1.00	0.02	31,800	1,050	1.00	0.01
0.75	1.5	31,800	2,390	1.50	0.03	26,500	1,590	1.50	0.02	21,200	950	1.50	0.02
1	2	23,900	2,390	2.00	0.04	19,900	1,590	2.00	0.03	15,900	950	2.00	0.02
1.25	2.5	19,100	2,240	2.50	0.05	15,900	1,490	2.50	0.04	12,700	900	2.50	0.03
1.5	3	15,900	2,240	3.00	0.06	13,300	1,500	3.00	0.05	10,600	900	3.00	0.03
2	4	11,900	2,260	4.00	0.08	10,000	1,520	4.00	0.06	8,000	910	4.00	0.04
2.5	5	9,600	2,330	5.00	0.10	8,000	1,550	5.00	0.08	6,400	930	5.00	0.05
3	6	8,000	2,330	6.00	0.12	6,600	1,540	6.00	0.09	5,300	930	6.00	0.06
4	8	6,000	2,400	8.00	0.16	5,000	1,600	8.00	0.12	4,000	960	8.00	0.08
5	10	4,800	2,400	10.00	0.20	4,000	1,600	10.00	0.15	3,200	960	10.00	0.10
6	12	4,000	2,280	12.00	0.24	3,300	1,500	12.00	0.18	2,700	920	12.00	0.12

	55 - 62 HRC	62 - 66 HRC	66 - 72 HRC
Slant angle for helical boring	1°	0.5°	0.2°
Feed rate for helical boring	70% of side cutting conditions		

※ Set the hole diameter for helical boring to between 1.6 and 2.0 times the tool diameter.
 ※ Set the maximum depth for helical boring to the tool diameter or smaller ($\leq 1D$).

- 【Note】 ① Use the appropriate coolant for the work material and machining shape.
 ② Use a highly rigid and accurate machine as possible.
 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.

Finishing

R Ball radius	Dc Tool dia.	Tool Steels (25 ~ 35HRC) HPM7, SCM440				Pre-Hardened Steels (35 ~ 45HRC) HPM-MAGIC, CENA1				Hardened Steels (45 ~ 55HRC) SKD61, HPM38, DAC-MAGIC			
		Vc=280m/min				Vc=250m/min				Vc=210m/min			
		n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm
0.5	1	60,000	3,240	0.02 ~ 0.05	0.02	60,000	2,970	0.02 ~ 0.05	0.02	60,000	2,700	0.02 ~ 0.05	0.02
0.75	1.5	60,000	4,860	0.02 ~ 0.07	0.03	53,100	3,940	0.02 ~ 0.07	0.03	44,600	3,010	0.02 ~ 0.07	0.03
1	2	44,600	4,820	0.02 ~ 0.10	0.04	39,800	3,940	0.02 ~ 0.10	0.04	33,400	3,010	0.02 ~ 0.10	0.04
1.25	2.5	35,700	5,030	0.05 ~ 0.12	0.05	31,800	4,110	0.05 ~ 0.12	0.05	26,800	3,150	0.05 ~ 0.12	0.05
1.5	3	29,700	5,030	0.05 ~ 0.15	0.06	26,500	4,110	0.05 ~ 0.15	0.06	22,300	3,140	0.05 ~ 0.15	0.06
2	4	22,300	5,080	0.05 ~ 0.20	0.08	19,900	4,160	0.05 ~ 0.20	0.08	16,700	3,170	0.05 ~ 0.20	0.08
2.5	5	17,800	5,180	0.05 ~ 0.25	0.1	15,900	4,240	0.05 ~ 0.25	0.1	13,400	3,250	0.05 ~ 0.25	0.10
3	6	14,900	5,200	0.05 ~ 0.3	0.12	13,300	4,260	0.05 ~ 0.3	0.12	11,100	3,230	0.05 ~ 0.3	0.12
4	8	11,100	5,330	0.05 ~ 0.4	0.16	10,000	4,400	0.05 ~ 0.4	0.16	8,400	3,360	0.05 ~ 0.4	0.16
5	10	8,900	5,340	0.05 ~ 0.5	0.2	8,000	4,400	0.05 ~ 0.5	0.2	6,700	3,350	0.05 ~ 0.5	0.20
6	12	7,400	5,060	0.05 ~ 0.6	0.24	6,600	4,140	0.05 ~ 0.6	0.24	5,600	3,190	0.05 ~ 0.6	0.24

R Ball radius	Dc Tool dia.	Hardened Steels (55 ~ 62HRC) SKD11, YXR3				Hardened Steels (62 ~ 66HRC) HAP40, YXR7, SKH51				Hardened Steels (66 ~ 72HRC) HAP70, HAP72			
		Vc=160m/min				Vc=140m/min				Vc=120m/min			
		n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm	n min ⁻¹	Vf mm/min	ap mm	ae mm
0.5	1	51,000	1,840	0.02 ~ 0.05	0.02	44,600	1,300	0.02 ~ 0.05	0.02	38,200	950	0.02 ~ 0.05	0.02
0.75	1.5	34,000	1,840	0.02 ~ 0.07	0.03	29,700	1,300	0.02 ~ 0.07	0.03	25,500	950	0.02 ~ 0.07	0.03
1	2	25,500	1,840	0.02 ~ 0.10	0.04	22,300	1,300	0.02 ~ 0.10	0.04	19,100	950	0.02 ~ 0.10	0.04
1.25	2.5	20,400	1,920	0.05 ~ 0.12	0.05	17,800	1,360	0.05 ~ 0.12	0.05	15,300	990	0.05 ~ 0.12	0.05
1.5	3	17,000	1,920	0.05 ~ 0.15	0.06	14,900	1,370	0.05 ~ 0.15	0.06	12,700	980	0.05 ~ 0.15	0.06
2	4	12,700	1,930	0.05 ~ 0.20	0.08	11,100	1,370	0.05 ~ 0.20	0.08	9,600	1,000	0.05 ~ 0.20	0.08
2.5	5	10,200	1,980	0.05 ~ 0.25	0.10	8,900	1,400	0.05 ~ 0.25	0.10	7,600	1,010	0.05 ~ 0.25	0.10
3	6	8,500	1,980	0.05 ~ 0.3	0.12	7,400	1,400	0.05 ~ 0.3	0.12	6,400	1,020	0.05 ~ 0.3	0.12
4	8	6,400	2,050	0.05 ~ 0.4	0.16	5,600	1,460	0.05 ~ 0.4	0.16	4,800	1,060	0.05 ~ 0.4	0.16
5	10	5,100	2,040	0.05 ~ 0.5	0.20	4,500	1,460	0.05 ~ 0.5	0.20	3,800	1,050	0.05 ~ 0.5	0.20
6	12	4,200	1,920	0.05 ~ 0.6	0.24	3,700	1,370	0.05 ~ 0.6	0.24	3,200	1,000	0.05 ~ 0.6	0.24

- 【Note】 ① Use the appropriate coolant for the work material and machining shape.
 ② Use a highly rigid and accurate machine as possible.
 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.

END MILL

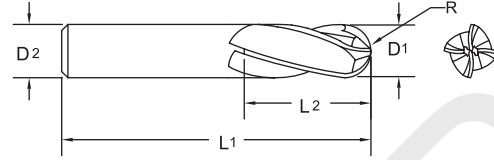
ดอกเอ็นมิลล์



เอ็นมิลล์ - รุ่น 140

TuffCut® GP

ENDMILLS - STANDARD LENGTH SERIES 140



Manufacturing with a full ball radius end. Designed for milling fillets or similar rounded corners in the bottom of cut. Ideal for most ferrous metal applications.

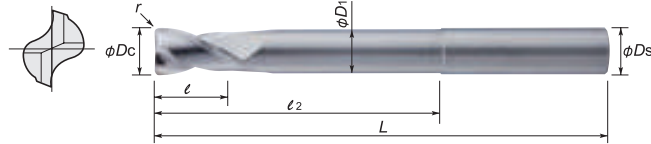
	Order No.	EDP	Diameter		Shank	OAL	Flute Length
			D1		D2	L1	L2
			mm	Decimal	mm	mm	mm
Ball หัวบอล	14003940A	14108	1.0	.0394	3.0	38	3.0
Radius หัวก้นมุม R	14005910A	14109	1.5	.0591	3.0	38	6.0
Square หัวสี่	14007870A	14110	2.0	.0787	3.0	38	9.0
Taper Ball หัวเตเปอร์บอล	14009840A	14111	2.5	.0984	3.0	38	12.0
Roughing	14011810A	14000	3.0	.1181	3.0	38	12.0
	14015750A	14004	4.0	.1575	4.0	51	14.0
	14019680A	14008	5.0	.1968	5.0	51	20.0
	14023620A	14010	6.0	.2362	6.0	64	20.0
	14031500A	14016	8.0	.3150	8.0	64	20.0
	14039370A	14020	10.0	.3937	10.0	70	25.0
	14047240A	14024	12.0	.4724	12.0	76	25.0
	14062990A	14030	16.0	.6299	16.0	89	30.0
	14078740A	14034	20.0	.7874	20.0	102	38.0
	14098430A	54004	25.0	.9843	25.0	102	40.0

D1	Tolerance h10
1.00-3.00	+.000/- .040
>3.00-6.00	+.000/- .048
>6.00-10.00	+.000/- .058
>10.00-18.00	+.000/- .070
>18.00-25.00	+.000/- .084

R	Tolerance
≤1.5	+.025/- .025
1.6-3.0	+.050/- .050
>3.0	+.075/- .075



ดอกเอ็นมิลล์

EPOCH MIRUS TYPE A for ALUMINIUM [2Flutes type]**EMXA2** 〇〇-〇〇-〇〇

Non Coat

Manufacture stocked items



0 ~ -0.02



$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 18$: 0 ~ -0.008
 $18 < D_s$: 0 ~ -0.009

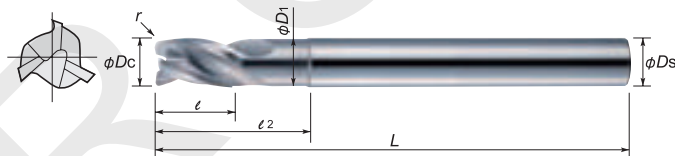
(mm)

Ultra high efficiency end mill for aliminum.

Item Code	Stock	Size (mm)						
		Dc Tool Dia.	r Corner radius	ℓ Flute Length	ℓ Under neck length	D1 Neck dia.	L Overall length	Ds Shank Dia.
Radius	EMXA2100-45-10	10		8	45	9.5	80	10
	EMXA2120-60-10	12	1.0	10	60	11.5	100	12
	EMXA2160-75-10	16		13	75	15.5	120	16
	EMXA2200-80-30	20	3.0	16	80	19.5	125	20
	EMXA2250-100-30	25		20	100	24.5	150	25

◎ : Manufacturer stocked items.

ดอกเอ็นมิลล์

EPOCH MIRUS TYPE A for ALUMINIUM [3Flutes type]**EMXA3** 〇〇-〇〇-〇〇

Non Coat

Manufacture stocked items



0 ~ -0.02



$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 18$: 0 ~ -0.008
 $18 < D_s$: 0 ~ -0.009

(mm)

Ultra high efficiency end mill for aliminum.

Item Code	Stock	Size (mm)						
		Dc Tool Dia.	r Corner radius	ℓ Flute Length	ℓ Under neck length	D1 Neck dia.	L Overall length	Ds Shank Dia.
Radius	EMXA3030-9-05	3		4.5	9	2.9	60	6
	EMXA3040-12-05	4		6	12	3.75	60	6
	EMXA3050-15-05	5	0.5	7.5	15	4.75	80	6
	EMXA3060-18-05	6		9	18	5.75	80	6
	EMXA3080-24-05	8		12	24	7.5	90	8
	EMXA3100-30-10	10		15	30	9.5	100	10
	EMXA3120-36-10	12	1.0	18	36	11.5	120	12
	EMXA3160-45-10	16		19	45	15.5	90	16

◎ : Manufacturer stocked items.

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH POWER MILL

EPP4



Regular, Corner Radius



Ø3 ~ Ø6 : 0 ~ -0.015
Ø8 ~ Ø25 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

	Item Code	Stock	Size (mm)			
			Tool Dia.	Corner radius	Flute Length	Overall length
Ball หัวบอล						Shank Dia.
Radius หัวก้นมุม R	EPP4030-02	●	3	0.2	8	60
	EPP4030-05	●	3	0.5	8	60
Square หัวตัด	EPP4040-02	●	4	0.2	11	60
	EPP4040-05	●	4	0.5	11	60
Taper Ball หัวเตเปอร์บอล	EPP4040-10	●	4	1	11	60
	EPP4050-02	●	5	0.2	13	60
Roughing	EPP4050-05	●	5	0.5	13	60
	EPP4050-10	●	5	1	13	60
	EPP4060-03	●	6	0.3	13	60
	EPP4060-05	●	6	0.5	13	60
	EPP4060-10	●	6	1	13	60
	EPP4060-15	●	6	1.5	13	60
	EPP4080-03	●	8	0.3	19	75
	EPP4080-05	●	8	0.5	19	75
	EPP4080-10	●	8	1	19	75
	EPP4080-15	●	8	1.5	19	75
	EPP4080-20	●	8	2	19	75
	EPP4100-03	●	10	0.3	22	80
	EPP4100-05	●	10	0.5	22	80
	EPP4100-10	●	10	1	22	80
	EPP4100-15	●	10	1.5	22	80
	EPP4100-20	●	10	2	22	80
	EPP4120-05	●	12	0.5	26	100
	EPP4120-10	●	12	1	26	100
	EPP4120-15	●	12	1.5	26	100
	EPP4120-20	●	12	2	26	100
	EPP4120-30	●	12	3	26	100
	EPP4160-10	●	16	1	32	110
	EPP4160-15	●	16	1.5	32	110
	EPP4160-20	●	16	2	32	110
	EPP4160-30	●	16	3	32	110
	EPP4200-10	●	20	1	38	125
	EPP4200-15	●	20	1.5	38	125
	EPP4200-20	●	20	2	38	125
	EPP4200-30	●	20	3	38	125
	EPP4250-10	□	25	1	63	140
	EPP4250-15	□	25	1.5	63	140
	EPP4250-20	□	25	2	63	140
	EPP4250-30	□	25	3	63	140

● : Stocked Items.

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

Please refer to page 597-598 for Condition.



ดอกเอ็นมิลล์

EPOCH POWER MILL

EPPL4



Long, Corner Radius



Ø6 : 0~-0.015
Ø8 ~ Ø25 : 0~-0.02



Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds ≤ 18 : 0~-0.011
18 < Ds : 0~-0.013

(mm)

Item Code	Stock	Size (mm)				
		Tool Dia.	Corner radius	Flute Length	Overall length	Shank Dia.
EPPL4060-05	●	6	0.5	25	70	6
EPPL4060-10	●	6	1	25	70	6
EPPL4080-05	●	8	0.5	35	90	8
EPPL4080-10	●	8	1	35	90	8
EPPL4080-15	●	8	1.5	35	90	8
EPPL4080-20	●	8	2	35	90	8
EPPL4100-05	●	10	0.5	45	100	10
EPPL4100-10	●	10	1	45	100	10
EPPL4100-15	●	10	1.5	45	100	10
EPPL4100-20	●	10	2	45	100	10
EPPL4120-05	●	12	0.5	55	120	12
EPPL4120-10	●	12	1	55	120	12
EPPL4120-15	●	12	1.5	55	120	12
EPPL4120-20	●	12	2	55	120	12
EPPL4120-30	●	12	3	55	120	12
EPPL4160-10	●	16	1	65	135	16
EPPL4160-15	●	16	1.5	65	135	16
EPPL4160-20	●	16	2	65	135	16
EPPL4160-30	●	16	3	65	135	16
EPPL4200-10	●	20	1	75	155	20
EPPL4200-15	●	20	1.5	75	155	20
EPPL4200-20	●	20	2	75	155	20
EPPL4200-30	●	20	3	75	155	20
EPPL4250-10	□	25	1	100	200	25
EPPL4250-15	□	25	1.5	100	200	25
EPPL4250-20	□	25	2	100	200	25
EPPL4250-30	□	25	3	100	200	25

● : Stocked Items.

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

Please refer to page 599 for Condition.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

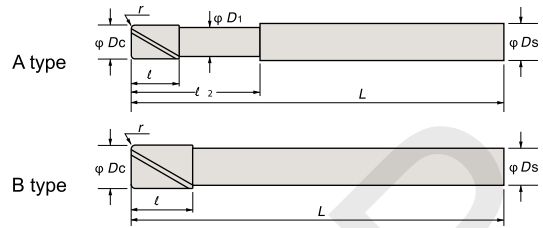
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH POWER MILL

EPPLS4



Long Shank, Corner Radius



Ø3 ~ Ø6 : 0~-0.015
Ø7 ~ Ø17 : 0~-0.02



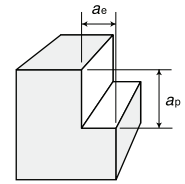
Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds : 0~-0.011

(mm)

Item Code	Stock	Size (mm)							Type
		Tool Dia.	Corner radius	Flute Length	D1 Neck Dia.	L2 Under Neck Length	L Overall length	shank Dia.	
EPPLS4030-02	●	3	0.2	4.5	2.9	10.5	80	6	A
EPPLS4030-05	●	3	0.5	4.5	2.9	10.5	80	6	A
EPPLS4040-02	●	4	0.2	6	3.8	14	80	6	A
EPPLS4040-05	●	4	0.5	6	3.8	14	80	6	A
EPPLS4050-02	●	5	0.2	7.5	4.8	17.5	100	6	A
EPPLS4050-05	●	5	0.5	7.5	4.8	17.5	100	6	A
EPPLS4060-03	●	6	0.3	9	-	-	120	5	B
EPPLS4060-05	●	6	0.5	9	-	-	120	5	B
EPPLS4060-10	●	6	1	9	-	-	120	5	B
EPPLS4070-03	●	7	0.3	9	-	-	120	6	B
EPPLS4070-05	●	7	0.5	9	-	-	120	6	B
EPPLS4070-10	●	7	1	9	-	-	120	6	B
EPPLS4080-05	●	8	0.3	12	-	-	135	7	B
EPPLS4080-10	●	8	0.5	12	-	-	135	7	B
EPPLS4080-15	●	8	1	12	-	-	135	7	B
EPPLS4090-05	●	9	0.5	12	-	-	135	8	B
EPPLS4090-10	●	9	1	12	-	-	135	8	B
EPPLS4090-15	●	9	1.5	12	-	-	135	8	B
EPPLS4100-05	●	10	0.5	15	-	-	150	9	B
EPPLS4100-10	●	10	1	15	-	-	150	9	B
EPPLS4100-15	●	10	1.5	15	-	-	150	9	B
EPPLS4110-05	●	11	0.5	15	-	-	150	10	B
EPPLS4110-10	●	11	1	15	-	-	150	10	B
EPPLS4110-15	●	11	1.5	15	-	-	150	10	B
EPPLS4120-05	●	12	0.5	18	-	-	160	11	B
EPPLS4120-10	●	12	1	18	-	-	160	11	B
EPPLS4120-15	●	12	1.5	18	-	-	160	11	B
EPPLS4120-20	●	12	2	18	-	-	160	11	B
EPPLS4130-05	●	13	0.5	18	-	-	160	12	B
EPPLS4130-10	●	13	1	18	-	-	160	12	B
EPPLS4130-15	●	13	1.5	18	-	-	160	12	B
EPPLS4130-20	●	13	2	18	-	-	160	12	B
EPPLS4160-10	●	16	1	24	-	-	180	15	B
EPPLS4160-15	●	16	1.5	24	-	-	180	15	B
EPPLS4160-20	●	16	2	24	-	-	180	15	B
EPPLS4170-10	●	17	1	24	-	-	180	16	B
EPPLS4170-15	●	17	1.5	24	-	-	180	16	B
EPPLS4170-20	●	17	2	24	-	-	180	16	B

● : Stocked Items.

Please refer to page 600 for Condition.



Recommended cutting conditions

EPP-CR

Side Milling

Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)								
				Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
Cast Iron (150 ~ 200HB) FC250	High Speed	ap=1.5Dc	min ⁻¹	12,700	9,550	7,640	6,370	4,770	3,820	3,180	2,390	1,910
		ae=0.1Dc	mm / min	1,020	1,150	1,220	1,270	1,340	1,220	1,140	960	920
	General	ap=1.5Dc	min ⁻¹	10,600	7,960	6,370	5,310	3,980	3,180	2,650	1,990	1,590
		ae=0.15Dc	mm / min	850	960	1,020	1,060	1,110	1,020	950	800	760
Carbon Steels (180 ~ 220HB) SS400, S50C	High Speed	ap=1.5Dc	min ⁻¹	12,700	9,550	7,640	6,370	4,770	3,820	3,180	2,390	1,910
		ae=0.1Dc	mm / min	1,020	1,150	1,220	1,270	1,340	1,220	1,140	960	920
	General	ap=1.5Dc	min ⁻¹	10,600	7,690	6,370	5,310	3,980	3,180	2,650	1,990	1,590
		ae=0.1Dc	mm / min	850	960	1,020	1,060	1,110	1,020	950	800	760
Alloy Steels (200 ~ 250HB) SCM440, SNCM	High Speed	ap=1.5Dc	min ⁻¹	10,600	7,960	6,370	5,310	3,980	3,180	2,650	1,990	1,590
		ae=0.1Dc	mm / min	850	960	1,020	1,060	1,110	1,020	950	800	760
	General	ap=1.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
		ae=0.1Dc	mm / min	680	790	810	850	890	820	760	640	610
Stainless Steels, Tool Steels (25 ~ 35HRC) SUS304, SKD	High Speed	ap=1.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
		ae=0.1Dc	mm / min	510	640	710	680	640	610	590	540	510
	General	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,910	1,590	1,190	950
		ae=0.1Dc	mm / min	380	480	530	510	480	460	450	400	380
Pre-Hardened Steels (35 ~ 45HRC) HPM1, NAK55	High Speed	ap=1.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
		ae=0.1Dc	mm / min	510	640	710	680	640	610	590	540	510
	General	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,910	1,590	1,190	950
		ae=0.1Dc	mm / min	380	480	530	510	480	460	450	400	380
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,910	1,590	1,190	950
		ae=0.05Dc	mm / min	250	380	460	450	430	420	380	330	300
	General	ap=1.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
		ae=0.05Dc	mm / min	170	250	310	300	290	280	250	220	200
Titanium Alloy Ti-6Al-4V	High Speed	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,190	1,590	1,190	950
		ae=0.05Dc	mm / min	250	380	460	450	430	420	380	330	300
	General	ap=1.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
		ae=0.05Dc	mm / min	170	250	310	300	290	280	250	220	200
Super Heat-resistant Steels Inconel Hasteloy	High Speed	ap=1.5Dc	min ⁻¹	2,650	1,990	1,590	1,330	990	800	660	500	400
		ae=0.05Dc	mm / min	110	160	190	190	180	180	160	140	130
	General	ap=1.5Dc	min ⁻¹	2,120	1,590	1,270	1,060	800	640	530	400	320
		ae=0.05Dc	mm / min	85	130	150	150	140	140	130	110	100

[Note]

- ① Down-cutting is recommended.
- ② Use generally dry (air-blow) or oil-mist coolant, especially at the high-speed machining.
- ③ Oil base coolant is recommended for machining stainless steels and heat-resistant steels.
- ④ Use a machine tool with rigidity and rigid set-up, to machine stably.
- ⑤ When the revolution speed is not enough, reduce the revolution speed and table speed at the same ratio.
- ⑥ Adjust the revolution speed and table speed, according to cutting conditions such as machining shape, rigidity of machine tool, over-hang and so on.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

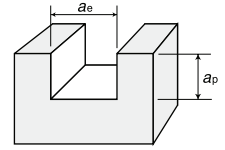
ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

Recommended cutting conditions

EPP-CR

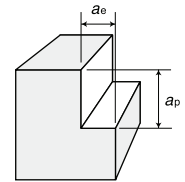


Slotting

DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)								
					Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
CBN END MILL CBN เอ็นมิลล์	Cast Iron (150 ~ 200HB) FC250	High Speed	ap≤0.5Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
ae=1Dc			mm / min	420	480	510	530	560	510	480	400	380	
Carbide Endmill เอ็นมิลล์คาร์ไบด์		General	ap≤1Dc	min ⁻¹	3,180	2,390	1,910	1,590	1,190	950	800	600	480
			ae=1Dc	mm / min	250	290	310	320	330	300	290	240	230
HSS Endmill เอ็นมิลล์ไฮสปีด	Carbon Steels (180 ~ 220HB) SS400, S50C	High Speed	ap≤0.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
ae=1Dc			mm / min	680	760	810	850	890	820	760	640	610	
Ball หัวบอล		General	ap≤1Dc	min ⁻¹	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,390	1,110
			ae=1Dc	mm / min	590	670	710	740	780	710	670	560	530
Radius หัวกัศม R	Alloy Steels (200 ~ 250HB) SCM440, SNCM	High Speed	ap≤0.5Dc	min ⁻¹	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,390	1,110
			ae=1Dc	mm / min	590	670	710	740	780	710	670	560	530
		General	ap≤1Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
			ae=1Dc	mm / min	420	480	510	530	560	510	480	400	380
Square หัวตัด	Stainless Steels, Tool Steels (25 ~ 35HRC) SUS304, SKD	High Speed	ap≤0.2Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
			ae=1Dc	mm / min	320	400	450	420	400	380	370	340	320
		General	ap≤0.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
			ae=1Dc	mm / min	250	320	360	340	320	300	300	270	260
Taper Ball หัวเตปเปอร์บอล	Pre-Hardened Steels (35 ~ 45HRC) HPM1, NAK55	High Speed	ap≤0.2Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
			ae=1Dc	mm / min	320	400	450	420	400	380	370	340	320
		General	ap≤0.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
			ae=1Dc	mm / min	250	320	360	340	320	300	300	270	260
Roughing	Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	ap=	min ⁻¹									
			ae=	mm / min									
		General	ap≤0.2Dc	min ⁻¹	2,120	1,590	1,270	1,060	800	640	530	400	320
			ae=1Dc	mm / min	85	130	150	150	140	140	130	110	100
	Titanium Alloy Ti-6Al-4V	High Speed	ap=	min ⁻¹									
			ae=	mm / min									
		General	ap≤0.2Dc	min ⁻¹	3,180	2,390	1,910	1,590	1,190	950	800	600	480
			ae=1Dc	mm / min	130	190	230	220	210	210	190	170	150
	Super Heat-resistant Steels Inconel Hasteloy	High Speed	ap=	min ⁻¹									
			ae=	mm / min									
		General	ap≤0.2Dc	min ⁻¹	1,590	1,190	950	800	600	480	400	300	240
			ae=1Dc	mm / min	65	95	110	110	110	110	95	85	75

[Note]

- ① Use generally dry (air-blow) or oil-mist coolant, especially at the high-speed machining.
- ② Oil base coolant is recommended for machining stainless steels and heat-resistant steels.
- ③ Use a machine tool with rigidity and rigid set-up, to machine stably.
- ④ When the revolution speed is not enough, reduce the revolution speed and table speed at the same ratio.
- ⑤ Adjust the revolution speed and table speed, according to cutting conditions such as machining shape, rigidity of machine tool, over-hang and so on.



Recommended cutting conditions

EPPL-CR

Side milling

Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)					
				Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
Cast Iron (150 ~ 200HB) FC250	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=0.02Dc	min ⁻¹ mm / min	2,650 530	1,990 560	1,590 510	1,330 480	990 400	800 380
Carbon Steels (180 ~ 220HB) SS400, S50C	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=0.02Dc	min ⁻¹ mm / min	2,650 530	1,990 560	1,590 510	1,330 480	990 400	800 380
Alloy Steels (200 ~ 250HB) SCM440, SNCM	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=1Dc	min ⁻¹ mm / min	2,120 420	1,590 450	1,270 410	1,060 380	800 320	640 310
Stainless Steels, Tool Steels (25 ~ 35HRC) SUS304, SKD	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=1Dc	min ⁻¹ mm / min	1,590 250	1,190 240	950 230	800 220	600 200	480 190
Pre-Hardened Steels (35 ~ 45HRC) HPM1, NAK55	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=0.01Dc	min ⁻¹ mm / min	1,590 250	1,190 240	950 230	800 220	600 200	480 190
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=0.01Dc	min ⁻¹ mm / min	1,060 150	800 140	640 140	530 130	400 110	320 100
Titanium Alloy Ti-6Al-4V	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=0.01Dc	min ⁻¹ mm / min	1,060 150	800 140	640 140	530 130	400 110	320 100
Super Heat-resistant Steels Inconel Hasteloy	High Speed	ap= ae=	min ⁻¹ mm / min						
	General	ap=3Dc ae=0.01Dc	min ⁻¹ mm / min	530 75	400 70	320 70	270 65	200 55	160 50

【Note】

- ① Use generally dry (air-blow) or oil-mist coolant, especially at the high-speed machining.
- ② Oil base coolant is recommended for machining stainless steels and heat-resistant steels.
- ③ Use a machine tool with rigidity and rigid set-up, to machine stably.
- ④ When the revolution speed is not enough, reduce the revolution speed and table speed at the same ratio.
- ⑤ Adjust the revolution speed and table speed, according to cutting conditions such as machining shape, rigidity of machine tool, over-hang and so on.

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

END MILL

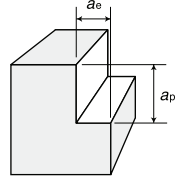
ดอกเอ็นมิลล์



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Recommended cutting conditions

EPPLS-CR



Side Milling

DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)							
					Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16
CBN END MILL CBN เอ็นมิลล์	Cast Iron (150 ~ 200HB) FC250	High Speed	ap=	min ⁻¹								
Carbide Endmill เอ็นมิลล์คาร์ไบด์			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	5,130	3,980	3,180	2,650	1,990	1,590	1,330	990
ae=0.1Dc	mm / min		420	480	510	530	560	510	480	400		
HSS Endmill เอ็นมิลล์ไฮสปีด	Carbon Steels (180 ~ 220HB) SS400, S50C	High Speed	ap=	min ⁻¹								
Ball หัวบอล			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990
ae=0.1Dc	mm / min		420	480	510	530	560	510	480	400		
Radius หัวคัมม R	Alloy Steels (200 ~ 250HB) SCM440, SNCM	High Speed	ap=	min ⁻¹								
			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800
ae=0.1Dc	mm / min		340	380	410	420	450	410	380	320		
Square หัวสี่	Stainless Steels, Tool Steels (25 ~ 35HRC) SUS304, SKD	High Speed	ap=	min ⁻¹								
			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	3,180	2,390	1,910	1,590	1,190	950	800	600
ae=0.1Dc	mm / min		190	240	270	250	240	230	220	200		
Taper Ball หัวเตเปอร์บอล	Pre-Hardened Steels (35 ~ 45HRC) HPM1, NAK55	High Speed	ap=	min ⁻¹								
			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	3,180	2,390	1,910	1,590	1,190	950	800	600
ae=0.1Dc	mm / min		190	240	270	250	240	230	220	200		
Roughing	Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	ap=	min ⁻¹								
			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	2,120	1,590	1,270	1,060	800	640	530	400
ae=0.05Dc	mm / min		85	130	150	150	140	140	130	110		
Ball หัวบอล	Titanium Alloy Ti-6Al-4V	High Speed	ap=	min ⁻¹								
			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	2,120	1,590	1,270	1,060	800	640	530	400
ae=0.05Dc	mm / min		85	130	150	150	140	140	130	110		
Taper Ball หัวเตเปอร์บอล	Super Heat-resistant Steels Inconel Hasteloy	High Speed	ap=	min ⁻¹								
			ae=	mm / min								
		General	ap=1.5Dc	min ⁻¹	1,060	800	640	530	400	320	270	200
ae=0.05Dc	mm / min		42	65	75	75	70	70	65	55		

[Note]

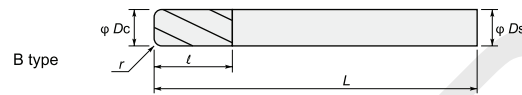
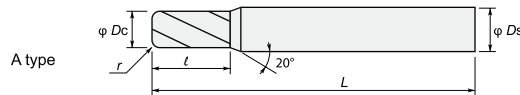
- ① Down-cutting is recommended.
- ② Use generally dry (air-blow) or oil-mist coolant, especially at the high-speed machining.
- ③ Oil base coolant is recommended for machining stainless steels and heat-resistant steels.
- ④ Use a machine tool with rigidity and rigid set-up, to machine stably.
- ⑤ When the revolution speed is not enough, reduce the revolution speed and table speed at the same ratio.
- ⑥ Adjust the revolution speed and table speed, according to cutting conditions such as machining shape, rigidity of machine tool, over-hang and so on.



ดอกเอ็นมิลล์

EPOCH SUS MULTI
EPSM4 R-0.1-PN

4Flutes



Regular, Radius type


 $\phi 1 \sim \phi 6 : 0 \sim -0.015$
 $\phi 7 \sim \phi 20 : 0 \sim -0.02$

 $\phi 6 \sim 12$ $\phi 16 \sim 20$
 $Ds \leq 6 : 0 \sim -0.005$
 $6 < Ds \leq 10 : 0 \sim -0.006$
 $10 < Ds \leq 12 : 0 \sim -0.008$
 $Ds = 16 : 0 \sim -0.011$
 $Ds = 20 : 0 \sim -0.013$

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	r Corner radius	Flute Length	Overall length	Ds Shank Dia.		
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	●	2	0.2	5	56	6	4	A
EPSM4030-R0.2-PN	●	3	0.2	7.5	56	6	4	A
EPSM4030-R0.5-PN	●	3	0.5	7.5	56	6	4	A
EPSM4040-R0.2-PN	●	4	0.2	10	56	6	4	A
EPSM4040-R0.5-PN	●	4	0.5	10	56	6	4	A
EPSM4040-R1.0-PN	●	4	1	10	56	6	4	A
EPSM4050-R0.2-PN	●	5	0.3	12.5	56	6	4	A
EPSM4050-R0.5-PN	●	5	0.5	12.5	56	6	4	A
EPSM4050-R1.0-PN	●	5	1	12.5	56	6	4	A
EPSM4060-R0.3-PN	●	6	0.3	15	56	6	4	A
EPSM4060-R0.5-PN	●	6	0.5	15	56	6	4	B
EPSM4060-R1.0-PN	●	6	1	15	56	6	4	B
EPSM4060-R1.5-PN	●	6	1.5	15	56	6	4	B
EPSM4070-R0.3-PN	●	7	0.3	17.5	63	8	4	A
EPSM4070-R0.5-PN	●	7	0.5	17.5	63	8	4	A
EPSM4070-R1.0-PN	●	7	1	17.5	63	8	4	A
EPSM4080-R0.3-PN	●	8	0.3	20	63	8	4	B
EPSM4080-R0.5-PN	●	8	0.5	20	63	8	4	B
EPSM4080-R1.0-PN	●	8	1	20	63	8	4	B
EPSM4080-R1.5-PN	●	8	1.5	20	63	8	4	B
EPSM4080-R2.0-PN	●	8	2	20	63	8	4	B
EPSM4090-R0.3-PN	●	9	0.3	22.5	74	10	4	A
EPSM4090-R0.5-PN	●	9	0.5	22.5	74	10	4	A
EPSM4090-R1.0-PN	●	9	1	22.5	74	10	4	A
EPSM4100-R0.3-PN	●	10	0.3	25	74	10	4	B
EPSM4100-R0.5-PN	●	10	0.5	25	74	10	4	B
EPSM4100-R1.0-PN	●	10	1	25	74	10	4	B
EPSM4100-R1.5-PN	●	10	1.5	25	74	10	4	B
EPSM4100-R2.0-PN	●	10	2	25	74	10	4	B
EPSM4110-R0.3-PN	●	11	0.3	27.5	86	12	4	A
EPSM4110-R0.5-PN	●	11	0.5	27.5	86	12	4	A
EPSM4110-R1.0-PN	●	11	1	27.5	86	12	4	A
EPSM4120-R0.3-PN	●	12	0.3	30	86	12	4	B
EPSM4120-R0.5-PN	●	12	0.5	30	86	12	4	B
EPSM4120-R1.0-PN	●	12	1	30	86	12	4	B
EPSM4120-R1.5-PN	●	12	1.5	30	86	12	4	B
EPSM4120-R2.0-PN	●	12	2	30	86	12	4	B
EPSM4120-R2.5-PN	●	12	2.5	30	86	12	4	B
EPSM4120-R3.0-PN	●	12	3	30	86	12	4	B
EPSM4130-R0.5-PN	□	13	0.5	32.5	105	16	4	A
EPSM4130-R1.0-PN	□	13	1	32.5	105	16	4	A

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

END MILL

ดอกเอ็นมิลล์



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END MILL
เอ็นมิลล์

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งมุม R

Square

หัวสี่

Taper Ball

หัวเตเปอร์บอล

Roughing

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	r Corner radius	ℓ Flute Length	L Overall length	Ds Shank Dia.		
EPSM4130-R1.5-PN	□	13	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	□	15	3	35	105	16	4	A
EPSM4150-R0.5-PN	□		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

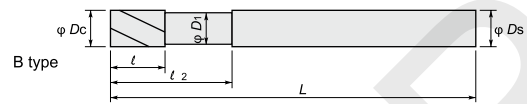
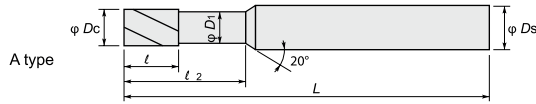
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ดอกเอ็นมิลล์

EPOCH SUS MULTI
EPSM4 -R-.PN

4Flutes



Under neck 5 Dc, Radius type



$\phi 1 \sim \phi 6$: 0 ~ -0.015
 $\phi 7 \sim \phi 20$: 0 ~ -0.02



h5 h6
 0.6-12 0.16-20

Ds ≤ 6 : 0 ~ -0.005
 6 < Ds ≤ 10 : 0 ~ -0.006
 10 < Ds ≤ 12 : 0 ~ -0.008
 Ds = 16 : 0 ~ -0.011
 Ds = 20 : 0 ~ -0.013

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)							No. of flutes	Type
		Dc Tool Dia.	r Corner radius	Flute Length	Under neck length	D1 Neck Dia.	L Overall length	Ds Shank Dia.		
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	●	2	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	●	3	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	●	4	0.5	6	20	3.7	68	6	4	A
EPSM4040-20-R1.0-PN	●	4	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	●	5	0.5	7.5	25	4.6	68	6	4	A
EPSM4050-25-R1.0-PN	●	5	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	●	6	0.5	9	30	5.5	68	6	4	B
EPSM4060-30-R1.0-PN	●	6	1	9	30	5.5	68	6	4	B
EPSM4060-30-R1.5-PN	●	6	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	●	7	0.5	10.5	35	6.4	80	8	4	A
EPSM4070-35-R1.0-PN	●	7	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	●	8	0.5	12	40	7.3	80	8	4	B
EPSM4080-40-R1.0-PN	●	8	1	12	40	7.3	80	8	4	B
EPSM4080-40-R1.5-PN	●	8	1.5	12	40	7.3	80	8	4	B
EPSM4080-40-R2.0-PN	●	8	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	●	9	0.5	13.5	45	8.3	94	10	4	A
EPSM4090-45-R1.0-PN	●	9	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	●	10	0.5	15	50	9.1	94	10	4	B
EPSM4100-50-R1.0-PN	●	10	1	15	50	9.1	94	10	4	B
EPSM4100-50-R1.5-PN	●	10	1.5	15	50	9.1	94	10	4	B
EPSM4100-50-R2.0-PN	●	10	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	●	11	0.5	16.5	55	10.2	110	12	4	A
EPSM4110-55-R1.0-PN	●	11	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	●	12	0.5	18	60	11	110	12	4	B
EPSM4120-60-R1.0-PN	●	12	1	18	60	11	110	12	4	B
EPSM4120-60-R1.5-PN	●	12	1.5	18	60	11	110	12	4	B
EPSM4120-60-R2.0-PN	●	12	2	18	60	11	110	12	4	B
EPSM4120-60-R2.5-PN	●	12	2.5	18	60	11	110	12	4	B
EPSM4120-60-R3.0-PN	●	12	3	18	60	11	110	12	4	B

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

● : Stocked item

END MILL

ดอกเอ็นมิลล์



END MILL
เอ็นมิลล์

	Item Code	Stock	Size (mm)						No. of flutes	Type
			Dc Tool Dia.	r Corner radius	ℓ Flute Length	ℓ2 Under neck length	D1 Neck Dia.	L Overall length		
DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	EPSM4130-65-R0.5-PN	☐	13	0.5	19.5	65	11.7	125	4	A
	EPSM4130-65-R1.0-PN	☐		1	19.5	65	11.7	125	4	A
	EPSM4130-65-R1.5-PN	☐		1.5	19.5	65	11.7	125	4	A
	EPSM4130-65-R2.0-PN	☐		2	19.5	65	11.7	125	4	A
	EPSM4130-65-R3.0-PN	☐		3	19.5	65	11.7	125	4	A
CBN END MILL CBN เอ็นมิลล์	EPSM4140-70-R0.5-PN	☐	14	0.5	21	70	12.7	125	4	A
	EPSM4140-70-R1.0-PN	☐		1	21	70	12.7	125	4	A
	EPSM4140-70-R1.5-PN	☐		1.5	21	70	12.7	125	4	A
	EPSM4140-70-R2.0-PN	☐		2	21	70	12.7	125	4	A
	EPSM4140-70-R3.0-PN	☐		3	21	70	12.7	125	4	A
Carbide Endmill เอ็นมิลล์คาร์ไบด์	EPSM4150-75-R0.5-PN	☐	15	0.5	22.5	75	13.6	135	4	A
	EPSM4150-75-R1.0-PN	☐		1	22.5	75	13.6	135	4	A
	EPSM4150-75-R1.5-PN	☐		1.5	22.5	75	13.6	135	4	A
	EPSM4150-75-R2.0-PN	☐		2	22.5	75	13.6	135	4	A
	EPSM4150-75-R3.0-PN	☐		3	22.5	75	13.6	135	4	A
HSS Endmill เอ็นมิลล์ไฮสปีด	EPSM4160-80-R0.5-PN	●	16	0.5	24	80	14.5	135	4	B
	EPSM4160-80-R1.0-PN	●		1	24	80	14.5	135	4	B
	EPSM4160-80-R1.5-PN	●		1.5	24	80	14.5	135	4	B
	EPSM4160-80-R2.0-PN	●		2	24	80	14.5	135	4	B
	EPSM4160-80-R3.0-PN	●		3	24	80	14.5	135	4	B
Ball หัวบอล	EPSM4170-85-R0.5-PN	☐	17	0.5	25.5	85	15.4	145	4	A
	EPSM4170-85-R1.0-PN	☐		1	25.5	85	15.4	145	4	A
	EPSM4170-85-R1.5-PN	☐		1.5	25.5	85	15.4	145	4	A
	EPSM4170-85-R2.0-PN	☐		2	25.5	85	15.4	145	4	A
	EPSM4170-85-R3.0-PN	☐		3	25.5	85	15.4	145	4	A
Radius หัวกึ่งมุม R	EPSM4180-90-R0.5-PN	☐	18	0.5	27	90	16.3	145	4	A
	EPSM4180-90-R1.0-PN	☐		1	27	90	16.3	145	4	A
	EPSM4180-90-R1.5-PN	☐		1.5	27	90	16.3	145	4	A
	EPSM4180-90-R2.0-PN	☐		2	27	90	16.3	145	4	A
	EPSM4180-90-R3.0-PN	☐		3	27	90	16.3	145	4	A
Taper Ball หัวเตเปอร์บอล	EPSM4190-95-R0.5-PN	☐	19	0.5	28.5	95	17.3	155	4	A
	EPSM4190-95-R1.0-PN	☐		1	28.5	95	17.3	155	4	A
	EPSM4190-95-R1.5-PN	☐		1.5	28.5	95	17.3	155	4	A
	EPSM4190-95-R2.0-PN	☐		2	28.5	95	17.3	155	4	A
	EPSM4190-95-R3.0-PN	☐		3	28.5	95	17.3	155	4	A
Roughing	EPSM4200-100-R0.5-PN	●	20	0.5	30	100	18.2	155	4	B
	EPSM4200-100-R1.0-PN	●		1	30	100	18.2	155	4	B
	EPSM4200-100-R1.5-PN	●		1.5	30	100	18.2	155	4	B
	EPSM4200-100-R2.0-PN	●		2	30	100	18.2	155	4	B
	EPSM4200-100-R3.0-PN	●		3	30	100	18.2	155	4	B
	EPSM4200-100-R5.0-PN	●		5	30	100	18.2	155	4	B

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

● : Stocked item

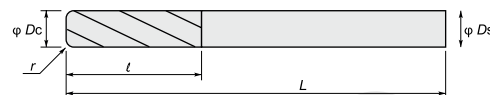


ดอกเอ็นมิลล์

**EPOCH SUS MULTI
EPSML4 -R- -PN**

4Flutes

B type



Long, Radius type



$\phi 6$: 0 ~ -0.015
 $\phi 8 \sim \phi 20$: 0 ~ -0.02



h5 : 0.6 ~ 1.2
 h6 : 0.16 ~ 0.20

$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 12$: 0 ~ -0.008
 $D_s = 16$: 0 ~ -0.011
 $D_s = 20$: 0 ~ -0.013

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	r Corner radius	l Flute Length	L Overall length	Ds Shank Dia.		
EPSML4060-R0.3-PN	☐	6	0.3	30	70	6	4	B
EPSML4060-R0.5-PN	☐		0.5	30	70	6	4	B
EPSML4060-R1.0-PN	☐		1	30	70	6	4	B
EPSML4060-R1.5-PN	☐		1.5	30	70	6	4	B
EPSML4080-R0.3-PN	☐	8	0.3	40	80	8	4	B
EPSML4080-R0.5-PN	☐		0.5	40	80	8	4	B
EPSML4080-R1.0-PN	☐		1	40	80	8	4	B
EPSML4080-R1.5-PN	☐		1.5	40	80	8	4	B
EPSML4080-R2.0-PN	☐	10	2	40	80	8	4	B
EPSML4100-R0.3-PN	☐		0.3	50	100	10	4	B
EPSML4100-R0.5-PN	☐		0.5	50	100	10	4	B
EPSML4100-R1.0-PN	☐		1	50	100	10	4	B
EPSML4100-R1.5-PN	☐		1.5	50	100	10	4	B
EPSML4100-R2.0-PN	☐	12	2	50	100	10	4	B
EPSML4120-R0.3-PN	☐		0.3	60	120	12	4	B
EPSML4120-R0.5-PN	☐		0.5	60	120	12	4	B
EPSML4120-R1.0-PN	☐		1	60	120	12	4	B
EPSML4120-R1.5-PN	☐		1.5	60	120	12	4	B
EPSML4120-R2.0-PN	☐	16	2	60	120	12	4	B
EPSML4120-R2.5-PN	☐		2.5	60	120	12	4	B
EPSML4120-R3.0-PN	☐		3	60	120	12	4	B
EPSML4160-R0.5-PN	☐		0.5	80	135	16	4	B
EPSML4160-R1.0-PN	☐	20	1	80	135	16	4	B
EPSML4160-R1.5-PN	☐		1.5	80	135	16	4	B
EPSML4160-R2.0-PN	☐		2	80	135	16	4	B
EPSML4160-R3.0-PN	☐		3	80	135	16	4	B
EPSML4200-R0.5-PN	☐	20	0.5	100	155	20	4	B
EPSML4200-R1.0-PN	☐		1	100	155	20	4	B
EPSML4200-R1.5-PN	☐		1.5	100	155	20	4	B
EPSML4200-R2.0-PN	☐		2	100	155	20	4	B
EPSML4200-R3.0-PN	☐		3	100	155	20	4	B
EPSML4200-R5.0-PN	☐		5	100	155	20	4	B

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์

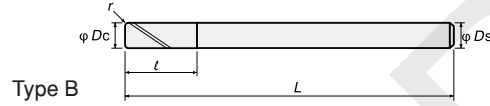
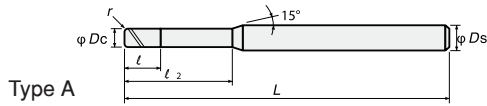


MOLDINO
The Edge To Innovation

ดอกเอ็นมิลล์

EPOCH TURBO MILL

ETM4 - - - TH



Straight Neck, Corner Radius



±0.015



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

(mm)

Suppresses chattering. Corner R end mill for high-efficiency machining.

Item Code	Stock	Size (mm)						Type
		Dc Tool Dia.	r Corner radius	l2 Under neck length	l Flute length	L Overall length	Ds Shank Dia	
ETM4020-05-TH	●	2	0.5	6	4	70	6	A
ETM4030-08-TH	●	3	0.8	9	6	70	6	
ETM4040-10-TH	●	4	1.0	12	8	70	6	
ETM4050-12-TH	●	5	1.2	15	10	70	6	
ETM4060-15-TH	●	6	1.5	-	12	90	6	
ETM4080-20-TH	●	8	2.0	-	16	100	8	B
ETM4100-20-TH	●	10	2.0	-	20	110	10	
ETM4120-20-TH	●	12	2.0	-	24	120	12	
ETM4160-30-TH	●	16	3.0	-	32	140	16	
ETM4200-30-TH	●	20	3.0	-	40	150	20	

● : Stocked Items.

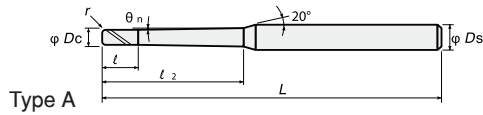
Refer to page 609 for Conditions



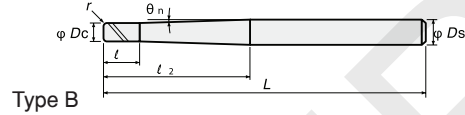
ดอกเอ็นมิลล์

EPOCH TURBO MILL

ETMP4 - - - - - TH



Type A



Type B

Pencil Neck, Corner Radius



±0.015



$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 18$: 0 ~ -0.008
 $18 < D_s$: 0 ~ -0.009

(mm)

Item Code	Stock	Size (mm)							Type
		Dc Tool Dia.	r Corner radius	l ₂ 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		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		
ETMP4100-115-20-TH	●			115			170	16	A
ETMP4120-80-20-TH	●			80			135		
ETMP4120-105-20-TH	●	12	2.0	105	18	1"	160	16	A
ETMP4160-105-30-TH	●			105			160		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

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวตลับเปอร์บอล

Roughing

END MILL

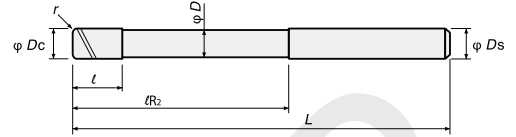
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH TURBO MILL

ETMLN4 000-000-00-TH



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

Long Neck, Corner Radius



±0.015



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

(mm)

Suppresses chattering. Corner R end mill for high-efficiency machining.

Item Code	Stock	Size (mm)						
		Dc Tool Dia.	r Corner radius	ℓ2 Under neck length	ℓ Flute length	D1 Neck Dia.	L Overall length	Ds Shank Dia.
ETMLN4040-20-10-TH	●	4	1.0	20	6	3.8	70	4
ETMLN4040-28-10-TH	●			28			70	
ETMLN4060-30-15-TH	●			30			75	
ETMLN4060-42-15-TH	●	6	1.5	42	9	5.7	90	6
ETMLN4060-54-15-TH	●			54			100	
ETMLN4080-40-20-TH	●			40	12	7.6	85	8
ETMLN4080-56-20-TH	●	8	2.0	56			100	
ETMLN4080-72-20-TH	●			72			120	
ETMLN4100-50-20-TH	●	10	2.0	50	15	9.5	100	10
ETMLN4100-70-20-TH	●			70			120	
ETMLN4100-90-20-TH	●			90			140	
ETMLN4120-60-20-TH	●	12	2.0	60	18	11.5	110	12
ETMLN4120-84-20-TH	●			84			135	
ETMLN4120-108-20-TH	●			108			160	
ETMLN4160-80-30-TH	●	16	3.0	80	24	15.5	140	16
ETMLN4160-120-30-TH	●			120			175	

● : Stocked Items.

Refer to page 609 for Conditions



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.

Roughing condition	Features	
	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)									
			$\phi 2\text{xr}0.5$	$\phi 3\text{xr}0.8$	$\phi 4\text{xr}1$	$\phi 5\text{xr}1.2$	$\phi 6\text{xr}1.5$	$\phi 8\text{xr}2$	$\phi 10\text{xr}2$	$\phi 12\text{xr}2$	$\phi 16\text{xr}3$	$\phi 20\text{xr}3$
Cast Iron, Carbon Steels, Alloy Steels (150 ~ 250HB) FC, S50C, SCM	min^{-1}	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^{-1}	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^{-1}	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^{-1}	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^{-1}	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

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH TH POWER MILL

EPP4 00-00-TH



Corner Radius



Ø3 ~ Ø6 : 0~-0.015
Ø8 ~ Ø20 : 0~-0.02



Ds ≤ 6 : 0~-0.008
6< Ds ≤ 10 : 0~-0.009
10< Ds ≤ 18 : 0~-0.011
18< Ds : 0~-0.013

(mm)

For machining of high-hardness materials. Excellent chip removal performance enables high efficiency.

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
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

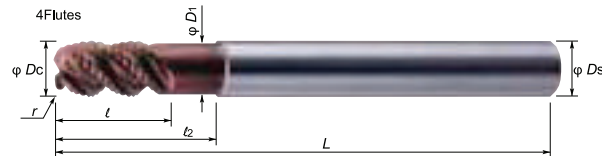
● : Stocked Items.



ดอกเอ็นมิลล์

EPOCH MIRUS TYPE R EMXR4 000-00-0TH

3Dc



4 flutes, Radius, Straight, 3Dc



0 ~ -0.05



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

(mm)

Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)							No. of Flutes
		Dc Tool Dia.	l Flute Length	r Corner radius	D1 Neck dia.	l2 Under neck length	L Overall length	Ds Shank Dia.	
EMXR4060-18-15-TH	●	6	9	1.5	5.5	18	60	6	4
EMXR4080-24-20-TH	●	8	12	2	7.3	24	75	8	4
EMXR4100-30-20-TH	●	10	15	2	9.1	30	80	10	4
EMXR4120-36-20-TH	●	12	18	2	11	36	100	12	4

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

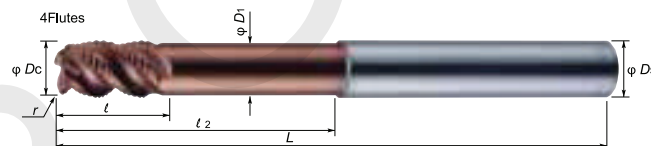
หัวเตเปอร์บอล

Roughing

ดอกเอ็นมิลล์

EPOCH MIRUS TYPE R EMXR4 000-00-0TH

5Dc



4 flutes, Radius, Straight, 5Dc



0 ~ -0.05



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

(mm)

Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)							No. of Flutes
		Dc Tool Dia.	l Flute Length	r Corner radius	D1 Neck dia.	l2 Under neck length	L Overall length	Ds Shank Dia.	
EMXR4060-30-15-TH	●	6	9	1.5	5.5	30	75	6	4
EMXR4080-40-20-TH	●	8	12	2	7.3	40	85	8	4
EMXR4100-50-20-TH	●	10	15	2	9.1	50	100	10	4
EMXR4120-60-20-TH	●	12	18	2	11	60	110	12	4

● : Stocked Items.

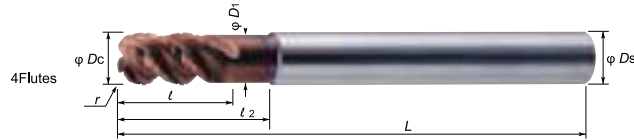
END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH MIRUS TYPE N
EMXN4 000-00-00TH



3Dc

4 flutes, Radius, Straight, 3Dc



0 ~ -0.03



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

(mm)

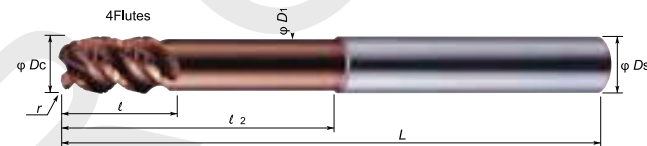
Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)							No. of Flutes
		Dc Tool Dia.	l Flute Length	r Corner radius	D1 Neck dia.	l2 Under neck length	L Overall length	Ds Shank Dia.	
EMXN4060-18-05-TH	●	9	9	0.5	5.5	18	60	6	4
EMXN4060-18-15-TH	●	9	9	1.5	5.5	18	60	6	4
EMXN4080-24-05-TH	●	8	12	0.5	7.3	24	75	8	4
EMXN4080-24-20-TH	●	8	12	2	7.3	24	75	8	4
EMXN4100-30-05-TH	●	10	15	0.5	9.1	30	80	10	4
EMXN4100-30-20-TH	●	10	15	2	9.1	30	80	10	4
EMXN4120-36-05-TH	●	12	18	0.5	11	36	100	12	4
EMXN4120-36-20-TH	●	12	18	2	11	36	100	12	4

● : Stocked Items.

ดอกเอ็นมิลล์

EPOCH MIRUS TYPE N
EMXN4 000-00-00TH



5Dc

4 flutes, Radius, Straight, 5Dc



0 ~ -0.03



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

(mm)

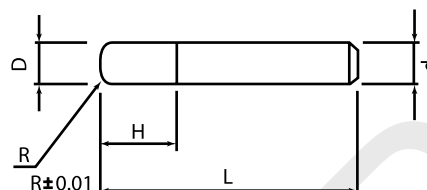
Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)							No. of Flutes
		Dc Tool Dia.	l Flute Length	r Corner radius	D1 Neck dia.	l2 Under neck length	L Overall length	Ds Shank Dia.	
EMXN4060-30-15-TH	●	6	9	1.5	5.5	30	75	6	4
EMXN4080-40-20-TH	●	8	12	2	7.3	40	85	8	4
EMXN4100-50-20-TH	●	10	15	2	9.1	50	100	10	4
EMXN4120-60-20-TH	●	12	18	2	11	60	110	12	4

● : Stocked Items.

ดอกเอ็นมิลล์คาร์ไบด์ 4 ฟัน

MICRO GRAIN CARBIDE END MILLS (4 Flute)



4 Flute	CARBIDE	HRC 15-40	TiAIN	Angle 35°
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Order No.	D (mm) outside diameter	R (mm) angle	H (mm) cutting edge length	L (mm) overall length	d (mm) shank dia.
PRV-T03M4R0.2	3.0	R0.2	7.5	50	4.0
PRV-T03M4R0.5	3.0	R0.5	7.5	50	4.0
PRV-T04M4R0.2	4.0	R0.2	10.0	50	4.0
PRV-T04M4R0.5	4.0	R0.5	10.0	50	4.0
PRV-T06M4R0.5	6.0	R0.5	12.0	50	6.0
PRV-T06M4R1.0	6.0	R1.0	12.0	50	6.0
PRV-T08M4R0.5	8.0	R0.5	20.0	60	8.0
PRV-T08M4R1.0	8.0	R1.0	20.0	60	8.0
PRV-T10M4R0.5	10.0	R0.5	25.0	75	10.0
PRV-T10M4R1.0	10.0	R1.0	25.0	75	10.0
PRV-T12M4R0.5	12.0	R0.5	30.0	75	12.0
PRV-T12M4R1.0	12.0	R1.0	30.0	75	12.0

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

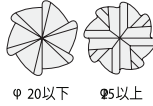
Roughing

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์ EPOCH END MILL CEPR



Epoch 21, Corner Radius

$\varnothing 6 \sim \varnothing 6 : 0 \sim -0.015$
 $\varnothing 8 \sim \varnothing 30 : 0 \sim -0.02$

$Ds \leq 6 : 0 \sim -0.008$
 $6 < Ds \leq 10 : 0 \sim -0.009$
 $10 < Ds \leq 18 : 0 \sim -0.011$
 $18 < Ds \leq 30 : 0 \sim -0.013$
 $30 < Ds : 0 \sim -0.016$

(mm)

Radius end mill for machining high-hardness materials.

Item Code	Stock	Size (mm)					No. of Flutes
		Corner radius	Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPR6060-03	●	0.3	6	15	60	6	6
CEPR6060-05	●	0.5	6	15	60	6	6
CEPR6060-10	●	1	6	15	60	6	6
CEPR6080-03	●	0.3	8	20	75	8	6
CEPR6080-05	●	0.5	8	20	75	8	6
CEPR6080-10	●	1	8	20	75	8	6
CEPR6080-15	●	1.5	8	20	75	8	6
CEPR6100-05	●	0.5	10	25	80	10	6
CEPR6100-10	●	1	10	25	80	10	6
CEPR6100-15	●	1.5	10	25	80	10	6
CEPR6100-20	●	2	10	25	80	10	6
CEPR6120-05	●	0.5	12	30	100	12	6
CEPR6120-10	●	1	12	30	100	12	6
CEPR6120-15	●	1.5	12	30	100	12	6
CEPR6120-20	●	2	12	30	100	12	6
CEPR6160-10	●	1	16	40	110	16	6
CEPR6160-15	●	1.5	16	40	110	16	6
CEPR6160-20	●	2	16	40	110	16	6
CEPR6160-25	●	2.5	16	40	110	16	6
CEPR6200-10	●	1	20	45	125	20	6
CEPR6200-15	●	1.5	20	45	125	20	6
CEPR6200-20	●	2	20	45	125	20	6
CEPR6200-25	●	2.5	20	45	125	20	6
CEPR6200-30	●	3	20	45	125	20	6
CEPR8250-10	□	1	25	50	140	25	8
CEPR8250-15	□	1.5	25	50	140	25	8
CEPR8250-20	□	2	25	50	140	25	8
CEPR8250-25	□	2.5	25	50	140	25	8
CEPR8250-30	□	3	25	50	140	25	8
CEPR8300-10	□	1	30	60	165	32	8
CEPR8300-15	□	1.5	30	60	165	32	8
CEPR8300-20	□	2	30	60	165	32	8
CEPR8300-25	□	2.5	30	60	165	32	8
CEPR8300-30	□	3	30	60	165	32	8

● : Stocked Items.

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



ดอกเอ็นมิลล์

**EPOCH TH HARD
CEPR6 000-00-TH**

Regular, Corner Radius



Ø6 : 0 ~ -0.015
Ø8 ~ Ø20 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Radius end mill for machining high-hardness materials.

Item Code	Stock	Size (mm)					No. of Flutes
		Corner radius	Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPR6060-03-TH	●	0.3	6	15	60	6	6
CEPR6060-05-TH	●	0.5	6	15	60	6	6
CEPR6060-10-TH	●	1.0	6	15	60	6	6
CEPR6080-03-TH	●	0.3	8	20	75	8	6
CEPR6080-05-TH	●	0.5	8	20	75	8	6
CEPR6080-10-TH	●	1.0	8	20	75	8	6
CEPR6100-05-TH	●	0.5	10	25	80	10	6
CEPR6100-10-TH	●	1.0	10	25	80	10	6
CEPR6100-15-TH	●	1.5	10	25	80	10	6
CEPR6100-20-TH	●	2.0	10	25	80	10	6
CEPR6120-05-TH	●	0.5	12	30	100	12	6
CEPR6120-10-TH	●	1.0	12	30	100	12	6
CEPR6120-15-TH	●	1.5	12	30	100	12	6
CEPR6120-20-TH	●	2.0	12	30	100	12	6
CEPR6160-10-TH	●	1.0	16	40	110	16	6
CEPR6160-20-TH	●	2.0	16	40	110	16	6
CEPR6200-10-TH	●	1.0	20	45	125	20	6
CEPR6200-20-TH	●	2.0	20	45	125	20	6
CEPR6200-30-TH	●	3.0	20	45	125	20	6

● : Stocked Items.

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

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

CARBIDE END MILLS HES2

2Flutes



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นม R

Square

หัวตัด

Taper Ball

หัวเคเปอร์บอล

Roughing

Regular



Ø0.1 ~ Ø6 : 0 ~ -0.02
Ø6.1 ~ Ø30 : 0 ~ -0.025



Ds ≤ 3 : 0 ~ -0.006
3 < Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Item Code	Stock	Size (mm)			
		Mill Dia.	Flute Length	Overall length	Shank Dia.
HES2001	●	0.1	0.2	38	3
HES2002	●	0.2	0.4	38	3
HES2003	●	0.3	1	38	3
HES2004	●	0.4	1	38	3
HES2005	●	0.5	1.5	38	3
HES2006	●	0.6	1.5	38	3
HES2007	●	0.7	1.5	38	3
HES2008	●	0.8	2	38	3
HES2009	●	0.9	2	38	3
HES2010	●	1	2.5	40	4
HES2011	●	1.1	3	40	4
HES2012	●	1.2	3	40	4
HES2013	●	1.3	4	40	4
HES2014	●	1.4	4	40	4
HES2015	●	1.5	4	40	4
HES2016	●	1.6	5	40	4
HES2017	●	1.7	5	40	4
HES2018	●	1.8	5	40	4
HES2019	●	1.9	6	40	4
HES2020	●	2	6	40	4
HES2021	●	2.1	8	40	4
HES2022	●	2.2	8	40	4
HES2023	●	2.3	8	40	4
HES2024	●	2.4	8	40	4
HES2025	●	2.5	8	40	4
HES2026	●	2.6	10	45	6
HES2027	●	2.7	10	45	6
HES2028	●	2.8	10	45	6
HES2029	●	2.9	10	45	6
HES2030	●	3	10	45	6
HES2031	●	3.1	11	45	6
HES2032	●	3.2	11	45	6
HES2033	●	3.3	11	45	6
HES2034	●	3.4	11	45	6
HES2035	●	3.5	11	45	6
HES2036	●	3.6	12	45	6
HES2037	●	3.7	12	45	6
HES2038	●	3.8	12	45	6
HES2039	●	3.9	12	45	6
HES2040	●	4	12	45	6
HES2041	●	4.1	14	45	6
HES2042	●	4.2	14	45	6
HES2043	●	4.3	14	45	6
HES2044	●	4.4	14	45	6
HES2045	●	4.5	14	45	6
HES2046	●	4.6	15	50	6
HES2047	●	4.7	15	50	6

Item Code	Stock	Size (mm)			
		Mill Dia.	Flute Length	Overall length	Shank Dia.
HES2048	●	4.8	15	50	6
HES2049	●	4.9	15	50	6
HES2050	●	5	15	50	6
HES2051	●	5.1	15	50	6
HES2052	●	5.2	15	50	6
HES2053	●	5.3	15	50	6
HES2054	●	5.4	15	50	6
HES2055	●	5.5	15	50	6
HES2056	●	5.6	15	50	6
HES2057	●	5.7	15	50	6
HES2058	●	5.8	15	50	6
HES2059	●	5.9	15	50	6
HES2060	●	6	15	50	6
HES2061	●	6.1	15	50	6
HES2062	●	6.2	15	50	6
HES2063	●	6.3	15	50	6
HES2064	●	6.4	15	50	6
HES2065	●	6.5	15	50	6
HES2066	●	6.6	20	60	8
HES2067	●	6.7	20	60	8
HES2068	●	6.8	20	60	8
HES2069	●	6.9	20	60	8
HES2070	●	7	20	60	8
HES2071	□	7.1	20	60	8
HES2072	□	7.2	20	60	8
HES2073	□	7.3	20	60	8
HES2074	□	7.4	20	60	8
HES2075	●	7.5	20	60	8
HES2076	□	7.6	20	60	8
HES2077	□	7.7	20	60	8
HES2078	□	7.8	20	60	8
HES2079	□	7.9	20	60	8
HES2080	●	8	20	60	8
HES2081	□	8.1	20	60	8
HES2082	□	8.2	20	60	8
HES2083	□	8.3	20	60	8
HES2084	□	8.4	20	60	8
HES2085	●	8.5	20	60	8
HES2086	□	8.6	20	65	10
HES2087	□	8.7	20	65	10
HES2088	□	8.8	20	65	10
HES2089	□	8.9	20	65	10
HES2090	●	9	20	65	10
HES2091	□	9.1	20	65	10
HES2092	□	9.2	20	65	10
HES2093	□	9.3	20	65	10
HES2094	□	9.4	20	65	10

Item Code	Stock	Size (mm)			
		Mill Dia.	Flute Length	Overall length	Shank Dia.
HES2095	●	9.5	20	65	10
HES2096	□	9.6	25	70	10
HES2097	□	9.7	25	70	10
HES2098	□	9.8	25	70	10
HES2099	□	9.9	25	70	10
HES2100	●	10	25	70	10
HES2101	□	10.1	25	70	10
HES2102	□	10.2	25	70	10
HES2103	□	10.3	25	70	10
HES2104	□	10.4	25	70	10
HES2105	●	10.5	25	70	10
HES2106	□	10.6	25	75	12
HES2107	□	10.7	25	75	12
HES2108	□	10.8	25	75	12
HES2109	□	10.9	25	75	12
HES2110	●	11	25	75	12
HES2111	□	11.1	25	75	12
HES2112	□	11.2	25	75	12
HES2113	□	11.3	25	75	12
HES2114	□	11.4	25	75	12
HES2115	□	11.5	25	75	12
HES2116	□	11.6	25	75	12
HES2117	□	11.7	25	75	12
HES2118	□	11.8	25	75	12
HES2119	□	11.9	25	75	12
HES2120	●	12	25	75	12
HES2130	●	13	25	75	12
HES2140	●	14	35	90	16
HES2150	●	15	35	90	16
HES2160	●	16	35	90	16
HES2170	□	17	35	90	16
HES2180	●	18	40	105	20
HES2190	□	19	40	105	20
HES2200	●	20	40	105	20
HES2210	□	21	40	105	20
HES2220	●	22	45	115	20
HES2230	□	23	45	115	20
HES2240	□	24	50	120	20
HES2250	●	25	50	120	25
HES2260	□	26	50	120	25
HES2270	□	27	55	130	25
HES2280	□	28	55	130	25
HES2290	□	29	55	130	25
HES2300	□	30	55	130	32

● : Stocked Items.

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



ดอกเอ็นมิลล์

CARBIDE END MILLS

HESM2

2Flutes



Medium



Ø3 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø30 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HESM2030	●	3	15	50	6
HESM2040	●	4	17	50	6
HESM2050	●	5	20	53	6
HESM2060	●	6	20	60	6
HESM2070	●	7	25	63	8
HESM2080	●	8	25	75	8
HESM2090	□	9	28	75	10
HESM2100	●	10	33	80	10
HESM2110	□	11	33	90	12
HESM2120	●	12	37	90	12
HESM2130	□	13	37	100	12
HESM2140	□	14	42	100	16
HESM2150	□	15	42	110	16
HESM2160	●	16	47	110	16
HESM2170	□	17	47	110	16
HESM2180	□	18	50	120	20
HESM2190	□	19	50	120	20
HESM2200	●	20	55	120	20
HESM2210	□	21	55	130	20
HESM2220	□	22	60	130	20
HESM2230	□	23	60	130	20
HESM2240	□	24	65	140	20
HESM2250	□	25	65	140	25
HESM2260	□	26	65	140	25
HESM2270	□	27	70	145	25
HESM2280	□	28	70	145	25
HESM2290	□	29	70	145	25
HESM2300	□	30	70	145	32

● : Stocked Items.

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์ CARBIDE END MILLS HESL2



2Flutes

Long



Ø3 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø25 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

	Item Code	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall length	Shank Dia.
Ball หัวบอล	HESL2010	●	1	6	50	4
Radius หัวก้นมุม R	HESL2015	●	1.5	8	50	4
Square หัวตัด	HESL2020	●	2	14	50	4
Taper Ball หัวเคเปอร์บอล	HESL2025	●	2.5	16	50	4
Roughing	HESL2030	●	3	20	55	6
	HESL2040	●	4	24	57	6
	HESL2050	●	5	30	65	6
	HESL2060	●	6	30	65	6
	HESL2070	●	7	40	80	8
	HESL2080	●	8	40	80	8
	HESL2090	●	9	40	85	10
	HESL2100	●	10	50	95	10
	HESL2110	□	11	50	95	12
	HESL2120	●	12	50	100	12
	HESL2130	□	13	50	100	12
	HESL2140	□	14	70	125	16
	HESL2150	□	15	70	125	16
	HESL2160	●	16	70	125	16
	HESL2170	□	17	70	135	16
	HESL2180	□	18	75	135	20
	HESL2190	□	19	75	140	20
	HESL2200	●	20	75	140	20
	HESL2210	□	21	75	140	20
	HESL2220	□	22	80	150	20
	HESL2230	□	23	80	150	20
	HESL2240	□	24	80	150	20
	HESL2250	□	25	80	150	25

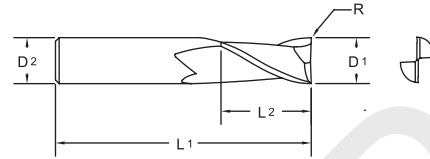
● : Stocked Items.

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



เอ็นมิลล์ - รุ่น 121

TuffCut® GP ENDMILLS - STANDARD LENGTH SERIES 121



Designed for aggressive milling of most materials - Micro sizes available.

Order No.	EDP	Diameter		Shank		OAL	Flute Length	Corner Radius
		D1		D2		L1	L2	R
		mm	Decimal	mm	mm	mm	mm	mm
12100780	52102	0.2	.0078	3.0	38	0.6		
12101180	52104	0.3	.0118	3.0	38	0.9		
12101570	52107	0.4	.0157	3.0	38	1.2		
12101960	52108	0.5	.0196	3.0	38	1.5		
12102360	52110	0.6	.0236	3.0	38	1.8		
12102750	52112	0.7	.0275	3.0	38	2.1		
12103150	52115	0.8	.0315	3.0	38	2.4		
12103540	52117	0.9	.0354	3.0	38	2.7		
12103940	12118	1.0	.0394	3.0	38	3.0		
12104330	52121	1.1	.0433	3.0	38	3.3		
12104720	52124	1.2	.0472	3.0	38	3.6		
12105120	52126	1.3	.0512	3.0	38	3.9		
12105510	52128	1.4	.0551	3.0	38	4.2		
12105910	12129	1.5	.0591	3.0	38	6.0		
12105911	52129	1.5	.0591	3.0	38	4.5		
12106300	52133	1.6	.0630	3.0	38	4.8		
12106690	52135	1.7	.0669	3.0	38	5.1		
12107090	52137	1.8	.0709	3.0	38	5.4		
12107480	52138	1.9	.0748	3.0	38	5.7		
12107870	12141	2.0	.0787	3.0	38	9.0		
12107871	52141	2.0	.0787	3.0	38	6.0		
12109840	12148	2.5	.0984	3.0	38	12.0		
12111810	12152	3.0	.1181	3.0	38	12.0		
12111811	52402	3.0	.1181	3.0	38	12.0	0.500	
12113780	12156	3.5	.1378	4.0	51	12.0		
12115750	12158	4.0	.1575	4.0	51	14.0		
12115751	52404	4.0	.1575	4.0	51	14.0	0.500	
12115752	52422	4.0	.1575	4.0	51	14.0	0.750	
12117720	12159	4.5	.1772	5.0	51	14.0		
12119680	12161	5.0	.1968	5.0	51	20.0		
12119681	52406	5.0	.1968	5.0	51	20.0	0.500	
12119682	52424	5.0	.1968	5.0	51	20.0	0.750	
12119683	52440	5.0	.1968	5.0	51	20.0	1.000	
12121650	12162	5.5	.2165	6.0	64	20.0		
12123620	12164	6.0	.2362	6.0	64	20.0		
12123621	52408	6.0	.2362	6.0	64	20.0	0.500	
12123622	52426	6.0	.2362	6.0	64	20.0	0.750	
12123623	52442	6.0	.2362	6.0	64	20.0	1.000	
12127560	12166	7.0	.2756	8.0	64	20.0		
12131500	12169	8.0	.3150	8.0	64	20.0		
12131501	52410	8.0	.3150	8.0	64	20.0	0.500	
12131502	52428	8.0	.3150	8.0	64	20.0	0.750	
12131503	52444	8.0	.3150	8.0	64	20.0	1.000	

Order No.	EDP	Diameter		Shank		OAL	Flute Length	Corner Radius
		D1		D2		L1	L2	R
		mm	Decimal	mm	mm	mm	mm	mm
12131504	52456	8.0	.3150	8.0	64	20.0	1.500	
12135430	12170	9.0	.3543	9.0	64	20.0		
12139370	12172	10.0	.3937	10.0	70	25.0		
12139371	52412	10.0	.3937	10.0	70	25.0	0.500	
12139372	52430	10.0	.3937	10.0	70	25.0	0.750	
12139373	52446	10.0	.3937	10.0	70	25.0	1.000	
12139374	52458	10.0	.3937	10.0	70	25.0	1.500	
12143310	12173	11.0	.4331	11.0	70	25.0		
12147240	12175	12.0	.4724	12.0	76	25.0		
12147241	52414	12.0	.4724	12.0	76	25.0	0.500	
12147242	52432	12.0	.4724	12.0	76	25.0	0.750	
12147243	52448	12.0	.4724	12.0	76	25.0	1.000	
12147244	52460	12.0	.4724	12.0	76	25.0	1.500	
12147245	52468	12.0	.4724	12.0	76	25.0	2.000	
12155120	12177	14.0	.5512	14.0	89	30.0		
12162990	12180	16.0	.6299	16.0	89	30.0		
12162991	52416	16.0	.6299	16.0	89	30.0	0.500	
12162992	52434	16.0	.6299	16.0	89	30.0	0.750	
12162993	52450	16.0	.6299	16.0	89	30.0	1.000	
12162994	52462	16.0	.6299	16.0	89	30.0	1.500	
12162995	52470	16.0	.6299	16.0	89	30.0	2.000	
12162996	52476	16.0	.6299	16.0	89	30.0	2.500	
12162997	52482	16.0	.6299	16.0	89	30.0	3.000	
12170870	12181	18.0	.7087	18.00	102	35.0		
12178740	12183	20.0	.7874	20.0	102	38.0		
12178741	52418	20.0	.7874	20.0	102	38.0	0.500	
12178742	52436	20.0	.7874	20.0	102	38.0	0.750	
12178743	52452	20.0	.7874	20.0	102	38.0	1.000	
12178744	52464	20.0	.7874	20.0	102	38.0	1.500	
12178745	52472	20.0	.7874	20.0	102	38.0	2.000	
12178746	52478	20.0	.7874	20.0	102	38.0	2.500	
12178747	52484	20.0	.7874	20.0	102	38.0	3.000	
12186620	12184	22.0	.8662	22.0	102	40.0		
12198430	12186	25.0	.9843	25.0	102	40.0		
12198431	52420	25.0	.9843	25.0	102	40.0	0.500	
12198432	52438	25.0	.9843	25.0	102	40.0	0.750	
12198433	52454	25.0	.9843	25.0	102	40.0	1.000	
12198434	52466	25.0	.9843	25.0	102	40.0	1.500	
12198435	52474	25.0	.9843	25.0	102	40.0	2.000	
12198436	52480	25.0	.9843	25.0	102	40.0	2.500	
12198437	52486	25.0	.9843	25.0	102	40.0	3.000	
12112600	12155	32.0	1.2600	32.0	111	40.0		

D1	Tolerance h10
0.20-0.50	+ .000/- .025
0.60-3.00	+ .000/- .040
>3.00-6.00	+ .000/- .048
>6.00-10.00	+ .000/- .058

D1	Tolerance h10
>10.00-18.00	+ .000/- .070
>18.00-30.00	+ .000/- .084
32.00	+ .000/- .100

R	Tolerance
3.0-25.0	+ .05/- .05

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

C-COATED CARBIDE END MILLS

HES2 -C

2Flutes



Regular



Ø0.1 ~ Ø6 : 0 ~ -0.02
Ø6.1 ~ Ø30 : 0 ~ -0.025



Ds ≤ 3 : 0 ~ -0.006
3 < Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

	Item Code	Stock	Size (mm)				Item Code	Stock	Size (mm)				Item Code	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall length	Shank Dia.			Tool Dia.	Flute Length	Overall length	Shank Dia.			Tool Dia.	Flute Length	Overall length	Shank Dia.
	HES2001-C	□	0.1	0.2	38	3	HES2049-C	□	4.9	15	50	6	HES2097-C	□	9.7	25	70	10
	HES2002-C	□	0.2	0.4	38	3	HES2050-C	●	5	15	50	6	HES2098-C	□	9.8	25	70	10
	HES2003-C	□	0.3	1	38	3	HES2051-C	□	5.1	15	50	6	HES2099-C	□	9.9	25	70	10
	HES2004-C	□	0.4	1	38	3	HES2052-C	□	5.2	15	50	6	HES2100-C	●	10	25	70	10
	HES2005-C	□	0.5	1.5	38	3	HES2053-C	□	5.3	15	50	6	HES2105-C	●	10.5	25	70	10
	HES2006-C	□	0.6	1.5	38	3	HES2054-C	□	5.4	15	50	6	HES2110-C	●	11	25	75	12
	HES2007-C	□	0.7	1.5	38	3	HES2055-C	●	5.5	15	50	6	HES2120-C	●	12	25	75	12
	HES2008-C	□	0.8	2	38	3	HES2056-C	□	5.6	15	50	6	HES2130-C	●	13	25	75	12
	HES2009-C	●	0.9	2	38	3	HES2057-C	□	5.7	15	50	6	HES2140-C	●	14	35	90	16
	HES2010-C	□	1	2.5	40	4	HES2058-C	□	5.8	15	50	6	HES2150-C	●	15	35	90	16
	HES2011-C	□	1.1	3	40	4	HES2059-C	□	5.9	15	50	6	HES2160-C	●	16	35	90	16
	HES2012-C	□	1.2	3	40	4	HES2060-C	●	6	15	50	6	HES2170-C	□	17	35	90	16
	HES2013-C	□	1.3	4	40	4	HES2061-C	□	6.1	15	50	6	HES2180-C	●	18	40	105	20
	HES2014-C	●	1.4	4	40	4	HES2062-C	□	6.2	15	50	6	HES2190-C	□	19	40	105	20
	HES2015-C	□	1.5	4	40	4	HES2063-C	□	6.3	15	50	6	HES2200-C	●	20	40	105	20
	HES2016-C	□	1.6	5	40	4	HES2064-C	□	6.4	15	50	6	HES2220-C	●	22	45	115	20
	HES2017-C	□	1.7	5	40	4	HES2065-C	●	6.5	15	50	6	HES2250-C	●	25	50	120	25
	HES2018-C	□	1.8	5	40	4	HES2066-C	□	6.6	20	60	8	HES2300-C	□	30	55	130	32
	HES2019-C	●	1.9	6	40	4	HES2067-C	□	6.7	20	60	8						
	HES2020-C	□	2	6	40	4	HES2068-C	□	6.8	20	60	8						
	HES2021-C	□	2.1	8	40	4	HES2069-C	□	6.9	20	60	8						
	HES2022-C	□	2.2	8	40	4	HES2070-C	●	7	20	60	8						
	HES2023-C	□	2.3	8	40	4	HES2071-C	□	7.1	20	60	8						
	HES2024-C	●	2.4	8	40	4	HES2072-C	□	7.2	20	60	8						
	HES2025-C	□	2.5	8	40	4	HES2073-C	□	7.3	20	60	8						
	HES2026-C	□	2.6	10	45	6	HES2074-C	□	7.4	20	60	8						
	HES2027-C	□	2.7	10	45	6	HES2075-C	●	7.5	20	60	8						
	HES2028-C	□	2.8	10	45	6	HES2076-C	□	7.6	20	60	8						
	HES2029-C	●	2.9	10	45	6	HES2077-C	□	7.7	20	60	8						
	HES2030-C	□	3	10	45	6	HES2078-C	□	7.8	20	60	8						
	HES2031-C	□	3.1	11	45	6	HES2079-C	□	7.9	20	60	8						
	HES2032-C	□	3.2	11	45	6	HES2080-C	●	8	20	60	8						
	HES2033-C	□	3.3	11	45	6	HES2081-C	□	8.1	20	60	8						
	HES2034-C	●	3.4	11	45	6	HES2082-C	□	8.2	20	60	8						
	HES2035-C	□	3.5	11	45	6	HES2083-C	□	8.3	20	60	8						
	HES2036-C	□	3.6	12	45	6	HES2084-C	□	8.4	20	60	8						
	HES2037-C	□	3.7	12	45	6	HES2085-C	●	8.5	20	60	8						
	HES2038-C	□	3.8	12	45	6	HES2086-C	□	8.6	20	65	10						
	HES2039-C	●	3.9	12	45	6	HES2087-C	□	8.7	20	65	10						
	HES2040-C	□	4	12	45	6	HES2088-C	□	8.8	20	65	10						
	HES2041-C	□	4.1	14	45	6	HES2089-C	□	8.9	20	65	10						
	HES2042-C	□	4.2	14	45	6	HES2090-C	●	9	20	65	10						
	HES2043-C	□	4.3	14	45	6	HES2091-C	□	9.1	20	65	10						
	HES2044-C	●	4.4	14	45	6	HES2092-C	□	9.2	20	65	10						
	HES2045-C	□	4.5	14	45	6	HES2093-C	□	9.3	20	65	10						
	HES2046-C	□	4.6	15	50	6	HES2094-C	□	9.4	20	65	10						
	HES2047-C	●	4.7	15	50	6	HES2095-C	●	9.5	20	65	10						
	HES2048-C	□	4.8	15	50	6	HES2096-C	□	9.6	25	70	10						

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

● : Stocked Items.



ดอกเอ็นมิลล์

C-COATED CARBIDE END MILLS
HESM2 -C

2Flutes



Medium



Ø3 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø25 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HESM2030-C	●	3	15	50	6
HESM2040-C	●	4	17	50	6
HESM2050-C	●	5	20	53	6
HESM2060-C	●	6	20	60	6
HESM2070-C	●	7	25	63	8
HESM2080-C	●	8	25	75	8
HESM2100-C	●	10	33	80	10
HESM2120-C	●	12	37	90	12
HESM2140-C	□	14	42	100	16
HESM2150-C	□	15	42	110	16
HESM2160-C	●	16	47	110	16
HESM2180-C	□	18	50	120	20
HESM2200-C	●	20	55	120	20
HESM2250-C	□	25	65	140	25

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

● : Stocked Items.

ดอกเอ็นมิลล์

C-COATED CARBIDE END MILLS
HESL2 -C

2Flutes



Long



Ø1 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø25 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HESL2010-C	●	1	6	50	4
HESL2015-C	●	1.5	8	50	4
HESL2020-C	●	2	14	50	4
HESL2025-C	●	2.5	16	50	4
HESL2030-C	●	3	20	55	6
HESL2040-C	●	4	24	55	6
HESL2050-C	●	5	30	65	6
HESL2060-C	●	6	30	65	6
HESL2070-C	●	7	40	80	8
HESL2080-C	●	8	40	80	8

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HESL2090-C	●	9	40	85	10
HESL2100-C	●	10	50	95	10
HESL2120-C	●	12	50	100	12
HESL2140-C	□	14	70	125	16
HESL2150-C	□	15	70	125	16
HESL2160-C	●	16	70	125	16
HESL2180-C	□	18	75	135	20
HESL2200-C	●	20	75	140	20
HESL2250-C	□	25	80	150	25

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

● : Stocked Items.

END MILL

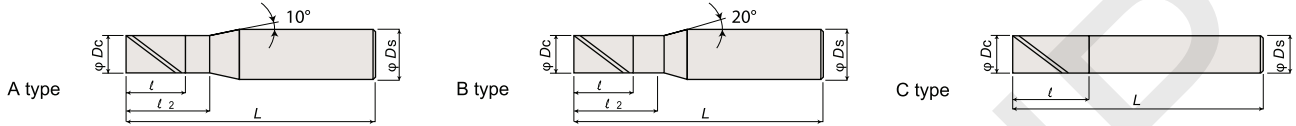
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

**EPOCH PANACEA SQUARE
HGOS2 -PN**

2Flutes



2 flutes



Ø0.2~Ø0.9 : 0~-0.015
Ø1.0~Ø20 : 0~-0.02



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

(mm)

PN coating for amazing seizure resistance and wear resistance. Enables machining of a wide variety of materials.

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	l Flute Length	l2 Under Neck length	L Overall length	Ds Shank Dia.		
HGOS2002-PN	●	0.2	0.4	0.6	40	4	2	A
HGOS2003-PN	●	0.3	0.6	0.9	40	4	2	A
HGOS2004-PN	●	0.4	0.8	1.1	40	4	2	A
HGOS2005-PN	●	0.5	1	1.3	40	4	2	A
HGOS2006-PN	●	0.6	1.2	1.5	40	4	2	A
HGOS2007-PN	●	0.7	1.4	1.7	40	4	2	A
HGOS2008-PN	●	0.8	1.6	1.9	40	4	2	A
HGOS2009-PN	●	0.9	1.8	2.1	40	4	2	A
HGOS2010-PN	●	1	2	2.5	40	4	2	A
HGOS2015-PN	●	1.5	3	3.5	40	4	2	A
HGOS2020-PN	●	2	6	7	40	4	2	A
HGOS2025-PN	●	2.5	8	9	40	4	2	A
HGOS2030-PN	●	3	8	9	45	6	2	A
HGOS2035-PN	●	3.5	10	11	45	6	2	A
HGOS2040-PN	●	4	11	12	45	6	2	B
HGOS2045-PN	●	4.5	11	12	45	6	2	B
HGOS2050-PN	●	5	13	14	60	6	2	B
HGOS2055-PN	●	5.5	13	14	60	6	2	B
HGOS2060-PN	●	6	13	-	60	6	2	C
HGOS2070-PN	●	7	16	17	70	8	2	B
HGOS2080-PN	●	8	19	-	75	8	2	C
HGOS2090-PN	●	9	19	20	80	10	2	B
HGOS2100-PN	●	10	22	-	80	10	2	C
HGOS2120-PN	●	12	26	-	100	12	2	C
HGOS2160-PN	●	16	35	-	110	16	2	C
HGOS2200-PN	●	20	40	-	125	20	2	C

● : Stocked Items.

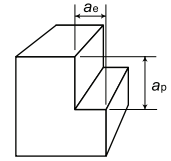


Recommended cutting conditions

HGOS2-PN

Epoch Panacea Square

Side cutting



Dc Tool Dia.	l Flute length	Copper Alloy, Aluminium Alloy				Cast Iron, Carbon Steels (150 ~ 200HB) FC250, S50C, S55C				Stainless Steels (25 ~ 35HRC) SUS304, SUS316			
		min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
0.2	0.4	66,879	669	0.300	0.010	55,732	557	0.300	0.010	33,439	301	0.300	0.008
0.3	0.6	44,586	446	0.450	0.015	37,155	372	0.450	0.015	22,293	201	0.450	0.012
0.4	0.8	38,217	382	0.600	0.020	27,866	279	0.600	0.020	16,720	150	0.600	0.016
0.5	1	38,217	382	0.750	0.025	25,478	255	0.750	0.025	15,287	138	0.750	0.020
0.6	1.2	41,401	662	0.900	0.030	26,539	425	0.900	0.030	15,924	229	0.900	0.024
0.7	1.4	35,487	568	1.050	0.035	29,572	473	1.050	0.035	17,743	256	1.050	0.028
0.8	1.6	33,439	535	1.200	0.040	25,876	414	1.200	0.040	15,525	224	1.200	0.032
0.9	1.8	33,970	544	1.350	0.045	24,770	396	1.350	0.045	14,862	214	1.350	0.036
1	2	38,217	764	1.500	0.050	25,478	510	1.500	0.050	15,287	275	1.500	0.040
1.5	3	28,025	561	2.250	0.150	21,231	425	2.250	0.150	12,739	229	2.250	0.135
2	6	21,019	631	3.000	0.200	17,516	525	3.000	0.200	10,510	284	3.000	0.180
2.5	8	16,815	504	3.750	0.250	14,013	420	3.750	0.250	8,408	227	3.750	0.225
3	8	15,287	611	4.500	0.300	11,677	467	4.500	0.300	7,006	252	4.500	0.270
3.5	10	13,103	524	5.250	0.350	10,919	437	5.250	0.350	6,551	236	5.250	0.315
4	11	11,465	573	6.000	0.400	9,554	478	6.000	0.400	5,732	258	6.000	0.360
4.5	11	10,191	510	6.750	0.450	8,493	425	6.750	0.450	5,096	229	6.750	0.405
5	13	9,172	550	7.500	0.500	7,643	459	7.500	0.500	4,586	248	7.500	0.450
5.5	13	8,338	500	8.250	0.550	6,948	417	8.250	0.550	4,169	225	8.250	0.495
6	13	7,643	459	9.000	0.600	6,369	382	9.000	0.600	3,822	206	9.000	0.540
7	16	6,551	459	10.500	0.700	5,460	382	10.500	0.700	3,276	206	10.500	0.630
8	19	5,732	401	12.000	0.800	4,777	334	12.000	0.800	2,866	181	12.000	0.720
9	19	5,096	408	13.500	0.900	4,246	340	13.500	0.900	2,548	183	13.500	0.810
10	22	4,586	459	15.000	1.000	3,822	382	15.000	1.000	2,293	206	15.000	0.900
12	26	3,822	459	18.000	1.200	3,185	382	18.000	1.200	1,911	206	18.000	1.080
16	35	2,866	401	24.000	1.600	2,389	334	24.000	1.600	1,433	181	24.000	1.440
20	40	2,293	367	30.000	2.000	1,911	306	30.000	2.000	1,146	165	30.000	1.800

Dc Mill Dia.	l Flute length	Alloy Steels (25 ~ 35HRC) HPM7, SKD61®, DKT4				Pre-hardened Steels (35 ~ 45HRC) HPM-MAGIC, CENA1, NAK80				Hardened Steels (45 ~ 52HRC) SKD61®, HPM38, DAC-MAGIC			
		min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
0.2	0.4	33,439	301	0.300	0.008	26,752	217	0.300	0.006	16,720	105	0.300	0.006
0.3	0.6	22,293	201	0.450	0.012	17,834	144	0.450	0.009	11,146	70	0.450	0.009
0.4	0.8	16,720	150	0.600	0.016	13,376	108	0.600	0.012	8,360	53	0.600	0.012
0.5	1	15,287	138	0.750	0.020	12,229	99	0.750	0.015	7,643	48	0.750	0.015
0.6	1.2	15,924	229	0.900	0.024	12,739	165	0.900	0.018	7,962	80	0.900	0.018
0.7	1.4	17,743	256	1.050	0.028	14,195	184	1.050	0.021	8,872	89	1.050	0.021
0.8	1.6	15,525	224	1.200	0.032	12,420	161	1.200	0.024	7,763	78	1.200	0.024
0.9	1.8	14,862	214	1.350	0.036	11,890	154	1.350	0.027	7,431	75	1.350	0.027
1	2	15,287	275	1.500	0.040	12,229	198	1.500	0.030	7,643	96	1.500	0.030
1.5	3	12,739	229	2.250	0.135	10,191	165	2.250	0.120	6,369	80	2.250	0.045
2	6	10,510	284	3.000	0.180	6,115	149	3.000	0.160	5,732	108	3.000	0.060
2.5	8	8,408	227	3.750	0.225	5,707	139	3.750	0.200	5,350	101	3.750	0.075
3	8	7,006	252	4.500	0.270	5,096	165	4.500	0.240	4,777	120	4.500	0.090
3.5	10	6,551	236	5.250	0.315	4,659	151	5.250	0.280	4,368	110	5.250	0.105
4	11	5,732	258	6.000	0.360	4,331	175	6.000	0.320	4,061	128	6.000	0.120
4.5	11	5,096	229	6.750	0.405	4,076	165	6.750	0.360	3,822	120	6.750	0.135
5	13	4,586	248	7.500	0.450	3,873	188	7.500	0.400	3,631	137	7.500	0.150
5.5	13	4,169	225	8.250	0.495	3,706	180	8.250	0.440	3,474	131	8.250	0.165
6	13	3,822	206	9.000	0.540	3,397	165	9.000	0.480	3,185	120	9.000	0.180
7	16	3,276	206	10.500	0.630	2,912	165	10.500	0.560	2,730	120	10.500	0.210
8	19	2,866	181	12.000	0.720	2,548	144	12.000	0.640	2,389	105	12.000	0.240
9	19	2,548	183	13.500	0.810	2,265	147	13.500	0.720	2,123	107	13.500	0.270
10	22	2,293	206	15.000	0.900	2,038	165	15.000	0.800	1,911	120	15.000	0.300
12	26	1,911	206	18.000	1.080	1,699	165	18.000	0.960	1,592	120	18.000	0.360
16	35	1,433	181	24.000	1.440	1,274	144	24.000	1.280	1,194	105	24.000	0.480
20	40	1,146	165	30.000	1.800	1,019	132	30.000	1.600	955	96	30.000	0.600

[Note]

- ① PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
- ② The cutting conditions given above is applied to 2 flutes type end mills. As for 4 flutes type, increase the feed rate by 1.5 times.
- ③ Use a highly rigid and accurate machine as possible.
- ④ Use the appropriate coolant for the work material and machining shape.
- ⑤ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- ⑥ If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.

END MILL

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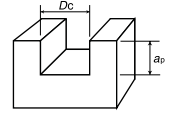


Recommended cutting conditions

HGOS2-PN

Epoch Panacea Square

Side cutting



DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	CBN END MILL CBN เอ็นมิลล์	Carbide Endmill เอ็นมิลล์คาร์ไบด์	HSS Endmill เอ็นมิลล์ไฮสปีด	Ball หัวบอล	Radius หัวก้นมุม R	Square หัวตัด	Taper Ball หัวเตเปอร์บอล	Roughing	Dc Tool Dia.	ℓ Flute length	Copper Alloy, Aluminium Alloy			Cast Iron, Carbon Steels (150 ~ 200HB) FC250, S50C, S55C			Stainless Steels (25 ~ 35HRC) SUS304, SUS316		
											min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
									0.2	0.4	58,678	235	0.01	53,344	213	0.01	37,341	157	0.01
									0.3	0.6	39,119	156	0.02	35,563	142	0.02	24,894	120	0.02
									0.4	0.8	35,032	140	0.02	26,672	107	0.02	22,293	103	0.02
									0.5	1	31,529	126	0.03	25,478	102	0.03	20,064	103	0.03
									0.6	1.2	32,113	180	0.03	23,885	191	0.03	20,435	143	0.03
									0.7	1.4	30,027	240	0.04	25,023	200	0.04	19,108	161	0.04
									0.8	1.6	28,025	228	0.04	23,885	191	0.04	18,113	152	0.04
									0.9	1.8	21,019	218	0.05	23,001	184	0.05	17,339	143	0.05
									1	2	28,025	215	0.05	22,293	175	0.05	17,834	125	0.05
									1.5	3	21,019	210	0.08	16,985	170	0.08	12,739	115	0.08
									2	6	15,764	189	0.12	14,331	172	0.12	8,917	96	0.12
									2.5	8	12,611	151	0.18	11,465	138	0.18	7,643	83	0.18
									3	8	11,677	163	0.30	9,554	134	0.30	6,794	86	0.30
									3.5	10	10,009	140	0.35	9,099	127	0.35	6,187	78	0.35
									4	11	8,758	140	0.60	7,962	127	0.60	5,732	83	0.60
									4.5	11	7,785	125	0.90	7,077	113	0.90	4,034	58	0.90
									5	13	7,006	140	1.25	6,369	127	1.25	3,822	69	1.25
									5.5	13	6,369	127	1.38	5,790	116	1.38	3,648	66	1.38
									6	13	5,839	160	1.80	5,308	150	1.80	3,503	90	1.80
									7	16	5,005	200	2.45	4,550	182	2.45	3,139	113	2.45
									8	19	4,379	215	3.20	3,981	200	3.20	1,672	125	3.20
									9	19	3,892	234	4.05	3,539	212	4.05	1,486	146	4.05
									10	22	3,503	210	5.00	3,185	191	5.00	1,338	134	5.00
									12	26	2,919	234	6.00	2,654	212	6.00	1,115	103	6.00
									16	35	2,189	219	8.00	1,990	199	8.00	975	100	8.00
									20	40	1,752	210	10.00	1,592	191	10.00	836	103	10.00

Dc Mill Dia.	ℓ Flute length	Alloy Steels (25 ~ 35HRC) HPM7, SKD61®, DKT4			Pre-hardened Steels (35 ~ 45HRC) HPM-MAGIC, CENA1, NAK80			Hardened Steels (45 ~ 52HRC) SKD61®, HPM38, DAC-MAGIC		
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
0.2	0.4	24,005	122	0.01	14,936	56	0.01	8,402	34	0.01
0.3	0.6	16,003	109	0.02	9,958	50	0.01	5,601	30	0.01
0.4	0.8	14,331	109	0.02	8,917	56	0.02	5,016	34	0.02
0.5	1	12,898	93	0.03	8,025	51	0.02	4,514	31	0.02
0.6	1.2	13,137	112	0.03	8,174	51	0.03	4,598	31	0.02
0.7	1.4	12,284	125	0.04	7,643	58	0.03	4,299	35	0.03
0.8	1.6	11,644	119	0.04	7,245	55	0.04	4,075	33	0.03
0.9	1.8	11,146	133	0.05	6,936	61	0.04	3,901	37	0.04
1	2	11,465	125	0.05	7,134	58	0.05	4,013	35	0.04
1.5	3	9,554	114	0.08	5,945	52	0.07	3,344	32	0.06
2	6	7,166	122	0.12	4,459	56	0.11	2,508	34	0.10
2.5	8	5,732	97	0.18	3,567	45	0.16	2,006	27	0.14
3	8	4,777	81	0.30	2,972	37	0.27	1,672	23	0.24
3.5	10	4,095	104	0.35	2,548	48	0.32	1,433	29	0.28
4	11	3,583	91	0.60	2,229	42	0.54	1,254	26	0.49
4.5	11	3,185	92	0.90	1,982	50	0.81	1,115	30	0.73
5	13	2,866	103	1.25	1,783	45	1.13	1,003	27	1.01
5.5	13	2,606	89	1.38	1,621	41	1.24	912	25	1.11
6	13	2,389	105	1.80	1,486	48	1.62	836	30	1.46
7	16	2,047	122	2.45	1,274	56	2.21	717	34	1.98
8	19	1,075	120	3.20	669	54	2.88	376	33	2.59
9	19	955	114	4.05	594	52	3.65	334	32	3.28
10	22	860	117	5.00	535	54	4.50	301	33	4.05
12	26	717	110	6.00	446	51	5.40	251	31	4.86
16	35	627	107	8.00	390	49	7.20	219	30	6.48
20	40	537	100	10.00	334	51	9.00	188	31	8.10



ดอกเอ็นมิลล์

**EPOCH SD (S-DLC) SQUARE
EPAS2 -SD**

2Flutes



Ø3 ~ Ø6 : 0 ~ -0.015
Ø7 ~ Ø12 : 0 ~ -0.02



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

(mm)

High welding resistance makes it ideal for machining aluminum alloys and copper. DLC coating.

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPAS2030-SD	●	3	8	60	6
EPAS2040-SD	●	4	11	60	6
EPAS2050-SD	●	5	13	60	6
EPAS2060-SD	●	6	13	70	6
EPAS2070-SD	●	7	20	70	8
EPAS2080-SD	●	8	20	75	8
EPAS2090-SD	●	9	20	80	10
EPAS2100-SD	●	10	25	80	10
EPAS2110-SD	●	11	25	100	12
EPAS2120-SD	●	12	25	100	12

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

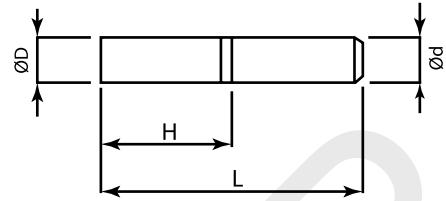
END MILL

ดอกเอ็นมิลล์

PROCH

ดอกเอ็นมิลล์คาร์ไบด์ 2 ฟัน

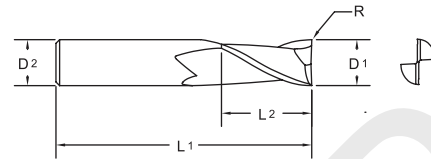
MICRO GRAIN CARBIDE END MILLS (2 Flute)



	Order No.	ØD (mm) outside diameter	L (mm) overall length	H (mm) cutting edge length	Ød (mm) shank dia.
Ball หัวบอล	PRV-T01M2	1.0	2.0	50	4.0
Radius หัวกัศม R	PRV-T015M2	1.5	3.0	50	4.0
Square หัวตัด	PRV-T02M2	2.0	4.0	50	4.0
	PRV-T025M2	2.5	5.0	50	4.0
	PRV-T03M2	3.0	6.0	50	4.0
Taper Ball หัวเตเปอร์บอล	PRV-T04M2	4.0	8.0	50	4.0
	PRV-T05M2	5.0	13.0	50	6.0
Roughing	PRV-T06M2	6.0	13.0	60	6.0
	PRV-T08M2	8.0	17.0	60	8.0
	PRV-T10-M2	10.0	25.0	75	10.0
	PRV-T12M2	12.0	30.0	75	12.0



เอ็นมิลล์ - รุ่น 121

TuffCut® GP ENDMILLS - STANDARD LENGTH SERIES 121

Designed for aggressive milling of most materials - Micro sizes available.

Order No.	EDP	Diameter		Shank	OAL	Flute Length
		D1		D2	L1	L2
		mm	Decimal	mm	mm	mm
12103940A	12119	1.0	.0394	3.0	38	3.0
12105910A	12130	1.5	.0591	3.0	38	6.0
12107870A	12142	2.0	.0787	3.0	38	9.0
12109840A	12147	2.5	.0984	3.0	38	12.0
12111810A	52153	3.0	.1181	3.0	38	12.0
12115750A	52157	4.0	.1575	4.0	51	14.0
12119680A	52161	5.0	.1968	5.0	51	20.0
12123620A	52163	6.0	.2362	6.0	64	20.0
12131500A	52169	8.0	.3150	8.0	64	20.0
12139370A	52173	10.0	.3937	10.0	70	25.0
12147240A	52177	12.0	.4724	12.0	76	25.0
12162990A	52183	16.0	.6299	16.0	89	30.0
12178740A	52187	20.0	.7874	20.0	102	38.0
12198430A	52189	25.0	.9843	25.0	102	40.0

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

D1	Tolerance h10
0.20-0.50	+0.000/-0.025
0.60-3.00	+0.000/-0.040
>3.00-6.00	+0.000/-0.048
>6.00-10.00	+0.000/-0.058

D1	Tolerance h10
>10.00-18.00	+0.000/-0.070
>18.00-30.00	+0.000/-0.084
32.00	+0.000/-0.100

R	Tolerance
3.0-25.0	+0.05/-0.05

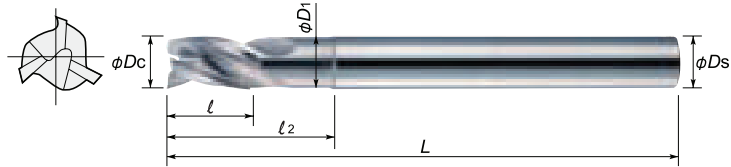
END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์สำหรับงานอะลูมิเนียม

EPOCH MIRUS TYPE A FOR ALUMINIUM



Manufacture stocked item



0~-0.02



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

(mm)

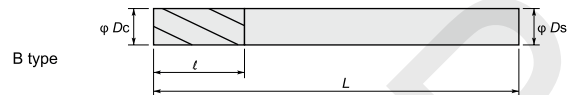
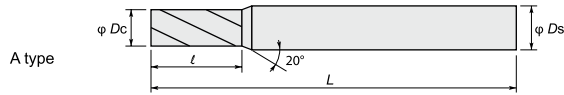
Ultra high efficiency end mill for aliminum.

Item Code		Stock	Size (mm)					
			Dc Tool Dia.	ℓ Flute Length	ℓ2 Under neck lenght	D1 Neck dia.	L Overall length	Ds Shank Dia.
Square	EMXA3030-9	◎	3	4.5	9	2.9	60	6
	EMXA3040-12	◎	4	6	12	3.75	60	6
	EMXA3050-15	◎	5	7.5	15	4.75	80	6
	EMXA3060-18	◎	6	9	18	5.75	80	6
	EMXA3080-24	◎	8	12	24	7.5	90	8
	EMXA3100-30	◎	10	15	30	9.5	100	10
	EMXA3120-36	◎	12	18	36	11.5	120	12
	EMXA3160-45	◎	16	19	45	15.5	90	16

◎ : Manufacturer stocked items.



ดอกเอ็นมิลล์

EPOCH SUS WAVE
EPSW 〰〰〰 -PN

Regular



0 ~ -0.05

h5 h6
06~12 016~20

$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 12$: 0 ~ -0.008
 $D_s = 16$: 0 ~ -0.011
 $D_s = 20$: 0 ~ -0.013

(mm)

For stable cutting of stainless steel in environments using low-rigidity machines and weak clamps.

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	Corner chamfering width		
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 by specified distributor. Contact with our sales department.

● : Stocked item

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

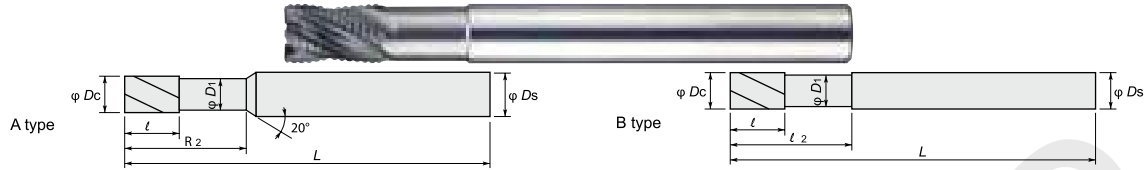
Roughing

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์
**EPOCH SUS MULTI
EPSW 0000-00 -PN**



Under neck 3 Dc type



0 ~ -0.05



06~12 016~20

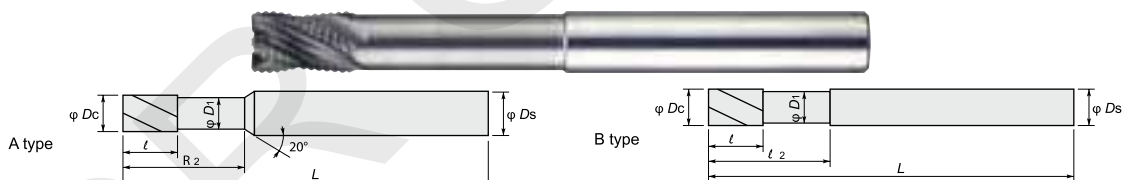
Ds ≤ 6 : 0 ~ -0.005
6 < Ds ≤ 10 : 0 ~ -0.006
10 < Ds ≤ 12 : 0 ~ -0.008
Ds = 16 : 0 ~ -0.011
Ds = 20 : 0 ~ -0.013

(mm)

For stable cutting of stainless steel in environments using low-rigidity machines and weak clamps.

Item Code	Stock	Size (mm)							No. of flutes	Type
		Dc Tool Dia.	Flute Length	Under neck length	D1 Neck Dia.	Overall length	Shank Dia.	Corner chamfering width		
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

ดอกเอ็นมิลล์
**EPOCH SUS MULTI
EPSW 0000-00 -PN**



Under neck 5 Dc



0 ~ -0.05



06~12 016~20

Ds ≤ 6 : 0 ~ -0.005
6 < Ds ≤ 10 : 0 ~ -0.006
10 < Ds ≤ 12 : 0 ~ -0.008
Ds = 16 : 0 ~ -0.011
Ds = 20 : 0 ~ -0.013

(mm)

For stable cutting of stainless steel in environments using low-rigidity machines and weak clamps.

Item Code	Stock	Size (mm)							No. of flutes	Type
		Dc Tool Dia.	Flute Length	Under neck length	D1 Neck Dia.	Overall length	Shank Dia.	Corner chamfering width		
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	135	20	0.7	4	B

● : Stocked item



ดอกเอ็นมิลล์

CARBIDE END MILLS

HES4

4Flutes



Regular



Ø2 ~ Ø6 : 0~-0.02
Ø6.5 ~ Ø30 : 0~-0.025



Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds ≤ 18 : 0~-0.011
18 < Ds ≤ 30 : 0~-0.013
30 < Ds : 0~-0.016

(mm)

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HES4020	●	2	6	40	4
HES4025	●	2.5	8	40	4
HES4030	●	3	10	45	6
HES4035	●	3.5	11	45	6
HES4040	●	4	12	45	6
HES4045	●	4.5	14	45	6
HES4050	●	5	15	50	6
HES4055	●	5.5	15	50	6
HES4060	●	6	15	50	6
HES4065	●	6.5	15	50	6
HES4070	●	7	20	60	8
HES4075	●	7.5	20	60	8
HES4080	●	8	20	60	8
HES4085	●	8.5	20	60	8
HES4090	●	9	20	65	10
HES4095	●	9.5	20	65	10
HES4100	●	10	25	70	10
HES4105	□	10.5	25	70	10
HES4110	●	11	25	75	12
HES4115	□	11.5	25	75	12
HES4120	●	12	25	75	12
HES4130	●	13	25	75	12
HES4140	●	14	35	90	16
HES4150	●	15	35	90	16
HES4160	●	16	35	90	16
HES4170	□	17	35	90	16
HES4180	●	18	40	105	20
HES4190	□	19	40	105	20
HES4200	●	20	40	105	20
HES4210	□	21	40	105	20
HES4220	□	22	45	115	20
HES4230	□	23	45	115	20
HES4240	□	24	50	120	20
HES4250	●	25	50	120	25
HES4260	□	26	50	120	25
HES4270	□	27	55	130	25
HES4280	□	28	55	130	25
HES4290	□	29	55	130	25
HES4300	□	30	55	130	32

● : Stocked Items.

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

CARBIDE END MILLS

HESM4

4Flutes



Medium



Ø3 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø25 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

	Item Code	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall length	Shank Dia.
	HESM4030	●	3	15	50	6
	HESM4040	●	4	17	50	6
	HESM4050	●	5	20	53	6
	HESM4060	●	6	20	60	6
	HESM4070	●	7	25	63	8
	HESM4080	●	8	25	75	8
	HESM4090	●	9	28	75	10
	HESM4100	●	10	33	80	10
	HESM4110	□	11	33	90	12
	HESM4120	●	12	37	90	12
	HESM4130	□	13	37	100	12
	HESM4140	□	14	42	100	16
	HESM4150	□	15	42	110	16
	HESM4160	●	16	47	110	16
	HESM4170	□	17	47	110	16
	HESM4180	□	18	50	120	20
	HESM4190	□	19	50	120	20
	HESM4200	●	20	55	120	20
	HESM4210	□	21	55	130	20
	HESM4220	□	22	60	130	20
	HESM4230	□	23	60	130	20
	HESM4240	□	24	65	140	20
	HESM4250	□	25	65	140	25
	HESM4260	□	26	65	140	25
	HESM4270	□	27	70	145	25
	HESM4280	□	28	70	145	25
	HESM4290	□	29	70	145	25
	HESM4300	□	30	70	145	32

● : Stocked Items.

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



ดอกเอ็นมิลล์

CARBIDE END MILLS

HESL4

4Flutes



Long



Ø3 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø25 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HESL4030	●	3	20	55	6
HESL4040	●	4	24	55	6
HESL4050	●	5	30	65	6
HESL4060	●	6	30	65	6
HESL4070	●	7	40	80	8
HESL4080	●	8	40	80	8
HESL4090	●	9	40	85	10
HESL4100	●	10	50	95	10
HESL4110	□	11	50	100	12
HESL4120	●	12	50	100	12
HESL4130	□	13	50	100	12
HESL4140	□	14	70	125	16
HESL4150	□	15	70	125	16
HESL4160	●	16	70	125	16
HESL4170	□	17	70	135	16
HESL4180	□	18	75	135	20
HESL4190	□	19	75	140	20
HESL4200	●	20	75	140	20
HESL4250	□	25	80	150	25

● : Stocked Items.

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

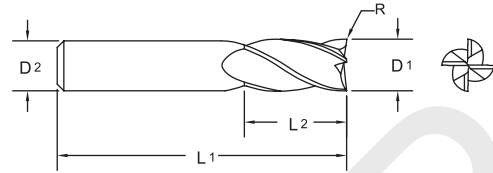
ดอกเอ็นมิลล์

END MILL
เอ็นมิลล์



เอ็นมิลล์ - รุ่น 111

TuffCut® GP ENDMILLS - STANDARD LENGTH SERIES 111



Designed for aggressive milling of most materials - Micro sizes available.

Order No.	EDP	Diameter		Shank	OAL	Flute Length	Corner Radius
		D1		D2	L1	L2	R
		mm	Decimal	mm	mm	mm	mm
11100780	51003	0.2	.0078*	3.0	38	0.6	
11101180	51007	0.3	.0118*	3.0	38	0.9	
11101570	51013	0.4	.0157	3.0	38	1.2	
11101960	51015	0.5	.0196	3.0	38	1.5	
11102360	51019	0.6	.0236	3.0	38	1.8	
11102750	51023	0.7	.0275	3.0	38	2.1	
11103150	51029	0.8	.0315	3.0	38	2.4	
11103540	51033	0.9	.0354	3.0	38	2.7	
11103940	11035	1.0	.0394	3.0	38	3.0	
11104330	151041	1.1	.0433	3.0	38	3.3	
11104720	51047	1.2	.0472	3.0	38	3.6	
11105120	51051	1.3	.0512	3.0	38	3.9	
11105510	51055	1.4	.0551	3.0	38	4.2	
11105910	11057	1.5	.0591	3.0	38	6.0	
11105911	51057	1.5	.0591	3.0	38	4.5	
11106300	51065	1.6	.0630	3.0	38	4.8	
11106690	51069	1.7	.0669	3.0	38	5.1	
11107090	51073	1.8	.0709	3.0	38	5.4	
11107480	51075	1.9	.0748	3.0	38	5.7	
11107870	11081	2.0	.0787	3.0	38	9.0	
11107871	51081	2.0	.0787	3.0	38	6.0	
11109840	11095	2.5	.0984	3.0	38	12.0	
11111810	11103	3.0	.1181	3.0	38	12.0	
11111811	51402	3.0	.1181	3.0	38	12.0	0.50
11113780	11111	3.5	.1378	4.0	51	12.0	
11115750	11115	4.0	.1575	4.0	51	14.0	
11115751	51404	4.0	.1575	4.0	51	14.0	0.50
11115752	51422	4.0	.1575	4.0	51	14.0	0.75
11117720	11117	4.5	.1772	5.0	51	14.0	
11119680	11121	5.0	.1968	5.0	51	20.0	
11119681	51406	5.0	.1968	5.0	51	20.0	0.50
11119682	51424	5.0	.1968	5.0	51	20.0	0.75
11119683	51440	5.0	.1968	5.0	51	20.0	1.00
11121650	11123	5.5	.2165	6.0	64	20.0	
11123620	11127	6.0	.2362	6.0	64	20.0	
11123621	51408	6.0	.2362	6.0	64	20.0	0.50
11123622	51426	6.0	.2362	6.0	64	20.0	0.75
11123623	51442	6.0	.2362	6.0	64	20.0	1.00
11127560	11131	7.0	.2756	8.0	64	20.0	
11131500	11137	8.0	.3150	8.0	64	20.0	
11131501	51410	8.0	.3150	8.0	64	20.0	0.50
11131502	51428	8.0	.3150	8.0	64	20.0	0.75
11131503	51444	8.0	.3150	8.0	64	20.0	1.00

Order No.	EDP	Diameter		Shank	OAL	Flute Length	Corner Radius
		D1		D2	L1	L2	R
		mm	Decimal	mm	mm	mm	mm
11131504	51456	8.0	.3150	8.0	64	20.0	1.50
11135430	11139	9.0	.3543	9.0	64	20.0	
11139370	11143	10.0	.3937	10.0	70	25.0	
11139371	51412	10.0	.3937	10.0	70	25.0	0.50
11139372	51430	10.0	.3937	10.0	70	25.0	0.75
11139373	51446	10.0	.3937	10.0	70	25.0	1.00
11139374	51458	10.0	.3937	10.0	70	25.0	1.50
11143310	11145	11.0	.4331	11.0	70	25.0	
11147240	11149	12.0	.4724	12.0	76	25.0	
11147241	51414	12.0	.4724	12.0	76	25.0	0.50
11147242	51432	12.0	.4724	12.0	76	25.0	0.75
11147243	51448	12.0	.4724	12.0	76	25.0	1.00
11147244	51460	12.0	.4724	12.0	76	25.0	1.50
11147245	51468	12.0	.4724	12.0	76	25.0	2.00
11155120	11153	14.0	.5512	14.0	89	30.0	
11162990	11159	16.0	.6299	16.0	89	30.0	
11162991	51416	16.0	.6299	16.0	89	30.0	0.50
11162992	51434	16.0	.6299	16.0	89	30.0	0.75
11162993	51450	16.0	.6299	16.0	89	30.0	1.00
11162994	51462	16.0	.6299	16.0	89	30.0	1.50
11162995	51470	16.0	.6299	16.0	89	30.0	2.00
11162996	51476	16.0	.6299	16.0	89	30.0	2.50
11162997	51482	16.0	.6299	16.0	89	30.0	3.00
11170870	11161	18.0	.7087	18.0	102	35.0	
11178740	11165	20.0	.7874	20.0	102	38.0	
11178741	51418	20.0	.7874	20.0	102	38.0	0.50
11178742	51436	20.0	.7874	20.0	102	38.0	0.75
11178743	51452	20.0	.7874	20.0	102	38.0	1.00
11178744	51464	20.0	.7874	20.0	102	38.0	1.50
11178745	51472	20.0	.7874	20.0	102	38.0	2.00
11178746	51478	20.0	.7874	20.0	102	38.0	2.50
11178747	51484	20.0	.7874	20.0	102	38.0	3.00
11186620	11167	22.0	.8662	22.0	102	40.0	
11198430	11171	25.0	.9843	25.0	102	40.0	
11198431	51420	25.0	.9843	25.0	102	40.0	0.50
11198432	51438	25.0	.9843	25.0	102	40.0	0.75
11198433	51454	25.0	.9843	25.0	102	40.0	1.00
11198434	51466	25.0	.9843	25.0	102	40.0	1.50
11198435	51474	25.0	.9843	25.0	102	40.0	2.00
11198436	51480	25.0	.9843	25.0	102	40.0	2.50
11198437	51486	25.0	.9843	25.0	102	40.0	3.00
11112600	11109	32.0	1.2600	32.0	111	40.0	

D1	Tolerance h10	D1	Tolerance h10
0.20-0.50	+.000/-0.025	>10.00-18.00	+.000/-0.070
0.60-3.00	+.000/-0.040	>18.00-30.00	+.000/-0.084
>3.00-6.00	+.000/-0.048	32.00	+.000/-0.100
>6.00-10.00	+.000/-0.058		

R	Tolerance
3.0-25.0	+.05/-0.05



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EPOCH POWER MILL

EPP4



Regular



Ø2 ~ Ø6 : 0 ~ -0.015
Ø6.5 ~ Ø25 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Excellent chip removal enables high efficiency.

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPP4020	□	2	6	60	6
EPP4025	□	2.5	8	60	6
EPP4030	●	3	8	60	6
EPP4035	□	3.5	10	60	6
EPP4040	●	4	11	60	6
EPP4045	□	4.5	11	60	6
EPP4050	●	5	13	60	6
EPP4055	□	5.5	13	60	6
EPP4060	●	6	13	60	6
EPP4065	□	6.6	16	70	8
EPP4070	●	7	16	70	8
EPP4075	□	7.5	16	70	8
EPP4080	●	8	19	75	8
EPP4085	□	8.5	19	80	10
EPP4090	●	9	19	80	10
EPP4095	□	9.5	19	80	10

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPP4100	●	10	22	80	10
EPP4110	●	11	22	100	12
EPP4120	●	12	26	100	12
EPP4130	●	13	26	100	12
EPP4140	●	14	26	110	16
EPP4150	●	15	26	110	16
EPP4160	●	16	32	110	16
EPP4170	●	17	32	110	16
EPP4180	●	18	32	125	20
EPP4190	●	19	32	125	20
EPP4200	●	20	38	125	20
EPP4210	□	21	38	125	20
EPP4220	□	22	38	125	20
EPP4230	□	23	45	140	25
EPP4240	□	24	45	140	25
EPP4250	□	25	63	140	25

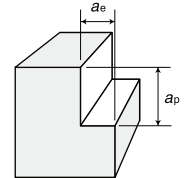
● : Stocked Items.

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

Recommended cutting conditions

EPP

Side Milling



Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)								
				Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
Cast Iron (150 ~ 200HB) FC250	High Speed	ap=1.5Dc	min ⁻¹	12,700	9,550	7,640	6,370	4,770	3,820	3,180	2,390	1,910
		ae=0.1Dc	mm / min	1,020	1,150	1,220	1,270	1,340	1,220	1,140	960	920
	General	ap=1.5Dc	min ⁻¹	10,600	7,960	6,370	5,310	3,980	3,180	2,650	1,990	1,590
		ae=0.15Dc	mm / min	850	960	1,020	1,060	1,110	1,020	950	800	760
Carbon Steels (180 ~ 220HB) SS400, S50C	High Speed	ap=1.5Dc	min ⁻¹	12,700	9,550	7,640	6,370	4,770	3,820	3,180	2,390	1,910
		ae=0.1Dc	mm / min	1,020	1,150	1,220	1,270	1,340	1,220	1,140	960	920
	General	ap=1.5Dc	min ⁻¹	10,600	7,960	6,370	5,310	3,980	3,180	2,650	1,990	1,590
		ae=0.1Dc	mm / min	850	960	1,020	1,060	1,110	1,020	950	800	760
Alloy Steels (200 ~ 250HB) SCM440, SNCM	High Speed	ap=1.5Dc	min ⁻¹	10,600	7,960	6,370	5,310	3,980	3,180	2,650	1,990	1,590
		ae=0.1Dc	mm / min	850	960	1,020	1,060	1,110	1,020	950	800	760
	General	ap=1.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
		ae=0.1Dc	mm / min	680	790	810	850	890	820	760	640	610
Stainless Steels, Tool Steels (25 ~ 35HRC) SUS304, SKD	High Speed	ap=1.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
		ae=0.1Dc	mm / min	510	640	710	680	640	610	590	540	510
	General	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,910	1,590	1,190	950
		ae=0.1Dc	mm / min	380	480	530	510	480	460	450	400	380
Pre-Hardened Steels (35 ~ 45HRC) HPM1, NAK55	High Speed	ap=1.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
		ae=0.1Dc	mm / min	510	640	710	680	640	610	590	540	510
	General	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,910	1,590	1,190	950
		ae=0.1Dc	mm / min	380	480	530	510	480	460	450	400	380

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)								
				Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,910	1,590	1,190	950
		ae=0.05Dc	mm / min	250	380	460	450	430	420	380	330	300
	General	ap=1.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
		ae=0.05Dc	mm / min	170	250	310	300	290	280	250	220	200
Titanium Alloy Ti-6Al-4V	High Speed	ap=1.5Dc	min ⁻¹	6,370	4,770	3,820	3,180	2,390	1,910	1,590	1,190	950
		ae=0.05Dc	mm / min	250	380	460	450	430	420	380	330	300
	General	ap=1.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
		ae=0.05Dc	mm / min	170	250	310	300	290	280	250	220	200
Super Heat-resistant Steels Inconel Hasteloy	High Speed	ap=1.5Dc	min ⁻¹	2,650	1,990	1,590	1,330	990	800	660	500	400
		ae=0.05Dc	mm / min	110	160	190	190	180	180	160	140	130
	General	ap=1.5Dc	min ⁻¹	2,120	1,590	1,270	1,060	800	640	530	400	320
		ae=0.05Dc	mm / min	85	130	150	150	140	140	130	110	110

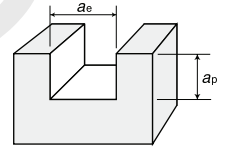
[Note]

- ① Down-cutting is recommended.
- ② Use generally dry (air-blow) or oil-mist coolant, especially at the high-speed machining.
- ③ Oil base coolant is recommended for machining stainless steels and heat-resistant steels.
- ④ Use a machine tool with rigidity and rigid set-up, to machine stably.
- ⑤ When the revolution speed is not enough, reduce the revolution speed and table speed at the same ratio.
- ⑥ Adjust the revolution speed and table speed, according to cutting conditions such as machining shape, rigidity of machine tool, over-hang and so on.

Recommended cutting conditions

EPP

Slotting



Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)								
				Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
Cast Iron (150 ~ 200HB) FC250	High Speed	ap≤0.5Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
		ae=1Dc	mm / min	420	480	510	530	560	510	480	400	380
	General	ap≤1Dc	min ⁻¹	3,180	2,390	1,910	1,590	1,190	950	800	600	480
		ae=1Dc	mm / min	250	290	310	320	330	300	290	240	230
Carbon Steels (180 ~ 220HB) SS400, S50C	High Speed	ap≤0.5Dc	min ⁻¹	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,590	1,270
		ae=1Dc	mm / min	680	760	810	850	890	820	760	640	610
	General	ap≤1Dc	min ⁻¹	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,390	1,110
		ae=1Dc	mm / min	590	670	710	740	780	710	670	560	530
Alloy Steels (200 ~ 250HB) SCM440, SNCM	High Speed	ap≤0.5Dc	min ⁻¹	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,390	1,110
		ae=1Dc	mm / min	590	670	710	740	780	710	670	560	530
	General	ap≤1Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
		ae=1Dc	mm / min	420	480	510	530	560	510	480	400	380
Stainless Steels, Tool Steels (25 ~ 35HRC) SUS304, SKD	High Speed	ap≤0.2Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
		ae=1Dc	mm / min	320	400	450	420	400	380	370	340	320
	General	ap≤0.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
		ae=1Dc	mm / min	250	320	360	340	320	300	300	270	260
Pre-Hardened Steels (35 ~ 45HRC) HPM1, NAK55	High Speed	ap≤0.2Dc	min ⁻¹	5,310	3,980	3,180	2,650	1,990	1,590	1,330	990	800
		ae=1Dc	mm / min	320	400	450	420	400	380	370	340	320
	General	ap≤0.5Dc	min ⁻¹	4,240	3,180	2,550	2,120	1,590	1,270	1,060	800	640
		ae=1Dc	mm / min	250	320	360	340	320	300	300	270	260
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	ap=	min ⁻¹									
		ae=	mm / min									
	General	ap≤0.2Dc	min ⁻¹	2,120	1,590	1,270	1,060	800	640	530	400	320
		ae=1Dc	mm / min	85	130	150	150	140	140	130	110	100
Titanium Alloy Ti-6Al-4V	High Speed	ap=	min ⁻¹									
		ae=	mm / min									
	General	ap≤0.2Dc	min ⁻¹	3,180	2,390	1,910	1,590	1,190	950	800	600	480
		ae=1Dc	mm / min	130	190	230	220	210	210	190	170	150
Super Heat-resistant Steels Inconel Hasteloy	High Speed	ap=	min ⁻¹									
		ae=	mm / min									
	General	ap≤0.2Dc	min ⁻¹	1,590	1,190	950	800	600	480	400	300	240
		ae=1Dc	mm / min	65	95	110	110	110	110	95	85	75

[Note]

- ① Use generally dry (air-blow) or oil-mist coolant, especially at the high-speed machining.
- ② Oil base coolant is recommended for machining stainless steels and heat-resistant steels.
- ③ Use a machine tool with rigidity and rigid set-up, to machine stably.
- ④ When the revolution speed is not enough, reduce the revolution speed and table speed at the same ratio.
- ⑤ Adjust the revolution speed and table speed, according to cutting conditions such as machining shape, rigidity of machine tool, over-hang and so on.



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EPOCH POWER MILL

EPPS4



Short



Ø1 ~ Ø6 : 0 ~ -0.015
Ø6.1 ~ Ø25 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Excellent chip removal enables high efficiency.

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPPS4010	□	1	1.5	60	6
EPPS4011	□	1.1	1.7	60	6
EPPS4012	□	1.2	1.8	60	6
EPPS4013	□	1.3	2	60	6
EPPS4014	□	1.4	2.1	60	6
EPPS4015	□	1.5	2.3	60	6
EPPS4016	□	1.6	2.4	60	6
EPPS4017	□	1.7	2.6	60	6
EPPS4018	□	1.8	2.7	60	6
EPPS4019	□	1.9	2.9	60	6
EPPS4020	□	2	3	60	6
EPPS4021	□	2.1	3.2	60	6
EPPS4022	□	2.2	3.3	60	6
EPPS4023	□	2.3	3.5	60	6
EPPS4024	□	2.4	3.6	60	6
EPPS4025	□	2.5	3.8	60	6
EPPS4026	□	2.6	3.9	60	6
EPPS4027	□	2.7	4.1	60	6
EPPS4028	□	2.8	4.2	60	6
EPPS4029	□	2.9	4.4	60	6
EPPS4030	●	3	4.5	60	6
EPPS4031	□	3.1	4.7	60	6
EPPS4032	□	3.2	4.8	60	6
EPPS4033	□	3.3	5	60	6
EPPS4034	□	3.4	5.1	60	6
EPPS4035	●	3.5	5.3	60	6
EPPS4036	□	3.6	5.4	60	6
EPPS4037	□	3.7	5.6	60	6
EPPS4038	□	3.8	5.7	60	6
EPPS4039	□	3.9	5.9	60	6
EPPS4040	●	4	6	60	6
EPPS4041	□	4.1	6.2	60	6
EPPS4042	□	4.2	6.3	60	6
EPPS4043	□	4.3	6.5	60	6
EPPS4044	□	4.4	6.6	60	6
EPPS4045	●	4.5	6.8	60	6
EPPS4046	□	4.6	6.9	60	6
EPPS4047	□	4.7	7.1	60	6
EPPS4048	□	4.8	7.2	60	6
EPPS4049	□	4.9	7.4	60	6
EPPS4050	●	5	7.5	60	6
EPPS4051	□	5.1	7.7	60	6
EPPS4052	□	5.2	7.8	60	6
EPPS4053	□	5.3	8	60	6
EPPS4054	□	5.4	8.1	60	6
EPPS4055	●	5.5	8.3	60	6
EPPS4056	□	5.6	8.4	60	6
EPPS4057	□	5.7	8.6	60	6
EPPS4058	□	5.8	8.7	60	6
EPPS4059	□	5.9	8.9	60	6

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPPS4060	●	6	9	60	6
EPPS4061	□	6.1	9.2	60	6
EPPS4062	□	6.2	9.3	60	6
EPPS4063	□	6.3	9.5	60	6
EPPS4064	□	6.4	9.6	60	6
EPPS4065	●	6.5	9.8	70	8
EPPS4066	□	6.6	9.9	70	8
EPPS4067	□	6.7	10.1	70	8
EPPS4068	□	6.8	10.2	70	8
EPPS4069	□	6.9	10.4	70	8
EPPS4070	●	7	10.5	70	8
EPPS4071	□	7.1	10.7	70	8
EPPS4072	□	7.2	10.8	70	8
EPPS4073	□	7.3	11	70	8
EPPS4074	□	7.4	11.1	70	8
EPPS4075	●	7.5	11.3	75	8
EPPS4076	□	7.6	11.4	75	8
EPPS4077	□	7.7	11.6	75	8
EPPS4078	□	7.8	11.7	75	8
EPPS4079	□	7.9	11.9	75	8
EPPS4080	●	8	12	75	8
EPPS4081	□	8.1	12.2	75	8
EPPS4082	□	8.2	12.3	75	8
EPPS4083	□	8.3	12.5	75	8
EPPS4084	□	8.4	12.6	75	8
EPPS4085	●	8.5	12.8	80	10
EPPS4086	□	8.6	12.9	80	10
EPPS4087	□	8.7	13.1	80	10
EPPS4088	□	8.8	13.2	80	10
EPPS4089	□	8.9	13.4	80	10
EPPS4090	●	9	13.5	80	10
EPPS4091	□	9.1	13.7	80	10
EPPS4092	□	9.2	13.8	80	10
EPPS4093	□	9.3	14	80	10
EPPS4094	□	9.4	14.1	80	10
EPPS4095	●	9.5	14.3	80	10
EPPS4096	□	9.6	14.4	80	10
EPPS4097	□	9.7	14.6	80	10
EPPS4098	□	9.8	14.7	80	10
EPPS4099	□	9.9	14.9	80	10
EPPS4100	●	10	15	80	10
EPPS4105	□	10.5	15.8	100	12
EPPS4110	□	11	16.5	100	12
EPPS4115	□	11.5	17.3	100	12
EPPS4120	●	12	18	100	12
EPPS4125	□	12.5	18.8	100	12
EPPS4130	□	13	19.5	100	12
EPPS4135	□	13.5	20.3	100	12
EPPS4140	□	14	21	100	12
EPPS4145	□	14.5	21.8	110	16

● : Stocked Items.

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

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPPS4150	☐	15	22.5	110	16
EPPS4155	☐	15.5	23.3	110	16
EPPS4160	●	16.5	24	110	16
EPPS4170	☐	17	25.5	110	16
EPPS4180	☐	18	27	110	16
EPPS4190	☐	19	28	125	20

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPPS4200	●	20	30	125	20
EPPS4210	☐	21	31.5	125	20
EPPS4220	☐	22	33	125	20
EPPS4230	☐	23	34.5	130	25
EPPS4240	☐	24	36	130	25
EPPS4250	☐	25	37.5	130	25

● : Stocked Items. ☐ : Stocked by specified distributor. Contact with our sales department.

ดอกเอ็นมิลล์

EPOCH POWER MILL

EPPM4 ○○○



Medium



Ø3 ~ Ø6 : 0~-0.015
Ø7 ~ Ø20 : 0~-0.02



Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds ≤ 18 : 0~-0.011
18 < Ds : 0~-0.013

(mm)

Excellent chip removal enables high efficiency.

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPPM4030	●	3	15	60	6
EPPM4040	●	4	17	60	6
EPPM4050	●	5	20	60	6
EPPM4060	●	6	20	60	6
EPPM4070	☐	7	23	75	8
EPPM4080	●	8	25	75	8
EPPM4090	☐	9	30	80	10
EPPM4100	●	10	33	80	10
EPPM4110	☐	11	33	100	12
EPPM4120	●	12	37	100	12
EPPM4130	☐	13	43	100	12
EPPM4140	☐	14	43	110	16
EPPM4150	☐	15	47	110	16
EPPM4160	●	16	47	110	16
EPPM4170	☐	17	47	110	16
EPPM4180	☐	18	55	125	20
EPPM4190	☐	19	55	125	20
EPPM4200	●	20	55	125	20

● : Stocked Items. ☐ : Stocked by specified distributor. Contact with our sales department.



ดอกเอ็นมิลล์

EPOCH POWER MILL
EPPL4

Long



Ø3 ~ Ø6 : 0 ~ -0.015
Ø7 ~ Ø20 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Excellent chip removal enables high efficiency.

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
EPPL4030	☐	3	18	65	6
EPPL4040	☐	4	20	65	6
EPPL4050	☐	5	25	70	6
EPPL4060	☒	6	25	70	6
EPPL4070	☐	7	35	90	8
EPPL4080	☒	8	35	90	8
EPPL4090	☐	9	45	100	10
EPPL4100	☒	10	45	100	10
EPPL4110	☐	11	55	120	12
EPPL4120	☒	12	55	120	12
EPPL4130	☐	13	55	120	12
EPPL4140	☐	14	55	125	16
EPPL4150	☐	15	65	135	16
EPPL4160	☒	16	65	135	16
EPPL4170	☐	17	65	145	20
EPPL4180	☐	18	65	145	20
EPPL4190	☐	19	75	155	20
EPPL4200	☒	20	75	155	20

● : Stocked Items.

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐ R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์

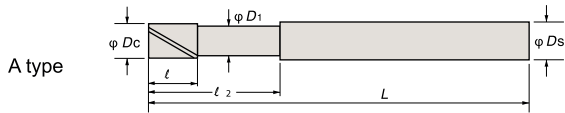


MOLDINO
The Edge To Innovation

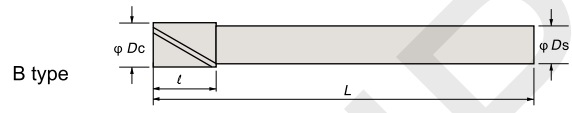
ดอกเอ็นมิลล์

EPOCH POWER MILL

EPPLS4



A type



B type

Long Shank



Ø3 ~ Ø6 : 0~-0.015
Ø7 ~ Ø20 : 0~-0.02



Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds ≤ 18 : 0~-0.011
18 < Ds : 0~-0.013

(mm)

Excellent chip removal enables high efficiency.

Item Code	Stock	Size (mm)						Type
		Tool Dia.	Flute Length	D1 Neck Dia.	Under Neck Length	Overall length	Shank Dia.	
EPPLS4030	●	3	4.5	2.9	10.5	80	6	A
EPPLS4040	●	4	6	3.8	14	80	6	A
EPPLS4050	●	5	7.5	4.8	17.5	100	6	A
EPPLS4060	●	6	9	-	-	120	5	B
EPPLS4070	●	7	9	-	-	120	6	B
EPPLS4080	●	8	12	-	-	135	7	B
EPPLS4090	●	9	12	-	-	135	8	B
EPPLS4100	●	10	15	-	-	150	9	B
EPPLS4110	●	11	15	-	-	150	10	B
EPPLS4120	●	12	18	-	-	160	11	B
EPPLS4130	●	13	18	-	-	160	12	B
EPPLS4140	□	14	18	-	-	160	13	B
EPPLS4150	□	15	22	-	-	180	14	B
EPPLS4160	●	16	24	-	-	180	15	B
EPPLS4170	●	17	24	-	-	180	16	B
EPPLS4180	□	18	27	-	-	180	16	B
EPPLS4190	□	19	30	-	-	200	18	B
EPPLS4200	□	20	30	-	-	200	20	B

● : Stocked Items.

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



ดอกเอ็นมิลล์

EPOCH UNIVERSAL

CEPU4



Ø4 ~ Ø6 : 0 ~ -0.015
Ø8 ~ Ø20 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

2-step flute groove enables high-efficiency machining from grooving to side cutting. Focus on efficiency.

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
CEPU4040	●	4	12	60	6
CEPU4060	●	6	15	60	6
CEPU4080	●	8	20	75	8
CEPU4100	●	10	25	80	10
CEPU4120	●	12	30	100	12
CEPU4160	●	16	40	110	16
CEPU4200	●	20	45	125	20

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

ดอกเอ็นมิลล์

C-COATED CARBIDE END MILLS

HES4

4Flutes



Regular



Ø2 ~ Ø6 : 0 ~ -0.02
Ø6.5 ~ Ø30 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HES4020-C	●	2	6	40	4
HES4025-C	●	2.5	8	40	4
HES4030-C	●	3	10	45	6
HES4035-C	●	3.5	11	45	6
HES4040-C	●	4	12	45	6
HES4045-C	●	4.5	14	45	6
HES4050-C	●	5	15	50	6
HES4055-C	●	5.5	15	50	6
HES4060-C	●	6	15	50	6
HES4065-C	●	6.5	15	50	6
HES4070-C	●	7	20	60	8
HES4075-C	●	7.5	20	60	8
HES4080-C	●	8	20	60	8
HES4085-C	●	8.5	20	60	8

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

Item Code	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall length	Shank Dia.
HES4090-C	●	9	20	65	10
HES4095-C	●	9.5	20	65	10
HES4100-C	●	10	25	70	10
HES4110-C	●	11	25	75	12
HES4120-C	●	12	25	75	12
HES4130-C	●	13	25	75	12
HES4140-C	●	14	35	90	16
HES4150-C	●	15	35	90	16
HES4160-C	●	16	35	90	16
HES4180-C	●	18	40	105	20
HES4200-C	●	20	40	105	20
HES4250-C	●	25	50	120	25
HES4300-C	□	30	55	130	32

● : Stocked Items.

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

C-COATED CARBIDE END MILLS HESM4 -C

4Flutes



Medium



Ø3 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø30 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Item Code	Stock	Size (mm)			
		Mill Dia.	Flute Length	Overall length	Shank Dia.
HESM4030-C	●	3	15	50	6
HESM4040-C	●	4	17	50	6
HESM4050-C	●	5	20	53	6
HESM4060-C	●	6	20	60	6
HESM4070-C	●	7	25	63	8
HESM4080-C	●	8	25	75	8
HESM4090-C	●	9	28	75	10
HESM4100-C	●	10	33	80	10
HESM4120-C	●	12	37	90	12

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

Item Code	Stock	Size (mm)			
		Mill Dia.	Flute Length	Overall length	Shank Dia.
HESM4130-C	□	13	37	100	12
HESM4140-C	□	14	42	100	16
HESM4150-C	□	15	42	110	16
HESM4160-C	●	16	47	110	16
HESM4180-C	□	18	50	120	20
HESM4190-C	□	19	50	120	20
HESM4200-C	●	20	55	120	20
HESM4250-C	□	25	65	140	25
HESM4300-C	□	30	70	145	32

● : Stocked Items.

ดอกเอ็นมิลล์

C-COATED CARBIDE END MILLS HESL4 -C

4Flutes



Long



Ø3 ~ Ø6 : 0 ~ -0.02
Ø7 ~ Ø25 : 0 ~ -0.025



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Item Code	Stock	Size (mm)			
		Mill Dia.	Flute Length	Overall length	Shank Dia.
HESL4030-C	●	3	20	55	6
HESL4040-C	●	4	24	55	6
HESL4050-C	●	5	30	65	6
HESL4060-C	●	6	30	65	6
HESL4070-C	●	7	40	80	8
HESL4080-C	●	8	40	80	8
HESL4090-C	●	9	40	85	10
HESL4100-C	●	10	50	95	10
HESL4120-C	●	12	50	100	12
HESL4130-C	□	13	50	100	12
HESL4140-C	□	14	70	125	16
HESL4150-C	□	15	70	125	16
HESL4160-C	●	16	70	125	16
HESL4180-C	□	18	75	135	20
HESL4200-C	●	20	75	140	20
HESL4250-C	□	25	80	150	25

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

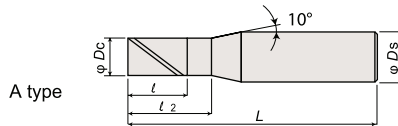
● : Stocked Items.



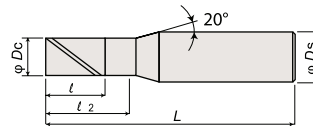
ดอกเอ็นมิลล์

EPOCH PANACEA SQUARE
HGOS4 -PN

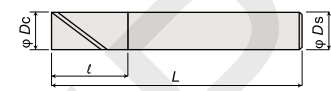
4Flutes



B type



C type



4 flutes



0 ~ -0.02



$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 18$: 0 ~ -0.008
 $18 < D_s$: 0 ~ -0.009

(mm)

PN coating for amazing seizure resistance and wear resistance. Enables machining of a wide variety of materials.

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	l Flute Length	l ₂ Under Neck length	L Overall length	Ds Shank Dia.		
HGOS4010-PN	●	1	2.5	3	40	4	4	A
HGOS4015-PN	●	1.5	4	4.5	40	4	4	A
HGOS4020-PN	●	2	6	7	40	4	4	A
HGOS4025-PN	●	2.5	8	9	40	4	4	A
HGOS4030-PN	●	3	10	11	45	6	4	A
HGOS4040-PN	●	4	12	13	45	6	4	B
HGOS4050-PN	●	5	15	16	60	6	4	B
HGOS4060-PN	●	6	15	-	60	6	4	C
HGOS4080-PN	●	8	20	-	75	8	4	C
HGOS4100-PN	●	10	25	-	80	10	4	C
HGOS4120-PN	●	12	30	-	100	12	4	C
HGOS4160-PN	●	16	35	-	110	16	4	C
HGOS4200-PN	●	20	40	-	125	20	4	C

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์

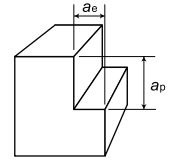


Recommended cutting conditions

HGOS4-PN

Epoch Panacea Square

Side cutting



Dc Tool Dia.	l Flute length	Copper Alloy, Aluminium Alloy				Cast Iron, Carbon Steels (150 ~ 200HB) FC250, S50C, S55C				Stainless Steels (25 ~ 35HRC) SUS304, SUS316			
		min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
0.2	0.4	66,879	669	0.300	0.010	55,732	557	0.300	0.010	33,439	301	0.300	0.008
0.3	0.6	44,586	446	0.450	0.015	37,155	372	0.450	0.015	22,293	201	0.450	0.012
0.4	0.8	38,217	382	0.600	0.020	27,866	279	0.600	0.020	16,720	150	0.600	0.016
0.5	1	38,217	382	0.750	0.025	25,478	255	0.750	0.025	15,287	138	0.750	0.020
0.6	1.2	41,401	662	0.900	0.030	26,539	425	0.900	0.030	15,924	229	0.900	0.024
0.7	1.4	35,487	568	1.050	0.035	29,572	473	1.050	0.035	17,743	256	1.050	0.028
0.8	1.6	33,439	535	1.200	0.040	25,876	414	1.200	0.040	15,525	224	1.200	0.032
0.9	1.8	33,970	544	1.350	0.045	24,770	396	1.350	0.045	14,862	214	1.350	0.036
1	2	38,217	764	1.500	0.050	25,478	510	1.500	0.050	15,287	275	1.500	0.040
1.5	3	28,025	561	2.250	0.150	21,231	425	2.250	0.150	12,739	229	2.250	0.135
2	6	21,019	631	3.000	0.200	17,516	525	3.000	0.200	10,510	284	3.000	0.180
2.5	8	16,815	504	3.750	0.250	14,013	420	3.750	0.250	8,408	227	3.750	0.225
3	8	15,287	611	4.500	0.300	11,677	467	4.500	0.300	7,006	252	4.500	0.270
3.5	10	13,103	524	5.250	0.350	10,919	437	5.250	0.350	6,551	236	5.250	0.315
4	11	11,465	573	6.000	0.400	9,554	478	6.000	0.400	5,732	258	6.000	0.360
4.5	11	10,191	510	6.750	0.450	8,493	425	6.750	0.450	5,096	229	6.750	0.405
5	13	9,172	550	7.500	0.500	7,643	459	7.500	0.500	4,586	248	7.500	0.450
5.5	13	8,338	500	8.250	0.550	6,948	417	8.250	0.550	4,169	225	8.250	0.495
6	13	7,643	459	9.000	0.600	6,369	382	9.000	0.600	3,822	206	9.000	0.540
7	16	6,551	459	10.500	0.700	5,460	382	10.500	0.700	3,276	206	10.500	0.630
8	19	5,732	401	12.000	0.800	4,777	334	12.000	0.800	2,866	181	12.000	0.720
9	19	5,096	408	13.500	0.900	4,246	340	13.500	0.900	2,548	183	13.500	0.810
10	22	4,586	459	15.000	1.000	3,822	382	15.000	1.000	2,293	206	15.000	0.900
12	26	3,822	459	18.000	1.200	3,185	382	18.000	1.200	1,911	206	18.000	1.080
16	35	2,866	401	24.000	1.600	2,389	334	24.000	1.600	1,433	181	24.000	1.440
20	40	2,293	367	30.000	2.000	1,911	306	30.000	2.000	1,146	165	30.000	1.800

Dc Mill Dia.	l Flute length	Alloy Steels (25 ~ 35HRC) HPM7, SKD61®, DKT4				Pre-hardened Steels (35 ~ 45HRC) HPM-MAGIC, CENA1, NAK80				Hardened Steels (45 ~ 52HRC) SKD61®, HPM38, DAC-MAGIC			
		min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
0.2	0.4	33,439	301	0.300	0.008	26,752	217	0.300	0.006	16,720	105	0.300	0.006
0.3	0.6	22,293	201	0.450	0.012	17,834	144	0.450	0.009	11,146	70	0.450	0.009
0.4	0.8	16,720	150	0.600	0.016	13,376	108	0.600	0.012	8,360	53	0.600	0.012
0.5	1	15,287	138	0.750	0.020	12,229	99	0.750	0.015	7,643	48	0.750	0.015
0.6	1.2	15,924	229	0.900	0.024	12,739	165	0.900	0.018	7,962	80	0.900	0.018
0.7	1.4	17,743	256	1.050	0.028	14,195	184	1.050	0.021	8,872	89	1.050	0.021
0.8	1.6	15,525	224	1.200	0.032	12,420	161	1.200	0.024	7,763	78	1.200	0.024
0.9	1.8	14,862	214	1.350	0.036	11,890	154	1.350	0.027	7,431	75	1.350	0.027
1	2	15,287	275	1.500	0.040	12,229	198	1.500	0.030	7,643	96	1.500	0.030
1.5	3	12,739	229	2.250	0.135	10,191	165	2.250	0.120	6,369	80	2.250	0.045
2	6	10,510	284	3.000	0.180	6,115	149	3.000	0.160	5,732	108	3.000	0.060
2.5	8	8,408	227	3.750	0.225	5,707	139	3.750	0.200	5,350	101	3.750	0.075
3	8	7,006	252	4.500	0.270	5,096	165	4.500	0.240	4,777	120	4.500	0.090
3.5	10	6,551	236	5.250	0.315	4,659	151	5.250	0.280	4,368	110	5.250	0.105
4	11	5,732	258	6.000	0.360	4,331	175	6.000	0.320	4,061	128	6.000	0.120
4.5	11	5,096	229	6.750	0.405	4,076	165	6.750	0.360	3,822	120	6.750	0.135
5	13	4,586	248	7.500	0.450	3,873	188	7.500	0.400	3,631	137	7.500	0.150
5.5	13	4,169	225	8.250	0.495	3,706	180	8.250	0.440	3,474	131	8.250	0.165
6	13	3,822	206	9.000	0.540	3,397	165	9.000	0.480	3,185	120	9.000	0.180
7	16	3,276	206	10.500	0.630	2,912	165	10.500	0.560	2,730	120	10.500	0.210
8	19	2,866	181	12.000	0.720	2,548	144	12.000	0.640	2,389	105	12.000	0.240
9	19	2,548	183	13.500	0.810	2,265	147	13.500	0.720	2,123	107	13.500	0.270
10	22	2,293	206	15.000	0.900	2,038	165	15.000	0.800	1,911	120	15.000	0.300
12	26	1,911	206	18.000	1.080	1,699	165	18.000	0.960	1,592	120	18.000	0.360
16	35	1,433	181	24.000	1.440	1,274	144	24.000	1.280	1,194	105	24.000	0.480
20	40	1,146	165	30.000	1.800	1,019	132	30.000	1.600	955	96	30.000	0.600

[Note]

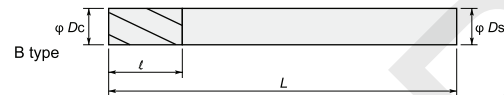
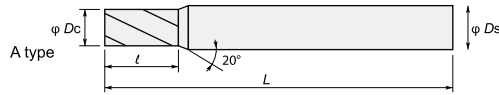
- ① PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.
- ② The cutting conditions given above is applied to 2 flutes type end mills. As for 4 flutes type, increase the feed rate by 1.5 times.
- ③ Use a highly rigid and accurate machine as possible.
- ④ Use the appropriate coolant for the work material and machining shape.
- ⑤ These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- ⑥ If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.



ดอกเอ็นมิลล์

EPOCH SUS MULTI-SHORT
EPSMS4 -PN

4Flutes



Short



$\phi 1 \sim \phi 6$: 0 ~ -0.015
 $\phi 6.1 \sim \phi 20$: 0 ~ -0.02



$Ds \leq 6$: 0 ~ -0.005
 $6 < Ds \leq 10$: 0 ~ -0.006
 $10 < Ds \leq 12$: 0 ~ -0.008
 $Ds = 16$: 0 ~ -0.011
 $Ds = 20$: 0 ~ -0.013

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	l Flute Length	L Overall length	Ds Shank Dia.	
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
EPSMS4050-PN	☐	5	7.5	56	6	A

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	l Flute Length	L Overall length	Ds Shank Dia.	
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
EPSMS4090-PN	☐	9	13.5	74	10	A
EPSMS4091-PN	☐	9.1	13.7	74	10	A

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

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

END MILL
เอ็นมิลล์

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	ℓ Flute Length	L Overall length	Ds Shank Dia.	
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

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

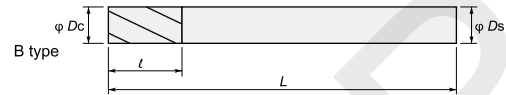
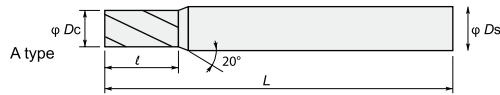
Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	ℓ Flute Length	L Overall length	Ds Shank Dia.	
EPSMS4115-PN	☐	11.5	17.3	86	12	A
EPSMS4116-PN	☐	11.6	17.4	86	12	A
EPSMS4117-PN	☐	11.7	17.6	86	12	A
EPSMS4118-PN	☐	11.8	17.7	86	12	A
EPSMS4119-PN	☐	11.9	17.9	86	12	A
EPSMS4120-PN	☐	12	18	86	12	B
EPSMS4125-PN	☐	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
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



ดอกเอ็นมิลล์

EPOCH SUS MULTI
EPSM4 -PN

4Flutes



Regular


 $\phi_1 \sim \phi_6 : 0 \sim -0.015$
 $\phi_{6.05} \sim \phi_{20} : 0 \sim -0.02$


06~12



016~20

 $Ds \leq 6 : 0 \sim -0.005$
 $6 < Ds \leq 10 : 0 \sim -0.006$
 $10 < Ds \leq 12 : 0 \sim -0.008$
 $Ds = 16 : 0 \sim -0.011$
 $Ds = 20 : 0 \sim -0.013$

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	
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

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

● : Stocked Items.

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	
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
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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	
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
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

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

● : Stocked Items.

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	
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
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



Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	
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

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

● : Stocked Items.

Please refer to page 648-650 for Condition

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	
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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

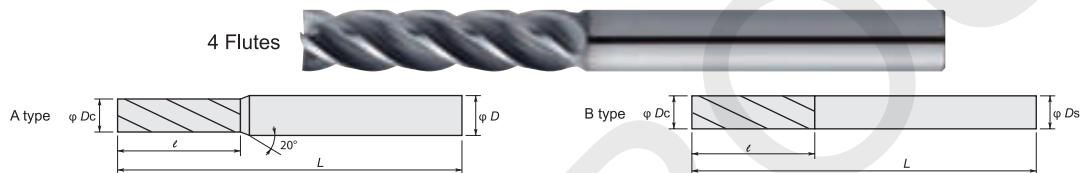
Taper Ball

หัวเตเปอร์บอล

Roughing

ดอกเอ็นมิลล์

EPOCH SUS MULTI-MEDIUM
EPSMM4 -PN



Medium



φ3 ~ φ6 : 0~-0.015
φ7 ~ φ20 : 0~-0.02



Ds ≤ 6 : 0~-0.005
6 < Ds ≤ 10 : 0~-0.006
10 < Ds ≤ 12 : 0~-0.008
Ds = 16 : 0~-0.011
Ds = 20 : 0~-0.013

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)				Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	
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
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

● : Stocked Items.

Please refer to page 652 for Condition

END MILL

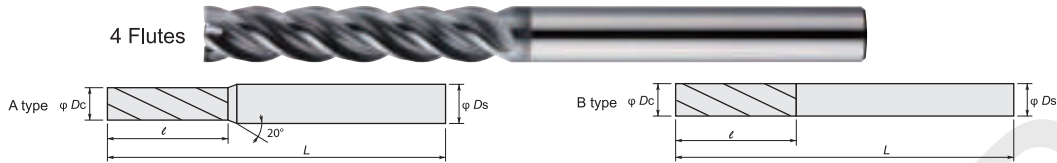
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH SUS MULTI-LONG EPSML4 -PN

4 Flutes



Long



$\phi 6$: 0 ~ -0.015
 $\phi 7$ ~ $\phi 20$: 0 ~ -0.02



Ø6~12 Ø16~20

$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 12$: 0 ~ -0.008
 $D_s = 16$: 0 ~ -0.011
 $D_s = 20$: 0 ~ -0.013

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)				No. of flutes	Shape
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.		
EPSML4060-PN	●	6	30	70	6	4	B
EPSML4070-PN	□	7	35	80	8	4	A
EPSML4080-PN	●	8	40	80	8	4	B
EPSML4090-PN	□	9	45	100	10	4	A
EPSML4110-PN	●	10	50	100	10	4	B
EPSML4110-PN	□	11	55	120	12	4	A
EPSML4120-PN	●	12	60	120	12	4	B
EPSML4130-PN	□	13	65	130	16	4	A

Item Code	Stock	Size (mm)				No. of flutes	Shape
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.		
EPSML4140-PN	□	14	70	130	16	4	A
EPSML4150-PN	□	15	75	130	16	4	A
EPSML4160-PN	●	16	80	135	16	4	B
EPSML4170-PN	□	17	85	135	20	4	A
EPSML4180-PN	□	18	90	145	20	4	A
EPSML4190-PN	□	19	95	145	20	4	A
EPSML4200-PN	●	20	100	155	20	4	B

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

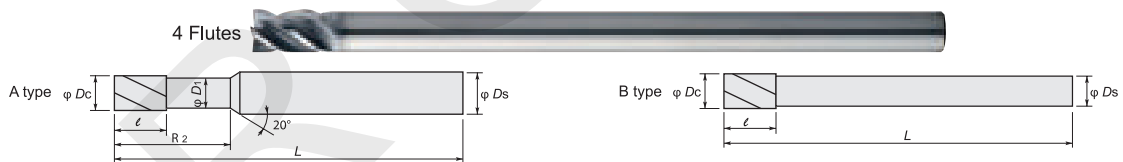
● : Stocked Items.

Please refer to page 652 for Condition

ดอกเอ็นมิลล์

EPOCH SUS MULTI-LONG SHANK EPSMLS4 -PN

4 Flutes



Long Shank



$\phi 3$ ~ $\phi 6$: 0 ~ -0.015
 $\phi 7$ ~ $\phi 17$: 0 ~ -0.02



Ø6~12 Ø16~20

$D_s \leq 5$: 0 ~ -0.005
 $6 \leq D_s \leq 7$: 0 ~ -0.008
 $8 \leq D_s \leq 11$: 0 ~ -0.009
 $12 \leq D_s$: 0 ~ -0.011

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)						No. of flutes	Shape
		Dc Tool Dia.	Flute Length	Under Neck length	D1 Neck dia.	L Overall length	Ds Shank dia.		
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

● : Stocked Items.

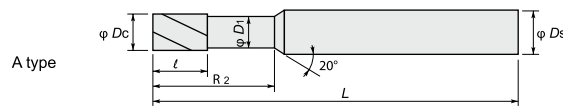
Please refer to page 651 for Condition



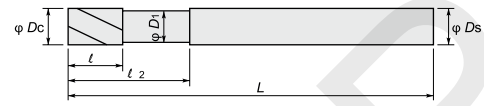
ดอกเอ็นมิลล์

EPOCH SUS MULTI
EPSM4 -PN

4Flutes



B type



Under neck 3 Dc


 $\phi 1 \sim \phi 6 : 0 \sim -0.015$
 $\phi 6.5 \sim \phi 20 : 0 \sim -0.02$


h5



h6

Ø6~12 Ø16~20

 $Ds \leq 6 : 0 \sim -0.005$
 $6 < Ds \leq 10 : 0 \sim -0.006$
 $10 < Ds \leq 12 : 0 \sim -0.008$
 $Ds = 16 : 0 \sim -0.011$
 $Ds = 20 : 0 \sim -0.013$

(mm)

Multi-purpose for roughing to finishing of stainless steel

Item Code	Stock	Size (mm)						No. of flutes	Type
		Dc Tool Dia.	Flute Length l	Under Neck Length l_2	D1 Neck Dia.	L Overall Length	Ds Shank Dia.		
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 by specified distributor. Contact with our sales department.

● : Stocked item

Please refer to page 648-650 for Condition

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐ R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

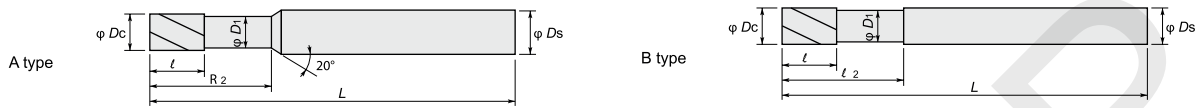
ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH SUS MULTI

EPSM4 -PN



Under neck 5 Dc



$\phi 1 \sim \phi 6$: 0 ~ -0.015
 $\phi 6.5 \sim \phi 20$: 0 ~ -0.02



06-12 016-20



$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 12$: 0 ~ -0.008
 $D_s = 16$: 0 ~ -0.011
 $D_s = 20$: 0 ~ -0.013

(mm)

Item Code	Stock	Size (mm)						No. of flutes	Type
		Dc Tool Dia.	Flute Length l	Under Neck Length l_2	D1 Neck Dia.	L Overall Length	Ds Shank Dia.		
EPSM4010-5-PN	●	1	1.5	5	0.96	68	4	6	A
EPSM4015-7.5-PN	□	1.5	2.3	7.5	1.44	68	4	6	A
EPSM4020-10-PN	●	2	3	10	1.92	68	4	6	A
EPSM4025-12.5-PN	□	2.5	3.8	12.5	2.4	68	4	6	A
EPSM4030-15-PN	●	3	4.5	15	2.88	68	4	6	A
EPSM4035-17.5-PN	□	3.5	5.3	17.5	3.35	68	4	6	A
EPSM4040-20-PN	●	4	6	20	3.7	68	4	6	A
EPSM4045-22.5-PN	□	4.5	6.8	22.5	4.15	68	4	6	A
EPSM4050-25-PN	●	5	7.5	25	4.6	68	4	6	A
EPSM4055-27.5-PN	□	5.5	8.3	27.5	5.05	68	4	6	A
EPSM4060-30-PN	●	6	9	30	5.5	68	4	6	B
EPSM4065-32.5-PN	□	6.5	9.8	32.5	5.95	80	4	8	A
EPSM4070-35-PN	●	7	10.5	35	6.4	80	4	8	A
EPSM4075-37.5-PN	□	7.5	11.3	37.5	6.85	80	4	8	A
EPSM4080-40-PN	●	8	12	40	7.3	80	4	8	B
EPSM4085-42.5-PN	□	8.5	12.8	42.5	7.8	94	4	10	A
EPSM4090-45-PN	●	9	13.5	45	8.3	94	4	10	A
EPSM4095-47.5-PN	□	9.5	14.3	47.5	8.7	94	4	10	A
EPSM4100-50-PN	●	10	15	50	9.1	94	4	10	B
EPSM4105-52.5-PN	□	10.5	15.8	52.5	9.65	110	4	12	A
EPSM4110-55-PN	●	11	16.5	55	10.2	110	4	12	A
EPSM4115-57.5-PN	□	11.5	17.3	57.5	10.6	110	4	12	A
EPSM4120-60-PN	●	12	18	60	11	110	4	12	B
EPSM4130-65-PN	□	13	19.5	65	11.7	125	4	16	A
EPSM4140-70-PN	□	14	21	70	12.7	125	4	16	A
EPSM4150-75-PN	□	15	22.5	75	13.6	135	4	16	A
EPSM4160-80-PN	●	16	24	80	14.5	135	4	16	B
EPSM4170-85-PN	□	17	25.5	85	15.4	145	4	20	A
EPSM4180-90-PN	□	18	27	90	16.3	145	4	20	A
EPSM4190-95-PN	□	19	28.5	95	17.3	155	4	20	A
EPSM4200-100-PN	●	20	30	100	18.2	155	4	20	B

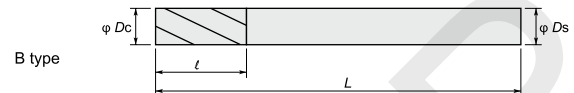
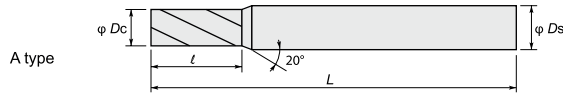
□ : Stocked by specified distributor. Contact with our sales department.

● : Stocked item

Please refer to page 650-651 for Condition



ดอกเอ็นมิลล์
EPOCH SUS WAVE
EPSW ○○○○ -PN



Regular



Ds ≤ 6 : 0~-0.005
6 < Ds ≤ 10 : 0~-0.006
10 < Ds ≤ 12 : 0~-0.008
Ds = 16 : 0~-0.011
Ds = 20 : 0~-0.013

(mm)

For stable cutting of stainless steel in environments using low-rigidity machines and weak clamps.

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	Flute Length	L Overall length	Ds Shank Dia.	Corner chamfering width		
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 by specified distributor. Contact with our sales department.

● : Stocked item

Please refer to page 649 for Condition

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์

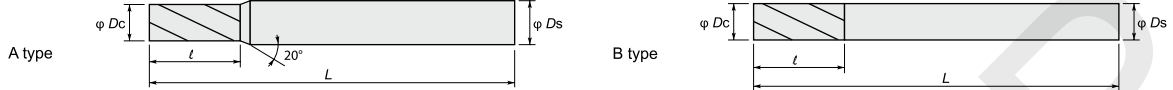


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The Edge To Innovation

ดอกเอ็นมิลล์

EPOCH SUS WAVE

EPSWL4 -PN



Long



0 ~ -0.05



Ø6-12 Ø16-20

Ds ≤ 6 : 0 ~ -0.005
6 < Ds ≤ 10 : 0 ~ -0.006
10 < Ds ≤ 12 : 0 ~ -0.008
Ds = 16 : 0 ~ -0.011
Ds = 20 : 0 ~ -0.013

(mm)

For stable cutting of stainless steel in environments using low-rigidity machines and weak clamps.

Item Code	Stock	Size (mm)					No. of flutes	Type
		Dc Tool Dia.	ℓ Flute Length	L Overall length	Ds Shank Dia.	Corner chamfering width		
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

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

● : Stocked item

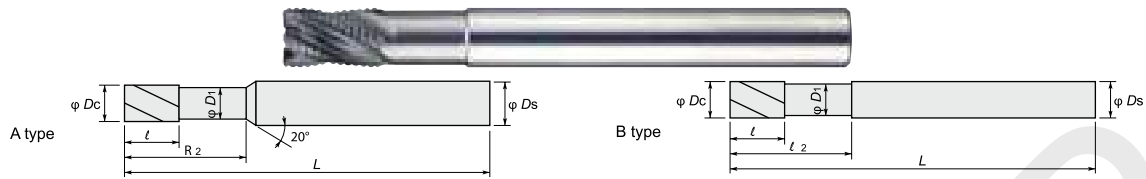
Please refer to page 652 for Condition



ดอกเอ็นมิลล์

EPOCH SUS MULTI

EPSW 000-000 -PN



Under neck 3 Dc type



$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 12$: 0 ~ -0.008
 $D_s = 16$: 0 ~ -0.011
 $D_s = 20$: 0 ~ -0.013

(mm)

For stable cutting of stainless steel in environments using low-rigidity machines and weak clamps.

Item Code	Stock	Size (mm)							No. of flutes	Type
		Dc Tool Dia.	Flute Length	Under neck length	D1 Neck Dia.	L Overall length	Ds Shank Dia.	Corner chamfering width		
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

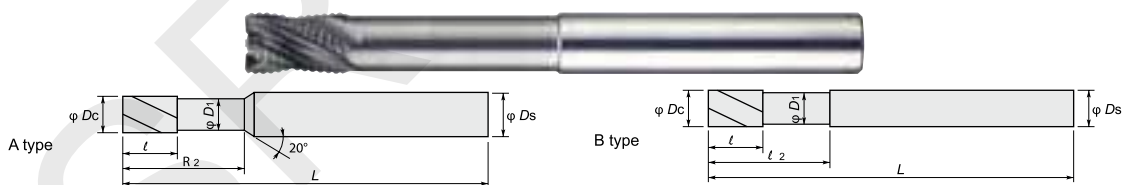
● : Stocked item

Please refer to page 649 for Condition

ดอกเอ็นมิลล์

EPOCH SUS MULTI

EPSW 000-000 -PN



Under neck 5 Dc



$D_s \leq 6$: 0 ~ -0.005
 $6 < D_s \leq 10$: 0 ~ -0.006
 $10 < D_s \leq 12$: 0 ~ -0.008
 $D_s = 16$: 0 ~ -0.011
 $D_s = 20$: 0 ~ -0.013

(mm)

For stable cutting of stainless steel in environments using low-rigidity machines and weak clamps.

Item Code	Stock	Size (mm)							No. of flutes	Type
		Dc Tool Dia.	Flute Length	Under neck length	D1 Neck Dia.	L Overall length	Ds Shank Dia.	Corner chamfering width		
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

● : Stocked item

END MILL

ดอกเอ็นมิลล์

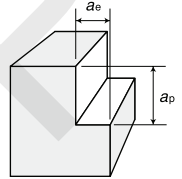


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Item Code	Stock	Size (mm)							No. of flutes	Type
		Dc Tool Dia.	ℓ Flute Length	ℓ ₂ Under neck length	D1 Neck Dia.	L Overall length	Ds Shank Dia.	Corner chamfering width		
EPSW4090-45-PN	●	9	13.5	45	8.3	94	10	0.5	4	A
EPSW4100-50-PN	●	10	15	50	9.1	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	135	20	0.7	4	B

● : Stocked item

Please refer to page 651 for Condition



Recommended cutting conditions

General Side milling condition

EPSMS※2		EPSM		EPSM-CR		EPSM-3Dc		EPSW		EPSW-3Dc	
Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels		
	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		
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	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.

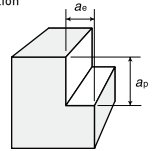
[Note] PN coating is less electro conductive. Therefore, electric transmitted measuring systems may not work.

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 condition

EPSMS※2**EPSM****EPSM-3Dc**

Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	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	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	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

[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.

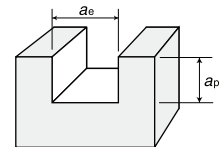
Use the high-rigidity and high accuracy machine as possible.

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

General Slotting Condition

**EPSMS※2****EPSM****EPSM-3Dc****EPSW****EPSW-3Dc**

Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=0.5Dc		ap=0.5Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	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

END MILL

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Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=0.5Dc		ap=0.5Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min
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.

[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.

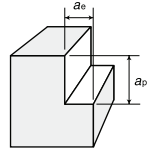
Please adjust it if chatter or abnormal vibration occurs.

Please setup feed 1/3 that of slotting parameter and step 0.1Dc for drilling application.

Please setup feed 70% of slotting parameter and ramping angle 3° for ramping application.

Recommended cutting conditions

Side finishing condition



EPSMS ^{※3}	EPSM	EPSM-3Dc	EPSM-5Dc ^{※3}
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Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	ap=1Dc, ae=0.01 ~ 0.02Dc		ap=1Dc, ae=0.001 ~ 0.02Dc		ap=1Dc, ae=0.001 ~ 0.02Dc		ap=1Dc, ae=0.001 ~ 0.02Dc		ap=1Dc, ae=0.001 ~ 0.02Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	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] 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.

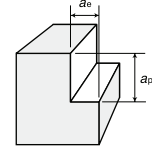
These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.

Please adjust it if chatter or abnormal vibration occurs.



Recommended cutting conditions

General Side milling condition



EPSMLS

EPSM-5DC

EPSW-5Dc

Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	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.

[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.

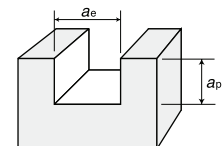
Please adjust it if chatter or abnormal vibration occurs.

Recommended cutting conditions

General Slotting condition

EPSM-5Dc

EPSW-5Dc



Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	ap=0.5Dc		ap=0.5Dc		ap=0.5Dc		ap=0.25Dc		ap=0.25Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min
1	25,500	320	15,900	160	14,300	110	9,500	50	4,800	14
1.5	17,700	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

END MILL

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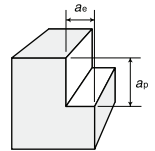
Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	ap=0.5Dc		ap=0.5Dc		ap=0.5Dc		ap=0.25Dc		ap=0.25Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min
11.5	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] 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.
Please setup feed 1/3 that of slotting parameter and step 0.1Dc for drilling application.
Please setup feed 70% of slotting parameter and ramping angle 3° for ramping application

Recommended cutting conditions

General Side milling condition

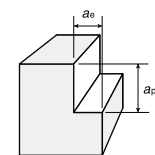


Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc		ap=1Dc, ae=0.5Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	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] 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

General Side milling condition



Dc Tool Dia.	(~ 30HRC) Carbon Steels, Alloy Steels Cast Iron		(30 ~ 40HRC) Tool steels, Pre-hardened steels		Stainless steels		Titanium alloy		Super heat-resistant steels	
	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=0.03Dc	
	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	mm/min	min ⁻¹	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	270	650	210	450	110	300	48

[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.



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EPOCH TH POWER MILL
EPP4-TH

Regular



Ø3 ~ Ø6 : 0 ~ -0.015
Ø7 ~ Ø20 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

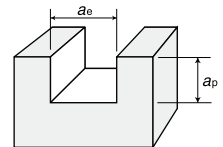
For machining of high-hardness materials. Excellent chip removal performance enables high efficiency.

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
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

● : Stocked Items.

Recommended cutting conditions

EPP4-TH

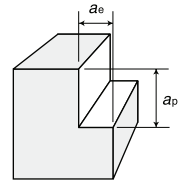


Slotting

Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)								
				Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
Alloy Steels (200 ~ 250HB) SKD61, SKD11	High Speed	ap ≤ 0.5Dc	min ⁻¹	8,500	6,400	5,100	4,200	3,200	2,500	2,100	1,600	1,300
		ae = 1Dc	mm / min	820	920	980	1,010	1,090	950	880	770	750
	General	ap ≤ 1Dc	min ⁻¹	6,400	4,800	3,800	3,200	2,400	1,900	1,600	1,200	1,000
		ae = 1Dc	mm / min	490	550	580	610	650	580	540	460	460
Alloy Steels (25 ~ 35HRC) SCM440	High Speed		min ⁻¹									
			mm / min									
	General	ap ≤ 0.5Dc	min ⁻¹	6,400	4,800	3,800	3,200	2,400	1,900	1,600	1,200	1,000
		ae = 1Dc	mm / min	440	500	530	550	590	520	480	410	420
Pre-Harden Steels (35 ~ 45HRC) NAK80	High Speed		min ⁻¹									
			mm / min									
	General	ap ≤ 0.5Dc	min ⁻¹	5,800	4,400	3,500	2,900	2,200	1,800	1,500	1,100	900
		ae = 1Dc	mm / min	360	410	430	450	480	440	400	340	330
Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed		min ⁻¹									
			mm / min									
	General	ap ≤ 0.2Dc	min ⁻¹	5,300	4,000	3,200	2,700	2,000	1,600	1,300	1,000	800
		ae = 1Dc	mm / min	240	280	290	310	330	290	260	230	200

END MILL

ดอกเอ็นมิลล์



Side Milling

DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)									
					Ø3	Ø4	Ø5	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	
CBN END MILL CBN เอ็นมิลล์	Alloy Steels (200 ~ 250HB) SKD61, SKD11	High Speed	ap=1.5Dc	min ⁻¹	16,000	12,000	9,600	8,000	6,000	4,800	4,000	3,000	2,400	
ae=0.1Dc			mm / min	1,800	1,900	2,100	2,200	2,400	2,200	2,100	1,700	1,400		
Carbide Endmill เอ็นมิลล์คาร์ไบด์		General	ap=1.5Dc	min ⁻¹	9,600	7,200	5,700	4,800	3,600	2,900	2,400	1,800	1,400	
			ae=0.15Dc	mm / min	860	920	1,000	1,080	1,150	1,070	1,000	810	670	
HSS Endmill เอ็นมิลล์ไฮสปีด	Alloy Steels (25 ~ 35HRC) SCM440	High Speed	ap=1.5Dc	min ⁻¹	14,000	10,000	8,300	6,900	5,200	4,100	3,500	2,600	2,100	
ae=0.05Dc			mm / min	1,400	1,400	1,600	1,700	1,900	1,700	1,600	1,300	1,100		
Ball หัวบอล		General	ap=1.5Dc	min ⁻¹	9,600	7,200	5,700	4,800	3,600	2,900	2,400	1,800	1,400	
			ae=0.15Dc	mm / min	770	830	900	970	1,040	960	900	730	600	
Radius หัวคัมมู R	Pre-Harden Steels (35 ~ 45HRC) NAK80	High Speed	ap=1.5Dc	min ⁻¹	12,000	8,800	7,000	5,800	4,400	3,500	2,900	2,200	1,800	
			ae=0.15Dc	mm / min	1,100	1,100	1,200	1,300	1,400	1,300	1,200	1,000	860	
		General	ap=1.5Dc	min ⁻¹	8,500	6,400	5,100	4,200	3,200	2,500	2,100	1,600	1,300	
			ae=0.07Dc	mm / min	610	660	720	750	820	740	700	570	500	
Square หัวตัด	Hardened Steels (45 ~ 55HRC) SKD61, SKT4	High Speed	ap=1.5Dc	min ⁻¹	11,000	8,000	6,400	5,300	4,000	3,200	2,700	2,000	1,590	
ae=0.02Dc			mm / min	860	900	990	1,040	1,120	1,030	980	780	670		
Taper Ball หัวตลับแป้นบอล		General	ap=1.5Dc	min ⁻¹	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,400	1,110	
			ae=0.05Dc	mm / min	460	500	550	580	630	570	550	440	370	
Roughing	[Note] ① Use a highly rigid and accurate machine as possible.													

- [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.

ดอกเอ็นมิลล์

EPOCH TH POWER MILL EPPS4 -TH



Short													
Planing	Side Cutting	Slotting	Roughing	Semi Finishing	Finishing	P (Steel)	PH (High hardened)	M (Stainless)	S (Titanium alloy)	N (Non ferrous)	CARBIDE	TH COATED	55 HRC
Dia. tolerance		Ø3 ~ Ø6 : 0~-0.015		Ø6.5~ Ø20 : 0~-0.02		h6		Ds ≤ 6 : 0~-0.008		6< Ds ≤ 10 : 0~-0.009		10< Ds ≤ 18 : 0~-0.011	
								18< Ds : 0~-0.013					

For machining of high-hardness materials. Excellent chip removal performance enables high efficiency.

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
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

● : Stocked Items.



ดอกเอ็นมิลล์

EPOCH TH POWER MILL
EPPM4 -TH

Medium



Ø3 ~ Ø6 : 0 ~ -0.015
Ø8 ~ Ø20 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

For machining of high-hardness materials. Excellent chip removal performance enables high efficiency.

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
EPPM4100-TH	●	10	33	80	10
EPPM4120-TH	●	12	37	100	12
EPPM4160-TH	●	16	47	110	16
EPPM4200-TH	●	20	55	125	20

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวตัด

Taper Ball

หัวตเปอรันบอล

Roughing

ดอกเอ็นมิลล์

EPOCH TH POWER MILL
EPPL4 -TH

Long



Ø6 : 0 ~ -0.015
Ø8 ~ Ø20 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

For machining of high-hardness materials. Excellent chip removal performance enables high efficiency.

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
EPPL4120-TH	●	12	55	120	12
EPPL4160-TH	●	16	65	135	16
EPPL4200-TH	●	20	75	155	20

● : Stocked Items.

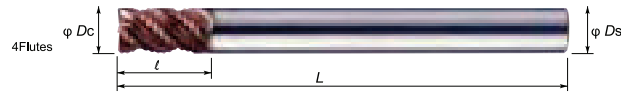
END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH MIRUS TYPE R EMXR4 -TH



4 flutes, Square, Straight



0~-0.05



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

(mm)

Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)					No. of Flutes
		Dc Tool Dia.	ℓ Flute Length	L Overall length	Ds Shank Dia.	R ※ Approx radius	
EMXR4060-TH	●	6	9	60	6	0.4	4
EMXR4080-TH	●	8	12	75	8	0.5	4
EMXR4100-TH	●	10	15	80	10	0.5	4
EMXR4120-TH	●	12	18	100	12	0.5	4
EMXR4160-TH	●	16	24	110	16	0.7	4
EMXR4200-TH	●	20	30	125	20	0.7	4

● : Stocked Items.

ดอกเอ็นมิลล์

EPOCH MIRUS TYPE R EMXR4 -SR-TH



4 flutes, Square, Semi long shank



0~-0.05



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

(mm)

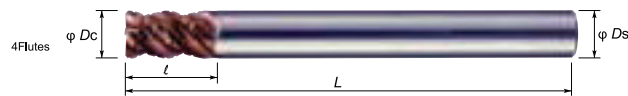
Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)					No. of Flutes
		Dc Tool Dia.	ℓ Flute Length	L Overall length	Ds Shank Dia.	R ※ Approx radius	
EMXR4070-SR-TH	●	7	9	90	6	0.4	4
EMXR4090-SR-TH	●	9	12	100	8	0.5	4
EMXR4110-SR-TH	●	11	15	110	10	0.5	4
EMXR4130-SR-TH	●	13	18	120	12	0.7	4

● : Stocked Items.



ดอกเอ็นมิลล์

EPOCH MIRUS TYPE N
EMXN4 -TH

4 flutes, Square, Straight



Ds ≤ 6 : 0 ~ -0.005
 6 < Ds ≤ 10 : 0 ~ -0.006
 10 < Ds ≤ 12 : 0 ~ -0.008
 Ds = 16 : 0 ~ -0.011
 Ds = 20 : 0 ~ -0.013

(mm)

Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)					No. of Flutes
		Dc Tool Dia.	l Flute Length	L Overall length	Ds Shank Dia.	R ※ Approx radius	
EMXN4060-TH	●	6	9	60	6	0.4	4
EMXN4080-TH	●	8	12	75	8	0.5	4
EMXN4100-TH	●	10	15	80	10	0.5	4
EMXN4120-TH	●	12	18	100	12	0.5	4
EMXN4160-TH	●	16	24	110	16	0.7	4
EMXN4200-TH	●	20	30	125	20	0.7	4

● : Stocked Items.

ดอกเอ็นมิลล์

EPOCH MIRUS TYPE N
EMXN4 -SR - TH

4 flutes, Square, Semi long shank



Ds ≤ 6 : 0 ~ -0.008
 6 < Ds ≤ 10 : 0 ~ -0.009
 10 < Ds : 0 ~ -0.011

(mm)

Achieves amazing machining efficiency with high cutting depth and high feed rate.

Item Code	Stock	Size (mm)					No. of Flutes
		Dc Tool Dia.	l Flute Length	L Overall length	Ds Shank Dia.	R ※ Approx radius	
EMXN4070-SR-TH	●	7	9	90	6	0.4	4
EMXN4090-SR-TH	●	9	12	100	8	0.5	4
EMXN4110-SR-TH	●	11	15	110	10	0.5	4
EMXN4130-SR-TH	●	13	18	120	12	0.7	4

● : Stocked Items.

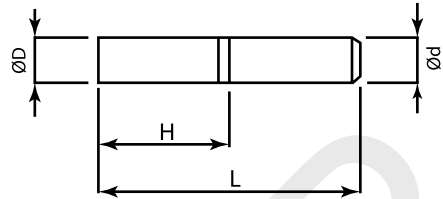
END MILL

ดอกเอ็นมิลล์

PROCH

ดอกเอ็นมิลล์คาร์ไบด์ 4 ฟัน

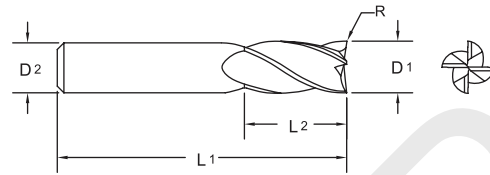
MICRO GRAIN CARBIDE END MILLS (4 Flute)



Order No.	ØD (mm) outside diameter	L (mm) overall length	H (mm) cutting edge length	Ød (mm) shank dia.
PRV-T01M4	1.0	3.0	50	4.0
PRV-T015M4	1.5	4.0	50	4.0
PRV-T02M4	2.0	5.0	50	4.0
PRV-T025M4	2.5	6.0	50	4.0
PRV-T03M4	3.0	7.5	50	4.0
PRV-T04M4	4.0	10.0	50	4.0
PRV-T05M4	5.0	12.0	50	6.0
PRV-T06M4	6.0	15.0	60	6.0
PRV-T08M4	8.0	25.0	60	8.0
PRV-T10-M4	10.0	30.0	75	10.0
PRV-T12M4	12.0	30.0	75	12.0



เอ็นมิลล์ - รุ่น 111

TuffCut® GP ENDMILLS - STANDARD LENGTH SERIES 111

Designed for aggressive milling of most materials - Micro sizes available.

Order No.	EDP	Diameter		Shank	OAL	Flute Length	
		D1		D2	L1	L2	
		mm	Decimal	mm	mm	mm	
11103940A	11036	1.0	.0394	3.0	38	3.0	
11105910A	1058	1.5	.0591	3.0	38	6.0	
11107870A	11082	2.0	.0787	3.0	38	9.0	
11109840A	11096	2.5	.0984	3.0	38	12.0	
11111810A	11003	3.0	.1181	3.0	38	12.0	
11115750A	11007	4.0	.1575	4.0	51	14.0	
11119680A	11013	5.0	.1968	5.0	51	20.0	
11123620A	11015	6.0	.2362	6.0	64	20.0	
11131500A	11021	8.0	.3150	8.0	64	20.0	
11139370A	11025	10.0	.3937	10.0	70	25.0	
11147240A	11031	12.0	.4724	12.0	76	25.0	
11162990A	11039	16.0	.6299	16.0	89	30.0	
11178740A	11047	20.0	.7874	20.0	102	38.0	
11198430A	11001	25.0	.9843	25.0	102	40.0	

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

D1	Tolerance h10
0.20-0.50	+.000/-0.025
0.60-3.00	+.000/-0.040
>3.00-6.00	+.000/-0.048
>6.00-10.00	+.000/-0.058

D1	Tolerance h10
>10.00-18.00	+.000/-0.070
>18.00-30.00	+.000/-0.084
32.00	+.000/-0.100

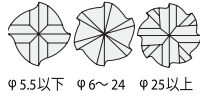
R	Tolerance
3.0-25.0	+.05/-0.05

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์
EPOCH END MILL
CEPR



DEEP SERIES
เอ็นมิลล์ตระกูลดีฟ

CBN END MILL
CBN เอ็นมิลล์

Carbide Endmill
เอ็นมิลล์คาร์ไบด์

HSS Endmill
เอ็นมิลล์ไฮสปีด

Epoch 21, Regular



Dia. tolerance
 $\varnothing 1 \sim \varnothing 6 : 0 \sim -0.015$
 $\varnothing 6.5 \sim \varnothing 32 : 0 \sim -0.02$

h6

$Ds \leq 6 : 0 \sim -0.008$
 $6 < Ds \leq 10 : 0 \sim -0.009$
 $10 < Ds \leq 18 : 0 \sim -0.011$
 $18 < Ds \leq 30 : 0 \sim -0.013$
 $30 < Ds : 0 \sim -0.016$

(mm)

Square end mill for machining high-hardness materials.

Item Code	Stock	Size (mm)				No. of Flutes
		ToolDia.	Flute Length	Overall length	thhank Dia.	
CEPR4010	●	1	3.5	60	6	4
CEPR4015	●	1.5	5	60	6	4
CEPR4020	●	2	7	60	6	4
CEPR4025	●	2.5	8	60	6	4
CEPR4030	●	3	10	60	6	4
CEPR4035	●	3.5	12	60	6	4
CEPR4040	●	4	12	60	6	4
CEPR4045	●	4.5	15	60	6	4
CEPR4050	●	5	15	60	6	4
CEPR4055	●	5.5	15	60	6	4
CEPR6060	●	6	15	60	6	6
CEPR6065	●	6.5	20	75	8	6
CEPR6070	●	7	20	75	8	6
CEPR6075	●	7.5	20	75	8	6
CEPR6080	●	8	20	75	8	6
CEPR6085	●	8.5	25	80	10	6
CEPR6090	●	9	25	80	10	6
CEPR6095	●	9.5	25	80	10	6
CEPR6100	●	10	25	80	10	6
CEPR6105	●	10.5	30	100	12	6
CEPR6110	●	11	30	100	12	6
CEPR6115	●	11.5	30	100	12	6
CEPR6120	●	12	30	100	12	6
CEPR6130	●	13	35	105	16	6
CEPR6140	●	14	35	105	16	6
CEPR6150	●	15	40	110	16	6
CEPR6160	●	16	40	110	16	6
CEPR6170	●	17	40	120	20	6
CEPR6180	●	18	40	120	20	6
CEPR6190	●	19	45	125	20	6
CEPR6200	●	20	45	125	20	6
CEPR6220	●	22	45	135	20	6
CEPR6240	●	24	50	140	25	6
CEPR8250	●	25	50	140	25	8
CEPR8260	●	26	50	140	25	8
CEPR8280	●	28	55	145	25	8
CEPR8300	●	30	60	165	32	8
CEPR8320	●	32	70	175	32	8

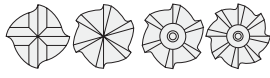
● : Stocked Items.



ดอกเอ็นมิลล์

EPOCH END MILL

CEPL



φ 5 以下 φ 6~12 φ 13~24 φ 25 以上



Epoch 21, Regular



03 ~ 06 : 0~-0.015
07 ~ 032 : 0~-0.02



Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds ≤ 18 : 0~-0.011
18 < Ds ≤ 30 : 0~-0.013
30 < Ds : 0~-0.016

(mm)

Square end mill for machining high-hardness materials.

Item Code	Stock	Size (mm)				No. of Flutes
		Mill Dia.	Flute Length	Overall length	Shank Dia.	
CEPL4030	●	3	15	60	6	4
CEPL4040	●	4	20	65	6	4
CEPL4050	●	5	25	70	6	4
CEPL6060	●	6	25	70	6	6
CEPL6070	●	7	35	90	8	6
CEPL6080	●	8	35	90	8	6
CEPL6090	●	9	45	100	10	6
CEPL6100	●	10	45	100	10	6
CEPL6110	●	11	55	120	12	6
CEPL6120	●	12	55	120	12	6
CEPL6130	□	13	55	125	16	6
CEPL6140	●	14	55	125	16	6
CEPL6150	●	15	65	135	16	6

Item Code	Stock	Size (mm)				No. of Flutes
		Mill Dia.	Flute Length	Overall length	Shank Dia.	
CEPL6160	●	16	65	135	16	6
CEPL6170	□	17	65	145	20	6
CEPL6180	●	18	65	145	20	6
CEPL6190	□	19	75	155	20	6
CEPL6200	●	20	75	155	20	6
CEPL6220	●	22	75	165	20	6
CEPL6240	□	24	90	180	25	6
CEPL8250	●	25	90	180	25	8
CEPL8260	□	26	90	180	25	8
CEPL8280	●	28	90	180	25	8
CEPL8300	●	30	90	195	32	8
CEPL8320	□	32	95	195	32	8

● : Stocked Items.

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

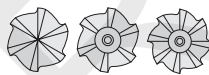
หัวเตเปอร์บอล

Roughing

ดอกเอ็นมิลล์

EPOCH END MILL

CEPLS



φ 12 以下 φ 16~22 φ 25 以上



Epoch 21, Long Shank



06 : 0~-0.015
08 ~ 032 : 0~-0.02



Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds ≤ 18 : 0~-0.011
18 < Ds ≤ 30 : 0~-0.013
30 < Ds : 0~-0.016

(mm)

Item Code	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPLS6060	●	6	12	70	6	6
CEPLS6080	●	8	16	90	8	6
CEPLS6100	●	10	20	100	10	6
CEPLS6120-10	●	12	24	120	10	6
CEPLS6120	●	12	24	120	12	6
CEPLS6160-12	●	16	32	135	12	6
CEPLS6160	●	16	32	135	16	6
CEPLS6180	●	18	36	145	16	6
CEPLS6200-16	●	20	40	155	16	6

Item Code	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPLS6200	●	20	40	155	20	6
CEPLS6220	●	22	45	165	20	6
CEPLS8250-20	●	25	45	180	20	8
CEPLS8250	●	25	45	180	25	8
CEPLS8280	□	28	50	180	25	8
CEPLS8300	□	30	50	195	25	8
CEPLS8320-25	□	32	55	195	25	8
CEPLS8320	□	32	55	195	32	8

● : Stocked Items.

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

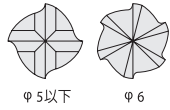
END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

**EPOCH TH HARD
CEPS 〇〇〇-TH**



φ 5以下

φ 6

Short



0 ~ -0.015



0 ~ -0.008

(mm)

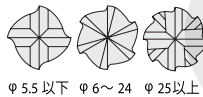
Square end mill for machining high-hardness materials.

Item Code	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPS4010-TH	●	1	2	60	6	4
CEPS4015-TH	●	1.5	3	60	6	4
CEPS4020-TH	●	2	4	60	6	4
CEPS4025-TH	●	2.5	5	60	6	4
CEPS4030-TH	●	3	6	60	6	4
CEPS4040-TH	●	4	8	60	6	4
CEPS4050-TH	●	5	10	60	6	4
CEPS6060-TH	●	6	12	60	6	6

● : Stocked Items.

ดอกเอ็นมิลล์

**EPOCH TH HARD
CEPR 〇〇〇-TH**



φ 5.5 以下 φ 6 ~ 24 φ 25 以上



Regular



Ø1 ~ Ø6 : 0 ~ -0.015
Ø6.5 ~ Ø32 : 0 ~ -0.02



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

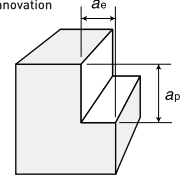
(mm)

Square end mill for machining high-hardness materials.

Item Code	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPR4010-TH	●	1	3.5	60	6	4
CEPR4015-TH	●	1.5	5	60	6	4
CEPR4020-TH	●	2	7	60	6	4
CEPR4025-TH	●	2.5	8	60	6	4
CEPR4030-TH	●	3	10	60	6	4
CEPR4035-TH	●	3.5	12	60	6	4
CEPR4040-TH	●	4	12	60	6	4
CEPR4045-TH	●	4.5	15	60	6	4
CEPR4050-TH	●	5	15	60	6	4
CEPR4055-TH	●	5.5	15	60	6	4
CEPR6060-TH	●	6	15	60	6	6
CEPR6065-TH	●	6.5	20	75	8	6
CEPR6070-TH	●	7	20	75	8	6
CEPR6075-TH	●	7.5	20	75	8	6
CEPR6080-TH	●	8	20	75	8	6
CEPR6085-TH	●	8.5	25	80	10	6
CEPR6090-TH	●	9	25	80	10	6
CEPR6095-TH	●	9.5	25	80	10	6
CEPR6100-TH	●	10	25	80	10	6

● : Stocked Items.

Item Code	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPR6105-TH	●	10.5	30	100	12	6
CEPR6110-TH	●	11	30	100	12	6
CEPR6115-TH	●	11.5	30	100	12	6
CEPR6120-TH	●	12	30	100	12	6
CEPR6130-TH	●	13	35	105	16	6
CEPR6140-TH	●	14	35	105	16	6
CEPR6150-TH	●	15	40	110	16	6
CEPR6160-TH	●	16	40	110	16	6
CEPR6170-TH	●	17	40	120	20	6
CEPR6180-TH	●	18	40	120	20	6
CEPR6190-TH	●	19	45	125	20	6
CEPR6200-TH	●	20	45	125	20	6
CEPR6220-TH	●	22	45	135	20	6
CEPR6240-TH	●	24	50	140	25	6
CEPR8250-TH	●	25	50	140	25	8
CEPR8260-TH	●	26	50	140	25	8
CEPR8280-TH	●	28	55	145	25	8
CEPR8300-TH	●	30	60	165	32	8
CEPR8320-TH	●	32	70	175	32	8



Recommended cutting conditions

CEPR-TH

Side Milling

Work material (Hardness)	Condition Range	Depth of cut (mm)	Cutting Conditions	Dc Tool Dia. (mm)											
				Ø1	Ø2	Ø3	Ø4	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø30
Tool Steels (25 ~ 35HRC) SKD	High Speed	ap=1.5Dc	min ⁻¹	50,000	40,000	27,000	20,000	13,000	10,000	8,000	6,600	5,000	4,000	3,200	2,700
		ae=0.1Dc	mm / min	1,680	2,910	3,180	3,360	4,910	5,040	4,840	4,440	4,200	4,030	4,590	4,110
	General	ap=1.5Dc	min ⁻¹	15,000	15,000	13,000	10,000	6,400	4,800	3,800	3,200	2,400	1,900	1,500	1,300
		ae=0.1Dc	mm / min	500	1,090	1,530	1,680	2,420	2,420	2,300	2,150	2,070	1,920	2,110	2,000
Pre-Harden Steels (35 ~ 45HRC) CEN41, NAK80	High Speed	ap=1.5Dc	min ⁻¹	50,000	40,000	27,000	20,000	13,000	10,000	8,000	6,600	5,000	4,000	3,200	2,700
		ae=0.05Dc	mm / min	1,500	2,600	2,840	3,000	4,390	4,500	4,320	3,960	3,750	3,600	4,100	3,670
	General	ap=1.5Dc	min ⁻¹	15,000	15,000	11,000	8,000	5,300	4,000	3,200	2,700	2,000	1,600	1,300	1,100
		ae=0.1Dc	mm / min	320	680	810	840	1,250	1,260	1,210	1,130	1,080	1,010	1,140	1,060
Hardened Steels (45 ~ 55HRC) SKD61, SKH4	High Speed	ap=1.5Dc	min ⁻¹	50,000	32,000	21,000	16,000	11,000	8,000	6,400	5,300	4,000	3,200	2,500	2,100
		ae=0.03Dc	mm / min	1,320	1,830	1,940	2,110	3,270	3,170	3,040	2,800	2,640	2,530	2,820	2,510
	General	ap=1.5Dc	min ⁻¹	15,000	13,000	8,000	6,000	4,200	3,200	2,500	2,100	1,600	1,300	1,000	800
		ae=0.06Dc	mm / min	280	520	520	550	870	890	830	780	760	720	770	670
Hardened Steels (55 ~ 65HRC) SKD11, SKH51	High Speed	ap=1.5Dc	min ⁻¹	48,000	24,000	16,000	12,000	8,000	6,000	4,800	4,000	3,000	2,400	1,900	1,600
		ae=0.02Dc	mm / min	1,150	1,250	1,340	1,440	2,160	2,160	2,070	1,920	1,800	1,730	1,950	1,740
	General	ap=1.5Dc	min ⁻¹	15,000	9,600	6,400	4,800	3,200	2,400	1,900	1,600	1,200	1,000	800	600
		ae=0.04Dc	mm / min	250	350	380	400	600	600	570	540	520	500	560	460
Hardened Steels (65 ~ 70HRC) SKH, HAP	High Speed	ap=1.5Dc	min ⁻¹	32,000	16,000	11,000	8,000	5,300	4,000	3,200	2,700	2,000	1,600	1,300	1,100
		ae=0.02Dc	mm / min	690	750	830	860	1,290	1,300	1,240	1,170	1,080	1,040	1,200	1,080
	General	ap=1.5Dc	min ⁻¹	13,000	6,400	4,200	3,200	2,100	1,600	1,300	1,100	800	600	510	420
		ae=0.04Dc	mm / min	2000	210	220	240	360	360	350	330	310	270	320	290

- [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

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกึ่งกลม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

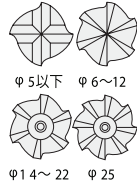
END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์

EPOCH TH HARD
CEPL 000-TH



Long



Ø3 ~ Ø6 : 0~-0.015
Ø7 ~ Ø25 : 0~-0.02



Ds ≤ 6 : 0~-0.008
6 < Ds ≤ 10 : 0~-0.009
10 < Ds ≤ 18 : 0~-0.011
18 < Ds : 0~-0.013

(mm)

Square end mill for machining high-hardness materials.

Item Code	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.	
CEPL4030-TH	●	3	15	60	6	4
CEPL4040-TH	●	4	20	65	6	4
CEPL4050-TH	●	5	25	70	6	4
CEPL6060-TH	●	6	25	70	6	6
CEPL6070-TH	●	7	35	90	8	6
CEPL6080-TH	●	8	35	90	8	6
CEPL6090-TH	●	9	45	100	10	6
CEPL6100-TH	●	10	45	100	10	6
CEPL6110-TH	●	11	55	120	12	6
CEPL6120-TH	●	12	55	120	12	6
*CEPL6140-TH	●	14	55	125	16	6
*CEPL6160-TH	●	16	65	135	16	6
*CEPL6180-TH	●	18	65	145	20	6
*CEPL6200-TH	●	20	75	155	20	6
*CEPL6220-TH	●	22	75	165	20	6
*CEPL8250-TH	●	25	90	180	25	8

● : Stocked Items.

* : Center eyed



ดอกเอ็นมิลล์

**EPOCH ROUGHING
EPQS4 -CS**

4Flutes



Short



0 ~ -0.05



$D_s \leq 6$: 0 ~ -0.008
 $6 < D_s \leq 10$: 0 ~ -0.009
 $10 < D_s \leq 18$: 0 ~ -0.011
 $18 < D_s$: 0 ~ -0.013

(mm)

Ideal roughing end mill for roughing of difficult-to-cut materials such as stainless steel, etc.

Item Code	Stock	Size (mm)				Corner chamfering width	No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.		
EPQS4060-CS	☐	6	12	50	6	0.4	A
EPQS4080-CS	☐	8	16	60	8	0.5	A
EPQS4100-CS	☐	10	18	70	10	0.5	A
EPQS4120-CS	☐	12	22	75	12	0.5	A
EPQS4160-CS	☐	16	27	90	16	0.7	A
EPQS4200-CS	☐	20	35	100	20	0.7	A

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

ดอกเอ็นมิลล์

**EPOCH ROUGHING
EPQR4 -CS**

4Flutes



Regular



0 ~ -0.05



$D_s \leq 6$: 0 ~ -0.008
 $6 < D_s \leq 10$: 0 ~ -0.009
 $10 < D_s \leq 18$: 0 ~ -0.011
 $18 < D_s$: 0 ~ -0.013

(mm)

Ideal roughing end mill for roughing of difficult-to-cut materials such as stainless steel, etc.

Item Code	Stock	Size (mm)				Corner chamfering width	No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.		
EPQR4060-CS	●	6	15	55	6	0.4	A
EPQR4070-CS	●	7	20	65	8	0.4	B
EPQR4080-CS	●	8	20	70	8	0.5	A
EPQR4090-CS	●	9	25	75	10	0.5	B
EPQR4100-CS	●	10	25	80	10	0.5	A
EPQR4110-CS	●	11	30	85	12	0.5	B
EPQR4120-CS	●	12	30	90	12	0.5	A
EPQR4130-CS	☐	13	35	100	16	0.7	B
EPQR4140-CS	☐	14	35	100	16	0.7	B
EPQR4150-CS	☐	15	35	100	16	0.7	B
EPQR4160-CS	●	16	40	110	16	0.7	A
EPQR4170-CS	☐	17	40	110	20	0.7	B
EPQR4180-CS	☐	18	45	120	20	0.7	B
EPQR4190-CS	☐	19	45	120	20	0.7	B
EPQR4200-CS	●	20	50	125	20	0.7	A

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

● : Stocked item

END MILL

ดอกเอ็นมิลล์



ดอกเอ็นมิลล์ EPOCH ROUGHING EPQM4 -CS

4Flutes



Medium



0 ~ -0.05



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Ideal roughing end mill for roughing of difficult-to-cut materials such as stainless steel, etc.

	Item Code	Stock	Size (mm)				Corner chamfering width	No. of Flutes
			Tool Dia.	Flute Length	Overall length	Shank Dia.		
Ball	EPQM4060-CS	☐	6	20	60	6	0.4	A
Radius	EPQM4070-CS	☐	7	30	80	8	0.4	B
Square	EPQM4080-CS	☐	8	30	80	8	0.5	A
Taper Ball	EPQM4090-CS	☐	9	35	90	10	0.5	B
Head bore	EPQM4100-CS	☐	10	35	90	10	0.5	A
Roughing	EPQM4110-CS	☐	11	45	110	12	0.5	B
	EPQM4120-CS	☐	12	45	110	12	0.5	A
	EPQM4130-CS	☐	13	50	120	16	0.7	B
	EPQM4140-CS	☐	14	50	120	16	0.7	B
	EPQM4150-CS	☐	15	50	120	16	0.7	B
	EPQM4160-CS	☐	16	55	125	16	0.7	A
	EPQM4170-CS	☐	17	55	125	20	0.7	B
	EPQM4180-CS	☐	18	65	135	20	0.7	B
	EPQM4190-CS	☐	19	65	135	20	0.7	B
	EPQM4200-CS	☐	20	70	145	20	0.7	A

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

ดอกเอ็นมิลล์ EPOCH ROUGHING EPQL4 -CS

4Flutes



Long



0 ~ -0.05



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

	Item Code	Stock	Size (mm)				Corner chamfering width	No. of Flutes
			Tool Dia.	Flute Length	Overall length	Shank Dia.		
	EPQL4060-CS	●	6	30	70	6	0.4	A
	EPQL4070-CS	☐	7	40	80	8	0.4	B
	EPQL4080-CS	●	8	40	80	8	0.5	A
	EPQL4090-CS	☐	9	50	100	10	0.5	B
	EPQL4100-CS	●	10	50	100	10	0.5	A
	EPQL4110-CS	☐	11	60	120	12	0.5	B
	EPQL4120-CS	●	12	60	120	12	0.5	A
	EPQL4130-CS	☐	13	70	130	16	0.7	B

	Item Code	Stock	Size (mm)				Corner chamfering width	No. of Flutes
			Tool Dia.	Flute Length	Overall length	Shank Dia.		
	EPQL4140-CS	☐	14	70	130	16	0.7	B
	EPQL4150-CS	☐	15	70	130	16	0.7	B
	EPQL4160-CS	●	16	75	135	16	0.7	A
	EPQL4170-CS	☐	17	75	135	20	0.7	B
	EPQL4180-CS	☐	18	80	145	20	0.7	B
	EPQL4190-CS	☐	19	80	145	20	0.7	B
	EPQL4200-CS	●	20	90	155	20	0.7	A

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

● : Stocked item



ดอกเอ็นมิลล์

EPOCH ROUGHING
EPQLS4 -CS

4Flutes



Long Shank



0 ~ -0.05


 $D_s \leq 6$: 0 ~ -0.008
 $6 < D_s \leq 10$: 0 ~ -0.009
 $10 < D_s \leq 18$: 0 ~ -0.011
 $18 < D_s$: 0 ~ -0.013

(mm)

Item Code	Stock	Size (mm)					Corner chamfering width	No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.			
EPQLS4060-CS	☐	6	9	120	5	0.4	C	
EPQLS4070-CS	☐	7	9	120	6	0.4	C	
EPQLS4080-CS	☐	8	12	135	7	0.5	C	
EPQLS4090-CS	☐	9	12	135	8	0.5	C	
EPQLS4100-CS	☐	10	15	150	9	0.5	C	
EPQLS4110-CS	☐	11	15	150	10	0.5	C	
EPQLS4120-CS	☐	12	18	160	11	0.5	C	
EPQLS4130-CS	☐	13	18	160	12	0.7	C	

Item Code	Stock	Size (mm)					Corner chamfering width	No. of Flutes
		Tool Dia.	Flute Length	Overall length	Shank Dia.			
EPQLS4140-CS	☐	14	18	160	13	0.7	C	
EPQLS4150-CS	☐	15	22	180	14	0.7	C	
EPQLS4160-CS	☐	16	24	180	15	0.7	C	
EPQLS4170-CS	☐	17	24	180	16	0.7	C	
EPQLS4180-CS	☐	18	27	180	16	0.7	C	
EPQLS4190-CS	☐	19	30	200	18	0.7	C	
EPQLS4200-CS	☐	20	30	200	18	0.7	C	

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐาน R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์

ESM BALL END MILLS 2ESMB0.5R



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s$: 0 ~ -0.021

(mm)

	Order No.	Stock	Size (mm)			
			Ball Radius	Tool Dia.	Flute Length	Overall Length
Ball หัวบอล						Shank Dia.
Radius หัวกลม R	2ESMB0.5R	●	0.5	1	2.5	60
	2ESMB1R	●	1	2	5	60
Square หัวสี่	2ESMB1.5R	●	1.5	3	8	70
	2ESMB2R	●	2	4	8	80
Taper Ball หัวเตเปอร์บอล	2ESMB2.5R	●	2.5	5	10	90
	2ESMB3R	●	3	6	12	100
Roughing	2ESMB3.5R	□	3.5	7	14	100
	2ESMB4R	●	4	8	14	110
	2ESMB4.5R	□	4.5	9	18	120
	2ESMB5R	●	5	10	18	125
	2ESMB5.5R	□	5.5	11	18	125
	2ESMB6R	●	6	12	22	140
	2ESMB6.5R	□	6.5	13	22	140
	2ESMB7R	□	7	14	26	140
	2ESMB7.5R	□	7.5	15	26	140
	2ESMB8R	●	8	16	30	160
	2ESMB9R	□	9	18	34	160
	2ESMB10R	●	10	20	38	180
	2ESMB12.5R	□	12.5	25	50	200
	2ESMB15R	□	15	30	55	200

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



เอ็นมิลล์

ESM BALL END MILLS 4ESMB...R



Ds ≤ 6 : 0 ~ -0.012
6 < Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds ≤ 30 : 0 ~ -0.021
30 < Ds : 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)				
		Ball Radius	Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESMB3.5R	●	3.5	7	20	100	6
4ESMB4.5R	●	4.5	9	25	120	8
4ESMB5.5R	●	5.5	11	30	125	10
4ESMB6.5R	●	6.5	13	35	140	12
4ESMB10R	●	10	20	45	180	20
4ESMB12R	●	12	24	50	180	20
4ESMB12.5R	●	12.5	25	50	200	25

● : Stocked Items.

เอ็นมิลล์

NK BALL END MILLS NB...R



NK Ball



Ds ≤ 6 : 0 ~ -0.012
6 < Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds : 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)				
		Ball Radius	Tool Dia.	Flute Length	Overall Length	Shank Dia.
NB1R	●	1	2	5	73	6
NB1.5R	●	1.5	3	8	75	6
NB2R	●	2	4	11	80	6
NB2.5R	●	2.5	5	13	80	6
NB3R	●	3	6	13	80	6
NB3.5R	●	3.5	7	16	95	8
NB4R	●	4	8	19	95	8
NB4.5R	●	4.5	9	19	105	10
NB5R	●	5	10	22	110	10
NB5.5R	□	5.5	11	22	120	12
NB6R	●	6	12	26	120	12
NB6.5R	●	6.5	13	26	135	16
NB7R	●	7	14	26	135	16
NB7.5R	●	7.5	15	26	135	16
NB8R	●	8	16	32	140	16
NB9R	□	9	18	32	150	20
NB10R	●	10	20	38	160	20
NB12.5R	●	12.5	25	45	180	25
NB15R	●	15	30	45	180	25

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

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์

ESM BALL END MILLS
2ESMBC...R



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

C-Coated



Ds ≤ 6 : 0~ -0.012
6 < Ds ≤ 10 : 0~ -0.015
10 < Ds ≤ 18 : 0~ -0.018
18 < Ds : 0~ -0.021

(mm)

	Order No.	Stock	Size (mm)			
			Ball Radius	Tool Dia.	Flute Length	Overall Length
Ball หัวบอล						Shank Dia.
Radius หัวก้นม R	2ESMBC0.5R	●	0.5	1	2.5	60
	2ESMBC1R	●	1	2	5	60
Square หัวสี่	2ESMBC1.5R	●	1.5	3	8	70
	2ESMBC2R	●	2	4	8	80
Taper Ball หัวเตเปอร์บอล	2ESMBC2.5R	●	2.5	5	10	90
	2ESMBC3R	●	3	6	12	100
Roughing	2ESMBC3.5R	□	3.5	7	14	100
	2ESMBC4R	●	4	8	14	110
	2ESMBC4.5R	□	4.5	9	18	120
	2ESMBC5R	●	5	10	18	125
	2ESMBC5.5R	□	5.5	11	18	125
	2ESMBC6R	●	6	12	22	140
	2ESMBC6.5R	□	6.5	13	22	140
	2ESMBC7R	□	7	14	26	140
	2ESMBC7.5R	□	7.5	15	26	140
	2ESMBC8R	●	8	16	30	160
	2ESMBC9R	□	9	18	34	160
	2ESMBC10R	●	10	20	38	180
	2ESMBC12.5R	□	12.5	25	50	200
	2ESMBC15R	□	15	30	55	200

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

เอ็นมิลล์ตระกูล NK
NK END MILL
2NKS

Short



0 ~ -0.03


 $D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s$: 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKS0.8	●	0.8	1.6	55	6
2NKS0.9	●	0.9	2	55	6
2NKS1	●	1	2.5	55	6
2NKS1.05	□	1.05	3	55	6
2NKS1.1	●	1.1	2.5	55	6
2NKS1.15	□	1.15	3	55	6
2NKS1.2	●	1.2	3	55	6
2NKS1.25	□	1.25	3	55	6
2NKS1.3	●	1.3	3	55	6
2NKS1.35	□	1.35	3	55	6
2NKS1.4	●	1.4	3	55	6
2NKS1.45	□	1.45	3	55	6
2NKS1.5	●	1.5	3.5	55	6
2NKS1.55	□	1.55	4	55	6
2NKS1.6	●	1.6	3.5	55	6
2NKS1.65	□	1.65	4	55	6
2NKS1.7	●	1.7	3.5	55	6
2NKS1.75	□	1.75	4	55	6
2NKS1.8	●	1.8	3.5	55	6
2NKS1.85	□	1.85	4	55	6
2NKS1.9	●	1.9	3.5	55	6
2NKS1.95	□	1.95	4	55	6
2NKS2	●	2	4	55	6
2NKS2.05	□	2.05	6	60	6
2NKS2.1	●	2.1	5	50	6
2NKS2.15	□	2.15	6	60	6
2NKS2.2	●	2.2	5	55	6
2NKS2.25	□	2.25	6	60	6
2NKS2.3	●	2.3	5	55	6
2NKS2.35	□	2.35	6	60	6
2NKS2.4	●	2.4	5	55	6
2NKS2.45	□	2.45	6	60	6
2NKS2.5	●	2.5	5	55	6
2NKS2.55	□	2.55	8	60	6
2NKS2.6	●	2.6	7	55	6
2NKS2.65	□	2.65	8	60	6
2NKS2.7	●	2.7	7	55	6
2NKS2.75	□	2.75	8	60	6
2NKS2.8	●	2.8	7	55	6
2NKS2.85	□	2.85	8	60	6
2NKS2.9	●	2.9	7	55	6
2NKS2.95	□	2.95	8	60	6
2NKS3	●	3	7	55	6
2NKS3.05	□	3.05	12	60	6
2NKS3.1	●	3.1	8	65	8
2NKS3.15	□	3.15	12	60	6
2NKS3.2	●	3.2	8	65	8
2NKS3.25	□	3.25	12	60	6
2NKS3.3	●	3.3	8	65	8

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKS3.35	□	3.35	14	65	8
2NKS3.4	●	3.4	8	65	8
2NKS3.45	□	3.45	14	65	8
2NKS3.5	●	3.5	8	65	8
2NKS3.55	□	3.55	14	65	8
2NKS3.6	●	3.6	8	65	8
2NKS3.65	□	3.65	14	65	8
2NKS3.7	●	3.7	8	65	8
2NKS3.75	□	3.75	14	65	8
2NKS3.8	●	3.8	8	65	8
2NKS3.85	□	3.85	14	65	8
2NKS3.9	●	3.9	8	65	8
2NKS3.95	□	3.95	14	65	8
2NKS4	●	4	8	65	8
2NKS4.05	□	4.05	14	65	8
2NKS4.1	●	4.1	10	65	8
2NKS4.15	□	4.15	14	65	8
2NKS4.2	●	4.2	10	65	8
2NKS4.25	□	4.25	14	65	8
2NKS4.3	●	4.3	10	65	8
2NKS4.35	□	4.35	14	65	8
2NKS4.4	●	4.4	10	65	8
2NKS4.45	□	4.45	14	65	8
2NKS4.5	●	4.5	10	65	8
2NKS4.55	□	4.55	16	65	8
2NKS4.6	●	4.6	10	65	8
2NKS4.65	□	4.65	16	65	8
2NKS4.7	●	4.7	10	65	8
2NKS4.75	□	4.75	16	65	8
2NKS4.8	●	4.8	10	65	8
2NKS4.85	□	4.85	16	65	8
2NKS4.9	●	4.9	10	65	8
2NKS4.95	□	4.95	16	65	8
2NKS5	●	5	10	65	8
2NKS5.05	□	5.05	16	65	8
2NKS5.1	●	5.1	12	65	8
2NKS5.15	□	5.15	16	65	8
2NKS5.2	●	5.2	12	65	8
2NKS5.25	□	5.25	16	65	8
2NKS5.3	●	5.3	12	65	8
2NKS5.35	□	5.35	16	65	8
2NKS5.4	●	5.4	12	65	8
2NKS5.45	□	5.45	16	65	8
2NKS5.5	●	5.5	12	65	8
2NKS5.55	□	5.55	16	65	8
2NKS5.6	●	5.6	12	65	8
2NKS5.65	□	5.65	16	65	8
2NKS5.7	●	5.7	12	65	8
2NKS5.75	□	5.75	16	65	8

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKS5.8	●	5.8	12	65	8
2NKS5.85	□	5.85	16	65	8
2NKS5.9	●	5.9	12	65	8
2NKS5.95	□	5.95	16	65	8
2NKS6	●	6	12	65	8
2NKS6.05	□	6.05	16	65	8
2NKS6.1	●	6.1	14	70	10
2NKS6.15	□	6.15	16	65	8
2NKS6.2	●	6.2	14	70	10
2NKS6.25	□	6.25	16	65	8
2NKS6.3	●	6.3	14	70	10
2NKS6.35	□	6.35	16	65	8
2NKS6.4	●	6.4	14	70	10
2NKS6.45	□	6.45	16	65	8
2NKS6.5	●	6.5	14	70	10
2NKS6.55	□	6.55	21	75	10
2NKS6.6	●	6.6	14	70	10
2NKS6.65	□	6.65	21	75	10
2NKS6.7	●	6.7	14	70	10
2NKS6.75	□	6.75	21	75	10
2NKS6.8	●	6.8	14	70	10
2NKS6.85	□	6.85	21	75	10
2NKS6.9	●	6.9	14	70	10
2NKS6.95	□	6.95	21	75	10
2NKS7	●	7	14	70	10
2NKS7.05	□	7.05	21	75	10
2NKS7.1	●	7.1	14	70	10
2NKS7.15	□	7.15	21	75	10
2NKS7.2	●	7.2	14	70	10
2NKS7.25	□	7.25	21	75	10
2NKS7.3	●	7.3	14	70	10
2NKS7.35	□	7.35	21	75	10
2NKS7.4	●	7.4	14	70	10
2NKS7.45	□	7.45	21	75	10
2NKS7.5	●	7.5	14	70	10
2NKS7.55	□	7.55	21	75	10
2NKS7.6	●	7.6	14	70	10
2NKS7.65	□	7.65	21	75	10
2NKS7.7	●	7.7	14	70	10
2NKS7.75	□	7.75	21	75	10
2NKS7.8	●	7.8	14	70	10
2NKS7.85	□	7.85	21	75	10
2NKS7.9	●	7.9	14	70	10
2NKS7.95	□	7.95	21	75	10
2NKS8	●	8	14	70	10
2NKS8.05	□	8.05	21	75	10
2NKS8.1	●	8.1	18	75	10
2NKS8.15	□	8.15	21	75	10
2NKS8.2	●	8.2	18	75	10

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

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

END MILL
เอ็นมิลล์

	Order No.	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall Length	Shank Dia.
DEEP SERIES เอ็นมิลล์ตระกูลดีฟ	2NKS8.25	☐	8.25	21	75	10
	2NKS8.3	●	8.3	18	75	10
	2NKS8.35	☐	8.35	21	75	10
	2NKS8.4	●	8.4	18	75	10
	2NKS8.45	☐	8.45	21	75	10
CBN END MILL CBN เอ็นมิลล์	2NKS8.5	●	8.5	18	75	10
	2NKS8.55	☐	8.55	26	85	10
	2NKS8.6	●	8.6	18	75	10
	2NKS8.65	☐	8.65	26	85	10
	2NKS8.7	●	8.7	18	75	10
Carbide Endmill เอ็นมิลล์คาร์ไบด์	2NKS8.75	☐	8.75	26	85	10
	2NKS8.8	●	8.8	18	75	10
	2NKS8.85	☐	8.85	26	85	10
	2NKS8.9	●	8.9	18	75	10
	2NKS8.95	☐	8.95	26	85	10
HSS Endmill เอ็นมิลล์ไฮสปีด	2NKS9	●	9	18	75	10
	2NKS9.05	☐	9.05	26	85	10
	2NKS9.1	●	9.1	18	75	10
	2NKS9.15	☐	9.15	26	85	10
	2NKS9.2	●	9.2	18	75	10
Ball หัวบอล	2NKS9.25	☐	9.25	26	85	10
	2NKS9.3	●	9.3	18	75	10
	2NKS9.35	☐	9.35	26	85	10
	2NKS9.4	●	9.4	18	75	10
	2NKS9.45	☐	9.45	26	85	10
Radius หัวกัศม R	2NKS9.5	●	9.5	18	75	10
	2NKS9.55	☐	9.55	26	85	10
	2NKS9.6	●	9.6	18	75	10
	2NKS9.65	☐	9.65	26	85	10
	2NKS9.7	●	9.7	18	75	10
Square หัวสี่	2NKS9.75	☐	9.75	26	85	10
	2NKS9.8	●	9.8	18	75	10
	2NKS9.85	☐	9.85	26	85	10
	2NKS9.9	●	9.9	18	75	10
	2NKS9.95	☐	9.95	26	85	10
Taper Ball หัวเตเปอร์บอล	2NKS10	●	10	18	75	10
	2NKS10.05	☐	10.05	26	85	10
	2NKS10.1	☐	10.1	22	85	12
	2NKS10.15	☐	10.15	26	85	10
	2NKS10.2	☐	10.2	22	85	12
Roughing	2NKS10.25	☐	10.25	26	85	10
	2NKS10.3	☐	10.3	22	85	12
	2NKS10.35	☐	10.35	26	85	10
	2NKS10.4	☐	10.4	22	85	12
	2NKS10.45	☐	10.45	26	85	10
	2NKS10.5	●	10.5	22	85	12
	2NKS10.55	☐	10.55	31	95	12
	2NKS10.6	☐	10.6	22	85	12
	2NKS10.65	☐	10.65	31	95	12
	2NKS10.7	☐	10.7	22	85	12
	2NKS10.75	☐	10.75	31	95	12
	2NKS10.8	☐	10.8	22	85	12
	2NKS10.85	☐	10.85	31	95	12
	2NKS10.9	☐	10.9	22	85	12
	2NKS10.95	☐	10.95	31	95	12
	2NKS11	●	11	22	85	12
	2NKS11.05	☐	11.05	31	95	12
	2NKS11.1	☐	11.1	22	85	12
	2NKS11.15	☐	11.15	31	95	12
	2NKS11.2	☐	11.2	22	85	12
	2NKS11.25	☐	11.25	31	95	12
	2NKS11.3	☐	11.3	22	85	12
	2NKS11.35	☐	11.35	31	95	12
	2NKS11.4	☐	11.4	22	85	12
	2NKS11.45	☐	11.45	31	95	12
	2NKS11.5	●	11.5	22	85	12
	2NKS11.55	☐	11.55	31	95	12
	2NKS11.6	☐	11.6	22	85	12
	2NKS11.65	☐	11.65	31	95	12
	2NKS11.7	☐	11.7	22	85	12
	2NKS11.75	☐	11.75	31	95	12
	2NKS11.8	☐	11.8	22	85	12
	2NKS11.85	☐	11.85	31	95	12
	2NKS11.9	☐	11.9	22	85	12
	2NKS11.95	☐	11.95	31	95	12
	2NKS12	●	12	22	85	12
	2NKS12.05	☐	12.05	31	95	12
	2NKS12.1	☐	12.1	25	95	12
	2NKS12.15	☐	12.15	31	95	12
	2NKS12.2	☐	12.2	25	95	16
	2NKS12.25	☐	12.25	31	95	12
	2NKS12.3	☐	12.3	25	95	16
	2NKS12.35	☐	12.35	31	95	12
	2NKS12.4	☐	12.4	25	95	16
	2NKS12.45	☐	12.45	31	95	12
	2NKS12.5	●	12.5	25	95	16
	2NKS12.55	☐	12.55	31	95	12
	2NKS12.6	☐	12.6	25	95	16
	2NKS12.65	☐	12.65	31	95	12
	2NKS12.7	☐	12.7	25	95	16
	2NKS12.75	☐	12.75	31	95	12
	2NKS12.8	☐	12.8	25	95	16
	2NKS12.85	☐	12.85	31	95	12
	2NKS12.9	☐	12.9	25	95	16
	2NKS12.95	☐	12.95	31	95	12
	2NKS13	●	13	25	90	12
	2NKS13.1	☐	13.1	25	95	16
	2NKS13.2	☐	13.2	25	95	16
	2NKS13.3	☐	13.3	25	95	16
	2NKS13.4	☐	13.4	25	95	16
	2NKS13.5	●	13.5	25	95	16
	2NKS13.6	☐	13.6	25	95	16
	2NKS13.7	☐	13.7	25	95	16
	2NKS13.8	☐	13.8	25	95	16
	2NKS13.9	☐	13.9	25	95	16
	2NKS14	●	14	25	95	16
	2NKS14.1	☐	14.1	30	100	16
	2NKS14.2	☐	14.2	30	100	16
	2NKS14.3	☐	14.3	30	100	16
	2NKS14.4	☐	14.4	30	100	16
	2NKS14.5	●	14.5	30	100	16
	2NKS14.6	☐	14.6	30	100	16
	2NKS14.7	☐	14.7	30	100	16
	2NKS14.8	☐	14.8	30	100	16
	2NKS14.9	☐	14.9	30	100	16
	2NKS15	●	15	30	100	16
	2NKS15.1	☐	15.1	30	100	16
	2NKS15.2	☐	15.2	30	100	16
	2NKS15.3	☐	15.3	30	100	16
	2NKS15.4	☐	15.4	30	100	16
	2NKS15.5	●	15.5	30	100	16
	2NKS15.6	☐	15.6	30	100	16
	2NKS15.7	☐	15.7	30	100	16
	2NKS15.8	☐	15.8	30	100	16
	2NKS15.9	☐	15.9	30	100	16
	2NKS16	●	16	30	100	16
	2NKS16.1	☐	16.1	35	115	20
	2NKS16.2	☐	16.2	35	115	20
	2NKS16.3	☐	16.3	35	115	20
	2NKS16.4	☐	16.4	35	115	20
	2NKS16.5	●	16.5	35	115	20
	2NKS16.6	☐	16.6	35	115	20
	2NKS16.7	☐	16.7	35	115	20
	2NKS16.8	☐	16.8	35	115	20
	2NKS16.9	☐	16.9	35	115	20
	2NKS17	●	17	35	105	16
	2NKS17.1	☐	17.1	35	115	20
	2NKS17.2	☐	17.2	35	115	20
	2NKS17.3	☐	17.3	35	115	20
	2NKS17.4	☐	17.4	35	115	20
	2NKS17.5	●	17.5	35	115	20
	2NKS17.6	☐	17.6	35	115	20
	2NKS17.7	☐	17.7	35	115	20
	2NKS17.8	☐	17.8	35	115	20
	2NKS17.9	☐	17.9	35	115	20
	2NKS18	●	18	35	105	16
	2NKS18.1	☐	18.1	40	120	20
	2NKS18.2	☐	18.2	40	120	20
	2NKS18.3	☐	18.3	40	120	20
	2NKS18.4	☐	18.4	40	120	20
	2NKS18.5	●	18.5	40	120	20
	2NKS18.6	☐	18.6	40	120	20
	2NKS18.7	☐	18.7	40	120	20
	2NKS18.8	☐	18.8	40	120	20
	2NKS18.9	☐	18.9	40	120	20
	2NKS19	●	19	40	120	20
	2NKS19.1	☐	19.1	40	120	20
	2NKS19.2	☐	19.2	40	120	20
	2NKS19.3	☐	19.3	40	120	20
	2NKS19.4	☐	19.4	40	120	20
	2NKS19.5	●	19.5	40	120	20
	2NKS19.6	☐	19.6	40	120	20
	2NKS19.7	☐	19.7	40	120	20
	2NKS19.8	☐	19.8	40	120	20
	2NKS19.9	☐	19.9	40	120	20
	2NKS20	●	20	40	120	20

● : Stocked Items. ☐ : Stocked by specified distributor. Contact with our sales department.

เอ็นมิลล์ตระกูล NK
NK END MILL
2NKR... (x...)

Regular



0 ~ -0.03



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKR2	●	2	5	55	6
2NKR2.5	●	2.5	7	55	6
2NKR3	●	3	10	55	6
2NKR3.5	●	3.5	12	60	6
2NKR4	●	4	12	60	6
2NKR4.5	●	4.5	15	60	6
2NKR5	●	5	15	60	6
2NKR5.5	●	5.5	15	60	6
2NKR6	●	6	15	60	6
2NKR6.5	●	6.5	20	70	8
2NKR7	●	7	20	70	8
2NKR7.5	●	7.5	20	70	8
2NKR8	●	8	20	70	8
2NKR8.5	●	8.5	25	80	10
2NKR9	●	9	25	80	10
2NKR9.5	●	9.5	25	80	10
2NKR10	●	10	25	80	10
2NKR10.5	●	10.5	30	95	12
2NKR11	●	11	30	95	12
2NKR11.5	●	11.5	30	95	12
2NKR12	●	12	30	95	12
2NKR12.5	●	12.5	35	105	16
2NKR13	●	13	35	100	12
2NKR13.5	●	13.5	35	105	16
2NKR14	●	14	35	105	16
2NKR14.5	●	14.5	40	110	16
2NKR15	●	15	40	110	16
2NKR15.5	●	15.5	40	110	16
2NKR16	●	16	40	110	16
2NKR16.5	●	16.5	40	120	20
2NKR17	●	17	40	110	16
2NKR17.5	●	17.5	40	120	20
2NKR18	●	18	40	110	16
2NKR18.5	●	18.5	45	125	20
2NKR19	●	19	45	125	20
2NKR19.5	●	19.5	45	125	20
2NKR20	●	20	45	125	20
2NKR20.1	□	20.1	45	135	20
2NKR20.2	□	20.2	45	135	20
2NKR20.3	□	20.3	45	135	20
2NKR20.4	□	20.4	45	135	20
2NKR20.5	□	20.5	45	135	20
2NKR20.6	□	20.6	45	135	20
2NKR20.7	□	20.7	45	135	20
2NKR20.8	□	20.8	45	135	20
2NKR20.9	□	20.9	45	135	20
2NKR21	●	21	45	125	20
2NKR21.1	□	21.1	45	135	20
2NKR21.2	□	21.2	45	135	20
2NKR21.3	□	21.3	45	135	20

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKR21.4	□	21.4	45	135	20
2NKR21.5	□	21.5	45	135	20
2NKR21.6	□	21.6	45	135	20
2NKR21.7	□	21.7	45	135	20
2NKR21.8	□	21.8	45	135	20
2NKR21.9	□	21.9	45	135	20
2NKR22	●	22	45	125	20
2NKR22.1	□	22.1	50	140	25
2NKR22.2	□	22.2	50	140	25
2NKR22.3	□	22.3	50	140	25
2NKR22.4	□	22.4	50	140	25
2NKR22.5	□	22.5	50	140	25
2NKR22.6	□	22.6	50	140	25
2NKR22.7	□	22.7	50	140	25
2NKR22.8	□	22.8	50	140	25
2NKR22.9	□	22.9	50	140	25
2NKR23	●	23	50	140	25
2NKR23.1	□	23.1	50	140	25
2NKR23.2	□	23.2	50	140	25
2NKR23.3	□	23.3	50	140	25
2NKR23.4	□	23.4	50	140	25
2NKR23.5	□	23.5	50	140	25
2NKR23.6	□	23.6	50	140	25
2NKR23.7	□	23.7	50	140	25
2NKR23.8	□	23.8	50	140	25
2NKR23.9	□	23.9	50	140	25
2NKR24	●	24	50	140	25
2NKR24.1	□	24.1	50	140	25
2NKR24.2	□	24.2	50	140	25
2NKR24.3	□	24.3	50	140	25
2NKR24.4	□	24.4	50	140	25
2NKR24.5	□	24.5	50	140	25
2NKR24.6	□	24.6	50	140	25
2NKR24.7	□	24.7	50	140	25
2NKR24.8	□	24.8	50	140	25
2NKR24.9	□	24.9	50	140	25
2NKR25	●	25	50	140	25
2NKR25.1	□	25.1	50	140	25
2NKR25.2	□	25.2	50	140	25
2NKR25.3	□	25.3	50	140	25
2NKR25.4	□	25.4	50	140	25
2NKR25.5	□	25.5	50	140	25
2NKR25.6	□	25.6	50	140	25
2NKR25.7	□	25.7	50	140	25
2NKR25.8	□	25.8	50	140	25
2NKR25.9	□	25.9	50	140	25
2NKR26	●	26	50	140	25
2NKR26.1	□	26.1	55	145	25
2NKR26.2	□	26.2	55	145	25
2NKR26.3	□	26.3	55	145	25

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

END MILL

ดอกเอ็นมิลล์



END MILL
เอ็นมิลล์

	Order No.	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall Length	Shank Dia.
	2NKR26.4	□	26.4	55	145	25
	2NKR26.5	□	26.5	55	145	25
	2NKR26.6	□	26.6	55	145	25
	2NKR26.7	□	26.7	55	145	25
DEEP SERIES	2NKR26.8	□	26.8	55	145	25
เอ็นมิลล์ตระกูลดีฟ	2NKR26.9	□	26.9	55	145	25
CBN END MILL	2NKR27	●	27	55	145	25
CBN เอ็นมิลล์	2NKR27.1	□	27.1	55	145	25
	2NKR27.2	□	27.2	55	145	25
Carbide Endmill	2NKR27.3	□	27.3	55	145	25
เอ็นมิลล์คาร์ไบด์	2NKR27.4	□	27.4	55	145	25
HSS Endmill	2NKR27.5	□	27.5	55	145	25
เอ็นมิลล์ไฮสปีด	2NKR27.6	□	27.6	55	145	25
Ball	2NKR27.7	□	27.7	55	145	25
หัวบอล	2NKR27.8	□	27.8	55	145	25
Radius	2NKR27.9	□	27.9	55	145	25
หัวกัณฐ R	2NKR28	●	28	55	145	25
Square	2NKR28.1	□	28.1	55	145	25
หัวสี่	2NKR28.2	□	28.2	55	145	25
	2NKR28.3	□	28.3	55	145	25
Taper Ball	2NKR28.4	□	28.4	55	145	25
หัวเตเปอร์บอล	2NKR28.5	□	28.5	55	145	25
Roughing	2NKR28.6	□	28.6	55	145	25
	2NKR28.7	□	28.7	55	145	25
	2NKR28.8	□	28.8	55	145	25
	2NKR28.9	□	28.9	55	145	25
	2NKR29	●	29	55	145	25
	2NKR29.1	□	29.1	55	145	25
	2NKR29.2	□	29.2	55	145	25
	2NKR29.3	□	29.3	55	145	25
	2NKR29.4	□	29.4	55	145	25
	2NKR29.5	□	29.5	55	145	25
	2NKR29.6	□	29.6	55	145	25
	2NKR29.7	□	29.7	55	145	25
	2NKR29.8	□	29.8	55	145	25
	2NKR29.9	□	29.9	55	145	25
	2NKR30	●	30	55	145	25
	2NKR30.5	□	30.5	60	160	32
	2NKR31	●	31	60	160	32
	2NKR31.5	□	31.5	60	160	32
	2NKR32	●	32	60	160	32
	2NKR32.5	□	32.5	60	160	32
	2NKR33	●	33	60	160	32
	2NKR33.5	□	33.5	60	160	32
	2NKR34	●	34	60	160	32
	2NKR34.5	□	34.5	60	160	32
	2NKR35	●	35	60	160	32
	2NKR35.5	□	35.5	60	160	32
	2NKR36	●	36	60	160	32
	2NKR36.5	□	36.5	60	160	32
	2NKR37	●	37	60	160	32
	2NKR37.5	□	37.5	65	165	32
	2NKR38	●	38	65	165	32
	2NKR38.5	□	38.5	65	165	32
	2NKR39	●	39	65	165	32
	2NKR39.5	□	39.5	65	165	32
	2NKR40x32	●	40	65	165	32
	2NKR40.5x32	□	40.5	65	165	32
	2NKR41	□	41	65	175	42
	2NKR41x32	□	41	65	165	32

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

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKR41.5x32	□	41.5	65	165	32
2NKR42	□	42	65	175	42
2NKR42x32	□	42	65	165	32
2NKR42.5x32	□	42.5	70	170	32
2NKR43	□	43	70	180	42
2NKR43x32	□	43	70	170	32
2NKR43.5x32	□	43.5	70	170	32
2NKR44	□	44	70	180	42
2NKR44x32	□	44	70	170	32
2NKR44.5x32	□	44.5	70	170	32
2NKR45	□	45	70	180	42
2NKR45x32	□	45	70	170	32
2NKR45.5x32	□	45.5	70	170	32
2NKR46	□	46	70	180	42
2NKR46x32	□	46	70	170	32
2NKR46.5x32	□	46.5	70	170	32
2NKR47	□	47	70	180	42
2NKR47x32	□	47	70	170	32
2NKR47.5x32	□	47.5	70	170	32
2NKR48	□	48	70	180	42
2NKR48x32	□	48	70	170	32
2NKR48.5	□	48.5	70	170	42
2NKR49	□	49	70	180	42
2NKR49x32	□	49	70	170	32
2NKR49.5x32	□	49.5	70	170	32
2NKR50	□	50	70	180	42
2NKR50x32	□	50	70	170	32
2NKR51	□	51	75	185	42
2NKR52	□	52	75	185	42
2NKR53	□	53	75	185	42
2NKR54	□	54	75	185	42
2NKR55	□	55	75	185	42
2NKR56	□	56	75	185	42
2NKR57	□	57	75	185	42
2NKR58	□	58	75	185	42
2NKR59	□	59	75	185	42
2NKR60	□	60	75	185	42
2NKR60x32	□	60	75	175	32



เอ็นมิลล์ตระกูล NK NK END MILL 2NKL ϕ . ϕ .(x ϕ)



Long



0 ~ -0.03



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKL1x5	☐	1	5	50	6
2NKL1x6	☐	1	6	50	6
2NKL1x7.5	☐	1	7.5	50	6
2NKL1.1	☐	1.1	7.5	50	6
2NKL1.2	☐	1.2	7.5	50	6
2NKL1.3	☐	1.3	7.5	50	6
2NKL1.4	☐	1.4	7.5	50	6
2NKL1.5	☐	1.5	7.5	50	6
2NKL1.5	☐	1.5	10	60	6
2NKL1.6	☐	1.6	10	60	6
2NKL1.7	☐	1.7	10	60	6
2NKL1.8	☐	1.8	10	60	6
2NKL1.9	☐	1.9	10	60	6
2NKL2x10	☐	2	10	60	6
2NKL2x12	☐	2	12	60	6
2NKL2x15	☐	2	15	60	6
2NKL2.1	☐	2.1	15	60	6
2NKL2.2	☐	2.2	15	60	6
2NKL2.3	☐	2.3	15	60	6
2NKL2.4	☐	2.4	15	60	6
2NKL2.5	☐	2.5	12	60	6
2NKL2.5	☐	2.5	15	60	6
2NKL2.5	☐	2.5	20	60	6
2NKL2.6	☐	2.6	15	60	6
2NKL2.7	☐	2.7	15	60	6
2NKL2.8	☐	2.8	15	60	6
2NKL2.9	☐	2.9	15	60	6
2NKL3	☒	3	15	60	6
2NKL3x20	☐	3	20	65	6
2NKL3x25	☐	3	25	65	6
2NKL3.1	☐	3.1	20	65	6
2NKL3.2	☐	3.2	20	65	6
2NKL3.3	☐	3.3	20	65	6
2NKL3.4	☐	3.4	20	65	6
2NKL3.5	☐	3.5	20	65	6
2NKL3.6	☐	3.6	20	65	6
2NKL3.7	☐	3.7	20	65	6
2NKL3.8	☐	3.8	20	65	6
2NKL3.9	☐	3.9	20	65	6
2NKL4	☒	4	20	65	6
2NKL4.1	☐	4.1	25	70	6
2NKL4.2	☐	4.2	25	70	6
2NKL4.3	☐	4.3	25	70	6
2NKL4.4	☐	4.4	25	70	6
2NKL4.5	☐	4.5	25	70	6
2NKL4.6	☐	4.6	25	70	6
2NKL4.7	☐	4.7	25	70	6
2NKL4.8	☐	4.8	25	70	6
2NKL4.9	☐	4.9	25	70	6

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKL5	☒	5	25	70	6
2NKL5.1	☐	5.1	25	70	6
2NKL5.2	☐	5.2	25	70	6
2NKL5.3	☐	5.3	25	70	6
2NKL5.4	☐	5.4	25	70	6
2NKL5.5	☐	5.5	25	70	6
2NKL5.6	☐	5.6	25	70	6
2NKL5.7	☐	5.7	25	70	6
2NKL5.8	☐	5.8	25	70	6
2NKL5.9	☐	5.9	25	70	6
2NKL6	☒	6	25	70	6
2NKL6.1	☐	6.1	35	85	8
2NKL6.2	☐	6.2	35	85	8
2NKL6.3	☐	6.3	35	85	8
2NKL6.4	☐	6.4	35	85	8
2NKL6.5	☐	6.5	35	85	8
2NKL6.6	☐	6.6	35	85	8
2NKL6.7	☐	6.7	35	85	8
2NKL6.8	☐	6.8	35	85	8
2NKL6.9	☐	6.9	35	85	8
2NKL7	☒	7	35	85	8
2NKL7.1	☐	7.1	35	85	8
2NKL7.2	☐	7.2	35	85	8
2NKL7.3	☐	7.3	35	85	8
2NKL7.4	☐	7.4	35	85	8
2NKL7.5	☐	7.5	35	85	8
2NKL7.6	☐	7.6	35	85	8
2NKL7.7	☐	7.7	35	85	8
2NKL7.8	☐	7.8	35	85	8
2NKL7.9	☐	7.9	35	85	8
2NKL8	☒	8	35	85	8
2NKL8.1	☐	8.1	45	100	10
2NKL8.2	☐	8.2	45	100	10
2NKL8.3	☐	8.3	45	100	10
2NKL8.4	☐	8.4	45	100	10
2NKL8.5	☐	8.5	45	100	10
2NKL8.6	☐	8.6	45	100	10
2NKL8.7	☐	8.7	45	100	10
2NKL8.8	☐	8.8	45	100	10
2NKL8.9	☐	8.9	45	100	10
2NKL9	☒	9	45	100	10
2NKL9.1	☐	9.1	45	100	10
2NKL9.2	☐	9.2	45	100	10
2NKL9.3	☐	9.3	45	100	10
2NKL9.4	☐	9.4	45	100	10
2NKL9.5	☐	9.5	45	100	10
2NKL9.6	☐	9.6	45	100	10
2NKL9.7	☐	9.7	45	100	10
2NKL9.8	☐	9.8	45	100	10

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

END MILL

ดอกเอ็นมิลล์



END MILL
เอ็นมิลล์

	Order No.	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall Length	Shank Dia.
	2NKL9.9	☐	9.9	45	100	10
	2NKL10	●	10	45	100	10
	2NKL10.1	☐	10.1	55	120	12
	2NKL10.2	☐	10.2	55	120	12
	2NKL10.3	☐	10.3	55	120	12
	2NKL10.4	☐	10.4	55	120	12
	2NKL10.5	☐	10.5	55	120	12
	2NKL10.6	☐	10.6	55	120	12
	2NKL10.7	☐	10.7	55	120	12
	2NKL10.8	☐	10.8	55	120	12
	2NKL10.9	☐	10.9	55	120	12
	2NKL11	●	11	55	120	12
	2NKL11.1	☐	11.1	55	120	12
	2NKL11.2	☐	11.2	55	120	12
	2NKL11.3	☐	11.3	55	120	12
	2NKL11.4	☐	11.4	55	120	12
	2NKL11.5	☐	11.5	55	120	12
	2NKL11.6	☐	11.6	55	120	12
	2NKL11.7	☐	11.7	55	120	12
	2NKL11.8	☐	11.8	55	120	12
	2NKL11.9	☐	11.9	55	120	12
	2NKL12	●	12	55	120	12
	2NKL12.1x12	☐	12.1	55	120	12
	2NKL12.1x16	☐	12.1	55	120	16
	2NKL12.2x12	☐	12.2	55	120	12
	2NKL12.2x16	☐	12.2	55	120	16
	2NKL12.3x12	☐	12.3	55	120	12
	2NKL12.3x16	☐	12.3	55	120	16
	2NKL12.4x12	☐	12.4	55	120	12
	2NKL12.4x16	☐	12.4	55	120	16
	2NKL12.5x12	☐	12.5	55	120	12
	2NKL12.5x16	☐	12.5	55	120	16
	2NKL12.6x12	☐	12.6	55	120	12
	2NKL12.6x16	☐	12.6	55	120	16
	2NKL12.7x12	☐	12.7	55	120	12
	2NKL12.7x16	☐	12.7	55	120	16
	2NKL12.8x12	☐	12.8	55	120	12
	2NKL12.8x16	☐	12.8	55	120	16
	2NKL12.9x12	☐	12.9	55	120	12
	2NKL12.9x16	☐	12.9	55	120	16
	2NKL13	●	13	55	120	12
	2NKL13.5	☐	13.5	55	125	16
	2NKL14	●	14	55	125	16
	2NKL14.5	☐	14.5	65	135	16
	2NKL15	●	15	65	135	16
	2NKL15.5	☐	15.5	65	135	16
	2NKL16	●	16	65	135	16
	2NKL16.5	☐	16.5	65	145	20
	2NKL17	●	17	65	135	16
	2NKL17.5	☐	17.5	65	145	20
	2NKL18	●	18	65	135	16
	2NKL18.5	☐	18.5	75	155	20
	2NKL19	●	19	75	155	20
	2NKL19.5	☐	19.5	75	155	20
	2NKL20	●	20	75	155	20
	2NKL20.5	☐	20.5	75	165	20
	2NKL21	●	21	75	155	20
	2NKL22	●	22	75	155	20
	2NKL23	☐	23	90	180	25
	2NKL24	●	24	90	180	25
	2NKL25	●	25	90	180	25
	2NKL26	●	26	90	180	25
	2NKL27	☐	27	90	180	25
	2NKL28	●	28	90	180	25
	2NKL29	☐	29	90	180	25
	2NKL30	●	30	90	180	25
	2NKL31	☐	31	95	195	32
	2NKL32	●	32	95	195	32

● : Stocked Items. ☐ : Stocked by specified distributor. Contact with our sales department.

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKL33	☐	33	95	195	32
2NKL34	☐	34	95	195	32
2NKL35	●	35	100	200	32
2NKL36	☐	36	100	200	32
2NKL37	☐	37	100	200	32
2NKL38	☐	38	105	205	32
2NKL39	☐	39	110	210	32
2NKL40x32	●	40	110	210	32
2NKL41x32	☐	41	110	210	32
2NKL42x32	☐	42	110	210	32
2NKL43x32	☐	43	110	210	32
2NKL44x32	☐	44	115	215	32
2NKL45x32	☐	45	115	215	32
2NKL46x32	☐	46	115	215	32
2NKL47x32	☐	47	115	215	32
2NKL48x32	☐	48	120	220	32
2NKL49x32	☐	49	120	220	32
2NKL50x32	☐	50	120	220	32
2NKL51x42	☐	51	120	220	42



เอ็นมิลล์ตระกูล NK NK END MILL 2NKX ϕ x ϕ x ϕ



Extra Long



0 ~ -0.03



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKX3X30	●	3	30	65	6
2NKX4X30	●	4	30	65	6
2NKX5X40	●	5	40	75	6
2NKX6X40	●	6	40	75	6
2NKX6X60	●	6	60	95	6
2NKX7X60	●	7	60	100	8
2NKX8X50	●	8	50	90	8
2NKX8X60	●	8	60	100	8
2NKX10X60	●	10	60	105	10
2NKX10X80	●	10	80	125	10
2NKX11X80	●	11	80	125	12
2NKX12X80	●	12	80	130	12
2NKX12X100	●	12	100	150	12

● : Stocked Items.

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NKX13X100	●	13	100	150	16
2NKX14X80	●	14	80	130	16
2NKX14X100	●	14	100	150	16
2NKX15X80	●	15	80	135	16
2NKX16X80	●	16	80	135	16
2NKX16X100	●	16	100	155	16
2NKX18X80	●	18	80	135	20
2NKX18X100	●	18	100	155	20
2NKX20X120	●	20	120	185	20
2NKX24X120	●	24	120	190	25
2NKX36X120	●	36	120	205	32
2NKX38X150	●	38	150	235	32
2NKX40X150	●	40	150	260	42

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัดมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ตระกูล ESM
ESM END MILL
2ESMS



END MILL
เอ็นมิลล์

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวสี่

Taper Ball

หัวเตเปอร์บอล

Roughing

Short



0 ~ -0.03



Ds ≤ 6 : 0 ~ -0.012
 6 < Ds ≤ 10 : 0 ~ -0.015
 10 < Ds ≤ 18 : 0 ~ -0.018
 18 < Ds : 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMS0.8	☐	0.8	2	50	6
2ESMS0.9	☐	0.9	2.2	50	6
2ESMS1	☒	1	2.5	50	6
2ESMS1.1	☐	1.1	2.5	50	6
2ESMS1.2	☐	1.2	3	50	6
2ESMS1.3	☐	1.3	3	50	6
2ESMS1.4	☐	1.4	3	50	6
2ESMS1.5	☒	1.5	3.5	50	6
2ESMS1.6	☐	1.6	3.5	50	6
2ESMS1.7	☐	1.7	3.5	50	6
2ESMS1.8	☐	1.8	3.5	50	6
2ESMS1.9	☐	1.9	4	50	6
2ESMS2	☒	2	4	50	6
2ESMS2.1	☐	2.1	5	50	6
2ESMS2.2	☐	2.2	5	50	6
2ESMS2.3	☐	2.3	5	50	6
2ESMS2.4	☐	2.4	5	50	6
2ESMS2.5	☒	2.5	5	50	6
2ESMS2.6	☐	2.6	7	50	6
2ESMS2.7	☐	2.7	7	50	6
2ESMS2.8	☐	2.8	7	50	6
2ESMS2.9	☐	2.9	7	50	6
2ESMS3	☒	3	7	50	6
2ESMS3.1	☐	3.1	8	60	8
2ESMS3.2	☐	3.2	8	60	8
2ESMS3.3	☐	3.3	8	60	8
2ESMS3.4	☐	3.4	8	60	8
2ESMS3.5	☒	3.5	8	60	8
2ESMS3.6	☐	3.6	8	60	8
2ESMS3.7	☐	3.7	8	60	8
2ESMS3.8	☐	3.8	8	60	8
2ESMS3.9	☐	3.9	8	60	8
2ESMS4	☒	4	8	60	8
2ESMS4.1	☐	4.1	10	60	8
2ESMS4.2	☐	4.2	10	60	8
2ESMS4.3	☐	4.3	10	60	8
2ESMS4.4	☐	4.4	10	60	8
2ESMS4.5	☒	4.5	10	60	8
2ESMS4.6	☐	4.6	10	60	8
2ESMS4.7	☐	4.7	10	60	8
2ESMS4.8	☐	4.8	10	60	8
2ESMS4.9	☐	4.9	10	60	8
2ESMS5	☒	5	10	60	8
2ESMS5.1	☐	5.1	12	60	8
2ESMS5.2	☐	5.2	12	60	8
2ESMS5.3	☐	5.3	12	60	8
2ESMS5.4	☐	5.4	12	60	8
2ESMS5.5	☒	5.5	12	60	8
2ESMS5.6	☐	5.6	12	60	8
2ESMS5.7	☐	5.7	12	60	8

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMS5.8	☐	5.8	12	60	8
2ESMS5.9	☐	5.9	12	60	8
2ESMS6	☒	6	12	60	8
2ESMS6.1	☐	6.1	14	65	10
2ESMS6.2	☐	6.2	14	65	10
2ESMS6.3	☐	6.3	14	65	10
2ESMS6.4	☐	6.4	14	65	10
2ESMS6.5	☒	6.5	14	65	10
2ESMS6.6	☐	6.6	14	65	10
2ESMS6.7	☐	6.7	14	65	10
2ESMS6.8	☐	6.8	14	65	10
2ESMS6.9	☐	6.9	14	65	10
2ESMS7	☒	7	14	65	10
2ESMS7.1	☐	7.1	14	65	10
2ESMS7.2	☐	7.2	14	65	10
2ESMS7.3	☐	7.3	14	65	10
2ESMS7.4	☐	7.4	14	65	10
2ESMS7.5	☒	7.5	14	65	10
2ESMS7.6	☐	7.6	14	65	10
2ESMS7.7	☐	7.7	14	65	10
2ESMS7.8	☐	7.8	14	65	10
2ESMS7.9	☐	7.9	14	65	10
2ESMS8	☒	8	14	65	10
2ESMS8.1	☐	8.1	18	70	10
2ESMS8.2	☐	8.2	18	70	10
2ESMS8.3	☐	8.3	18	70	10
2ESMS8.4	☐	8.4	18	70	10
2ESMS8.5	☒	8.5	18	70	10
2ESMS8.6	☐	8.6	18	70	10
2ESMS8.7	☐	8.7	18	70	10
2ESMS8.8	☐	8.8	18	70	10
2ESMS8.9	☐	8.9	18	70	10
2ESMS9	☒	9	18	70	10
2ESMS9.1	☐	9.1	18	75	10
2ESMS9.2	☐	9.2	18	75	10
2ESMS9.3	☐	9.3	18	75	10
2ESMS9.4	☐	9.4	18	75	10
2ESMS9.5	☒	9.5	18	75	10
2ESMS9.6	☐	9.6	18	75	10
2ESMS9.7	☐	9.7	18	75	10
2ESMS9.8	☐	9.8	18	75	10
2ESMS9.9	☐	9.9	18	75	10
2ESMS10	☒	10	18	75	10
2ESMS10.5	☐	10.5	22	80	12
2ESMS11	☒	11	22	80	12
2ESMS11.5	☐	11.5	22	80	12
2ESMS12	☒	12	22	80	12
2ESMS12.5	☐	12.5	25	95	16
2ESMS13	☒	13	25	90	12
2ESMS13.5	☐	13.5	25	95	16

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMS14	☒	14	25	95	16
2ESMS14.5	☐	14.5	30	100	16
2ESMS15	☒	15	30	100	16
2ESMS15.5	☐	15.5	30	100	16
2ESMS16	☒	16	30	100	16
2ESMS16.5	☐	16.5	35	115	20
2ESMS17	☐	17	35	105	16
2ESMS17.5	☐	17.5	35	115	20
2ESMS18	☒	18	35	105	16
2ESMS18.5	☐	18.5	40	120	20
2ESMS19	☐	19	40	120	20
2ESMS19.5	☐	19.5	40	120	20
2ESMS20	☒	20	40	120	20
2ESMS21	☐	21	40	120	20
2ESMS22	☐	22	40	120	20
2ESMS23	☐	23	50	120	25
2ESMS24	☐	24	50	120	25
2ESMS25	☐	25	50	120	25
2ESMS26	☐	26	50	120	25
2ESMS27	☐	27	55	125	25
2ESMS28	☐	28	55	125	25
2ESMS29	☐	29	55	125	25
2ESMS30	☐	30	55	125	25

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

เอ็นมิลล์ตระกูล ESM
ESM END MILL
2ESMR

Regular



0 ~ -0.03



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMR1	●	1	3.5	55	6
2ESMR1.5	●	1.5	5	55	6
2ESMR2	●	2	5	55	6
2ESMR2.5	●	2.5	7	55	6
2ESMR3	●	3	10	55	6
2ESMR3.5	●	3.5	12	60	8
2ESMR4	●	4	12	60	8
2ESMR4.5	●	4.5	15	60	8
2ESMR5	●	5	15	60	8
2ESMR5.5	●	5.5	15	60	8
2ESMR6	●	6	15	60	8
2ESMR6.5	●	6.5	20	70	10
2ESMR7	●	7	20	70	10
2ESMR7.5	●	7.5	20	70	10
2ESMR8	●	8	20	70	10
2ESMR8.5	●	8.5	25	80	10
2ESMR9	●	9	25	80	10
2ESMR9.5	●	9.5	25	80	10
2ESMR10	●	10	25	80	10
2ESMR10.5	□	10.5	30	95	12
2ESMR11	●	11	30	95	12
2ESMR11.5	□	11.5	30	95	12
2ESMR12	●	12	30	95	12
2ESMR12.5	□	12.5	35	105	16
2ESMR13	●	13	35	100	12
2ESMR13.5	□	13.5	35	105	16
2ESMR14	●	14	35	105	16
2ESMR14.5	□	14.5	40	110	16
2ESMR15	●	15	40	110	16
2ESMR15.5	□	15.5	40	110	16

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMR16	●	16	40	110	16
2ESMR16.5	□	16.5	40	120	20
2ESMR17	●	17	40	110	16
2ESMR17.5	□	17.5	40	120	20
2ESMR18	●	18	40	110	16
2ESMR18.5	□	18.5	45	125	20
2ESMR19	□	19	45	125	20
2ESMR19.5	□	19.5	45	125	20
2ESMR20	●	20	45	125	20
2ESMR21	□	21	45	125	20
2ESMR22	●	22	45	140	20
2ESMR23	□	23	50	140	25
2ESMR24	●	24	50	140	25
2ESMR25	●	25	50	140	25
2ESMR26	●	26	50	140	25
2ESMR27	□	27	55	145	25
2ESMR28	□	28	55	145	25
2ESMR29	□	29	55	145	25
2ESMR30	●	30	55	145	25
2ESMR31	□	31	60	160	32
2ESMR32	□	32	60	160	32
2ESMR33	□	33	60	160	32
2ESMR34	□	34	60	160	32
2ESMR35	□	35	60	160	32
2ESMR36	□	36	60	160	32
2ESMR37	□	37	60	160	32
2ESMR38	□	38	65	165	32
2ESMR39	□	39	65	165	32
2ESMR40	□	40	65	165	32

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐ R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ตระกูล ESM
ESM END MILL
2ESML



END MILL
เอ็นมิลล์

DEEP SERIES
เอ็นมิลล์ตระกูลดีฟ

CBN END MILL
CBN เอ็นมิลล์

Carbide Endmill
เอ็นมิลล์คาร์ไบด์

HSS Endmill
เอ็นมิลล์ไฮสปีด

Ball
หัวบอล

Radius
หัวกัศม R

Square
หัวสี่

Taper Ball
หัวเตเปอร์บอล

Roughing

Long



0 ~ -0.03



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESML3	●	3	15	60	6
2ESML4	●	4	20	65	6
2ESML5	●	5	25	70	6
2ESML6	●	6	25	70	6
2ESML7	□	7	35	85	8
2ESML8	●	8	35	85	8
2ESML9	□	9	45	100	10
2ESML10	●	10	45	100	10
2ESML11	□	11	55	120	12
2ESML12	●	12	55	120	12
2ESML13	□	13	55	120	12
2ESML14	●	14	55	125	16
2ESML15	●	15	65	135	16
2ESML16	●	16	65	135	16
2ESML17	□	17	65	135	16
2ESML18	●	18	65	135	16
2ESML19	□	19	75	155	20
2ESML20	●	20	75	155	20
2ESML21	□	21	75	155	20

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESML22	□	22	75	155	20
2ESML23	□	23	90	180	25
2ESML24	□	24	90	180	25
2ESML25	●	25	90	180	25
2ESML26	□	26	90	180	25
2ESML27	□	27	90	180	25
2ESML28	□	28	90	180	25
2ESML29	□	29	90	180	25
2ESML30	●	30	90	180	25
2ESML31	□	31	95	195	32
2ESML32	□	32	95	195	32
2ESML33	□	33	95	195	32
2ESML34	□	34	95	195	32
2ESML35	□	35	100	200	32
2ESML36	□	36	100	200	32
2ESML37	□	37	100	200	32
2ESML38	□	38	105	205	32
2ESML39	□	39	110	210	32
2ESML40	□	40	110	210	32

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



เอ็นมิลล์ตระกูล ESM ESM END MILL 2ESMSUS



for Stainless Steel



Dia. tolerance
0 ~ -0.03

h7

$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s$: 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMSUS1.5	●	1.5	4	50	6
2ESMSUS2	●	2	4	50	6
2ESMSUS2.5	●	2.5	5	50	6
2ESMSUS3	●	3	7	50	6
2ESMSUS3.5	●	3.5	8	60	8
2ESMSUS4	●	4	8	60	8
2ESMSUS4.5	●	4.5	10	60	8
2ESMSUS5	●	5	10	60	8
2ESMSUS5.5	●	5.5	12	60	8
2ESMSUS6	●	6	12	60	8
2ESMSUS6.5	●	6.5	14	65	10
2ESMSUS7	●	7	14	65	10
2ESMSUS7.5	●	7.5	14	65	10
2ESMSUS8	●	8	14	65	10
2ESMSUS8.5	●	8.5	18	70	10
2ESMSUS9	●	9	18	70	10
2ESMSUS9.5	●	9.5	18	75	10
2ESMSUS10	●	10	18	75	10
2ESMSUS11	●	11	22	80	12

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMSUS12	●	12	22	80	12
2ESMSUS13	●	13	25	95	16
2ESMSUS14	●	14	25	95	16
2ESMSUS15	●	15	30	100	16
2ESMSUS16	●	16	30	100	16
2ESMSUS17	●	17	35	115	20
2ESMSUS18	●	18	35	115	20
2ESMSUS19	●	19	40	120	20
2ESMSUS20	●	20	40	120	20
2ESMSUS21	□	21	40	120	20
2ESMSUS22	●	22	40	120	20
2ESMSUS23	□	23	50	120	25
2ESMSUS24	□	24	50	120	25
2ESMSUS25	●	25	50	120	25
2ESMSUS26	□	26	50	120	25
2ESMSUS27	□	27	55	125	25
2ESMSUS28	□	28	55	125	25
2ESMSUS29	□	29	55	125	25
2ESMSUS30	●	30	55	125	25

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกั๊กมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์สำหรับอลูมิเนียม

END MILLS FOR ALUMINIUM 1AL



1 Flute



0 ~ -0.1



0 ~ -0.015

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
1AL4	●	4	12	60	8
1AL5	●	5	15	60	8
1AL6	●	6	15	60	8
1AL8	●	8	20	75	8
1AL10	●	10	25	90	10

● : Stocked Items.

เอ็นมิลล์สำหรับอลูมิเนียม

END MILLS FOR ALUMINIUM 2AL



2 Flute



0 ~ -0.1



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s$: 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2AL3	●	3	10	55	6
2AL3.1	□	3.1	12	60	6
2AL3.2	□	3.2	12	60	6
2AL3.3	□	3.3	12	60	6
2AL3.4	□	3.4	12	60	6
2AL3.5	□	3.5	12	60	6
2AL3.6	□	3.6	12	60	6
2AL3.7	□	3.7	12	60	6
2AL3.8	□	3.8	12	60	6
2AL3.9	□	3.9	12	60	6
2AL4	●	4	12	60	6
2AL4.1	□	4.1	15	60	6
2AL4.2	□	4.2	15	60	6
2AL4.3	□	4.3	15	60	6
2AL4.4	□	4.4	15	60	6
2AL4.5	□	4.5	15	60	6
2AL4.6	□	4.6	15	60	6
2AL4.7	□	4.7	15	60	6
2AL4.8	□	4.8	15	60	6

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2AL4.9	□	4.9	15	60	6
2AL5	●	5	15	60	6
2AL5.1	□	5.1	15	60	6
2AL5.2	□	5.2	15	60	6
2AL5.3	□	5.3	15	60	6
2AL5.4	□	5.4	15	60	6
2AL5.5	□	5.5	15	60	6
2AL5.6	□	5.6	15	60	6
2AL5.7	□	5.7	15	60	6
2AL5.8	□	5.8	15	60	6
2AL5.9	□	5.9	15	60	6
2AL6	●	6	15	60	6
2AL6.1	□	6.1	16	60	8
2AL6.2	□	6.2	16	60	8
2AL6.3	□	6.3	16	60	8
2AL6.4	□	6.4	16	60	8
2AL6.5	□	6.5	16	60	8
2AL6.6	□	6.6	16	60	8
2AL6.7	□	6.7	16	60	8

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

END MILL

ดอกเอ็นมิลล์



MOLDINO
The Edge To Innovation

END MILL
เอ็นมิลล์

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2AL6.8	☐	6.8	16	60	8
2AL6.9	☐	6.9	16	60	8
2AL7	☒	7	20	70	8
2AL7.1	☐	7.1	20	70	8
2AL7.2	☐	7.2	20	70	8
2AL7.3	☐	7.3	20	70	8
2AL7.4	☐	7.4	20	70	8
2AL7.5	☐	7.5	20	70	8
2AL7.6	☐	7.6	20	70	8
2AL7.7	☐	7.7	20	70	8
2AL7.8	☐	7.8	20	70	8
2AL7.9	☐	7.9	20	70	8
2AL8	☒	8	20	70	8
2AL8.1	☐	8.1	20	70	10
2AL8.2	☐	8.2	20	70	10
2AL8.3	☐	8.3	20	70	10
2AL8.4	☐	8.4	20	70	10
2AL8.5	☐	8.5	20	70	10
2AL8.6	☐	8.6	20	70	10
2AL8.7	☐	8.7	20	70	10
2AL8.8	☐	8.8	20	70	10
2AL8.9	☐	8.9	20	70	10
2AL9	☒	9	25	80	10
2AL9.1	☐	9.1	25	80	10
2AL9.2	☐	9.2	25	80	10
2AL9.3	☐	9.3	25	80	10
2AL9.4	☐	9.4	25	80	10
2AL9.5	☐	9.5	25	80	10
2AL9.6	☐	9.6	25	80	10
2AL9.7	☐	9.7	25	80	10
2AL9.8	☐	9.8	25	80	10
2AL9.9	☐	9.9	25	80	10
2AL10	☒	10	25	80	10
2AL10.5	☐	10.5	30	95	12
2AL11	☒	11	30	95	12
2AL11.5	☐	11.5	30	95	12

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2AL12	☒	12	30	95	12
2AL12.5	☐	12.5	30	95	12
2AL13	☒	13	30	95	12
2AL13.5	☐	13.5	30	95	12
2AL14	☒	14	35	105	16
2AL14.5	☐	14.5	40	110	16
2AL15	☒	15	40	110	16
2AL15.5	☐	15.5	40	110	16
2AL16	☒	16	40	110	16
2AL16.5	☐	16.5	40	110	16
2AL17	☒	17	40	110	16
2AL17.5	☐	17.5	40	110	16
2AL18	☒	18	40	110	16
2AL18.5	☐	18.5	40	110	16
2AL19	☒	19	40	110	16
2AL19.5	☐	19.5	40	110	16
2AL20	☒	20	45	125	20
2AL20.5	☐	20.5	45	125	20
2AL21	☒	21	45	125	20
2AL21.5	☐	21.5	45	125	20
2AL22	☒	22	45	125	20
2AL22.5	☐	22.5	45	125	20
2AL23	☒	23	45	125	20
2AL23.5	☐	23.5	45	125	20
2AL24	☒	24	50	140	25
2AL24.5	☐	24.5	50	140	25
2AL25	☒	25	50	140	25
2AL25.5	☐	25.5	50	140	25
2AL26	☒	26	50	140	25
2AL26.5	☐	26.5	50	140	25
2AL27	☒	27	50	140	25
2AL27.5	☐	27.5	50	140	25
2AL28	☒	28	55	145	25
2AL28.5	☐	28.5	55	145	25
2AL29	☒	29	55	145	25
2AL29.5	☐	29.5	55	145	25
2AL30	☒	30	55	145	25

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



MOLDINO
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เอ็นมิลล์ตระกูล NK เคลือบผิว
G-COATED NK END MILL
2GNKR...



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

Regular



0 ~ -0.03



Ds ≤ 6 : 0 ~ -0.012
6 < Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds ≤ 30 : 0 ~ -0.021
30 < Ds : 0 ~ -0.025

(mm)

	Order No.	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall Length	Shank Dia.
	2GNKR2	☐	2	5	55	6
	2GNKR2.5	☐	2.5	7	55	6
	2GNKR3	☐	3	10	55	6
	2GNKR3.5	☐	3.5	12	60	6
	2GNKR4	☐	4	12	60	6
	2GNKR4.5	☐	4.5	15	60	6
	2GNKR5	☐	5	15	60	6
	2GNKR5.5	☐	5.5	15	60	6
	2GNKR6	☐	6	15	60	6
	2GNKR6.5	☐	6.5	20	70	8
	2GNKR7	☐	7	20	70	8
	2GNKR7.5	☐	7.5	20	70	8
	2GNKR8	☐	8	20	70	8
	2GNKR8.5	☐	8.5	25	80	10
	2GNKR9	☐	9	25	80	10
	2GNKR9.5	☐	9.5	25	80	10
	2GNKR10	☐	10	25	80	10
	2GNKR11	☐	11	30	95	12
	2GNKR12	☐	12	30	95	12
	2GNKR13	☐	13	35	100	12
	2GNKR14	☐	14	35	105	16
	2GNKR15	☐	15	40	110	16
	2GNKR16	☐	16	40	110	16
	2GNKR17	☐	17	40	110	16
	2GNKR18	☐	18	40	110	16
	2GNKR19	☐	19	45	125	20

	Order No.	Stock	Size (mm)			
			Tool Dia.	Flute Length	Overall Length	Shank Dia.
	2GNKR20	☐	20	45	125	20
	2GNKR21	☐	21	45	125	20
	2GNKR22	☐	22	45	125	20
	2GNKR23	☐	23	50	140	25
	2GNKR24	☐	24	50	140	25
	2GNKR25	☐	25	50	140	25
	2GNKR26	☐	26	50	140	25
	2GNKR27	☐	27	55	145	25
	2GNKR28	☐	28	55	145	25
	2GNKR29	☐	29	55	145	25
	2GNKR30	☐	30	55	145	25
	2GNKR31	☐	31	60	160	32
	2GNKR32	☐	32	60	160	32
	2GNKR33	☐	33	60	160	32
	2GNKR34	☐	34	60	160	32
	2GNKR35	☐	35	60	160	32
	2GNKR36	☐	36	60	160	32
	2GNKR37	☐	37	60	160	32
	2GNKR38	☐	38	65	165	32
	2GNKR39	☐	39	65	165	32
	2GNKR40	☐	40	65	165	32
	2GNKR42	☐	42	65	165	32
	2GNKR44	☐	44	70	170	32
	2GNKR45	☐	45	70	170	32
	2GNKR46	☐	46	70	170	32
	2GNKR48	☐	48	70	170	32
	2GNKR50	☐	50	70	170	32

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



เอ็นมิลล์ตระกูล ESM เคลือบผิว C-COATED ESM END MILL 2ESMRC



Regular



0 ~ -0.03



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s$: 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2ESMRC1	●	1	3.5	55	6
2ESMRC1.5	●	1.5	5	55	6
2ESMRC2	●	2	5	55	6
2ESMRC2.5	●	2.5	7	55	6
2ESMRC3	●	3	10	55	6
2ESMRC3.5	●	3.5	12	60	8
2ESMRC4	●	4	12	60	8
2ESMRC4.5	●	4.5	15	60	8
2ESMRC5	●	5	15	60	8
2ESMRC5.5	●	5.5	15	60	8
2ESMRC6	●	6	15	60	8
2ESMRC6.5	●	6.5	20	70	10
2ESMRC7	●	7	20	70	10
2ESMRC7.5	●	7.5	20	70	10
2ESMRC8	●	8	20	70	10
2ESMRC8.5	●	8.5	25	80	10
2ESMRC9	●	9	25	80	10
2ESMRC9.5	●	9.5	25	80	10
2ESMRC10	●	10	25	80	10
2ESMRC11	●	11	30	95	12
2ESMRC12	●	12	30	95	12
2ESMRC13	●	13	35	100	12
2ESMRC14	●	14	35	105	16
2ESMRC15	●	15	40	110	16
2ESMRC16	●	16	40	110	16
2ESMRC17	●	17	40	110	16
2ESMRC18	●	18	40	110	16
2ESMRC20	●	20	45	125	20
2ESMRC22	●	22	45	125	20
2ESMRC24	●	24	50	140	25
2ESMRC25	●	25	50	140	25
2ESMRC26	●	26	50	140	25
2ESMRC28	●	28	55	145	25
2ESMRC30	●	30	55	145	25

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐ R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ตระกูล NE เคลือบ AT
AT COATED NE END MILL
2NES-AT



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

Short



0 ~ -0.03



Ds ≤ 6 : 0 ~ -0.008
 6 < Ds ≤ 10 : 0 ~ -0.009
 10 < Ds ≤ 18 : 0 ~ -0.011
 18 < Ds : 0 ~ -0.013

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NES1-AT	●	1	2.5	55	6
2NES1.5-AT	●	1.5	3.5	55	6
2NES2-AT	●	2	4	55	6
2NES2.5-AT	●	2.5	5	55	6
2NES3-AT	●	3	7	55	6
2NES3.5-AT	●	3.5	8	65	8
2NES4-AT	●	4	8	65	8
2NES4.5-AT	●	4.5	10	65	8
2NES5-AT	●	5	10	65	8
2NES5.5-AT	●	5.5	12	65	8
2NES6-AT	●	6	12	65	8
2NES6.5-AT	●	6.5	14	70	10
2NES7-AT	●	7	14	70	10
2NES7.5-AT	●	7.5	14	70	10
2NES8-AT	●	8	14	70	10
2NES8.5-AT	●	8.5	18	75	10
2NES9-AT	●	9	18	75	10
2NES9.5-AT	●	9.5	18	75	10
2NES10-AT	●	10	18	75	10
2NES11-AT	●	11	22	85	12
2NES12-AT	●	12	22	85	12
2NES13-AT	●	13	25	90	12
2NES14-AT	●	14	25	95	16
2NES15-AT	●	15	30	100	16
2NES16-AT	●	16	30	100	16
2NES17-AT	●	17	35	105	16
2NES18-AT	●	18	35	105	16
2NES19-AT	●	19	40	120	20
2NES20-AT	●	20	40	120	20

● : Stocked Items.



เอ็นมิลล์ตระกูล NE เคลือบ AT AT COATED NE END MILL 2NER-.-AT



Regular



0 ~ -0.03



$D_s \leq 6$: 0 ~ -0.008
 $6 < D_s \leq 10$: 0 ~ -0.009
 $10 < D_s \leq 18$: 0 ~ -0.011
 $18 < D_s \leq 30$: 0 ~ -0.013
 $30 < D_s$: 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
2NER1-AT	●	1	3.5	55	6
2NER1.5-AT	●	1.5	5	55	6
2NER2-AT	●	2	5	55	6
2NER2.5-AT	●	2.5	7	55	6
2NER3-AT	●	3	10	55	6
2NER3.5-AT	●	3.5	12	60	6
2NER4-AT	●	4	12	60	6
2NER4.5-AT	●	4.5	15	60	6
2NER5-AT	●	5	15	60	6
2NER5.5-AT	●	5.5	15	60	6
2NER6-AT	●	6	15	60	6
2NER6.5-AT	●	6.5	20	70	8
2NER7-AT	●	7	20	70	8
2NER7.5-AT	●	7.5	20	70	8
2NER8-AT	●	8	20	70	8
2NER8.5-AT	●	8.5	25	80	10
2NER9-AT	●	9	25	80	10
2NER9.5-AT	●	9.5	25	80	10
2NER10-AT	●	10	25	80	10
2NER11-AT	●	11	30	95	12
2NER12-AT	●	12	30	95	12
2NER13-AT	●	13	35	100	12
2NER14-AT	●	14	35	105	16
2NER15-AT	●	15	40	110	16
2NER16-AT	●	16	40	110	16
2NER17-AT	●	17	40	110	16
2NER18-AT	●	18	40	110	16
2NER19-AT	●	19	45	125	20
2NER20-AT	●	20	45	125	20
2NER21-AT	●	21	45	125	20
2NER22-AT	●	22	45	125	20
2NER23-AT	●	23	50	140	25
2NER24-AT	●	24	50	140	25
2NER25-AT	●	25	50	140	25
2NER26-AT	●	26	50	140	25
2NER27-AT	●	27	55	145	25
2NER28-AT	●	28	55	145	25
2NER29-AT	●	29	55	145	25
2NER30-AT	●	30	55	145	25
2NER31-AT	●	31	60	160	32
2NER32-AT	●	32	60	160	32
2NER33-AT	●	33	60	160	32
2NER34-AT	●	34	60	160	32
2NER35-AT	●	35	60	160	32
2NER36-AT	●	36	60	160	32
2NER37-AT	●	37	60	160	32
2NER38-AT	●	38	65	165	32
2NER39-AT	●	39	65	165	32
2NER40-AT	●	40	65	165	32
2NER50-AT	●	50	70	170	32

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ รุ่น NE
NE END MILL
4NKRC



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวสี่

Taper Ball

หัวเตเปอร์บอล

Roughing

Regular, Center-cut



+0.03~0



Ds ≤ 6 : 0~-0.012
6 < Ds ≤ 10 : 0~-0.015
10 < Ds ≤ 18 : 0~-0.018
18 < Ds ≤ 30 : 0~-0.021
30 < Ds : 0~-0.025

(mm)

Order No.	Stock	Size (mm)				Order No.	Stock	Size (mm)				Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.			Tool Dia.	Flute Length	Overall Length	Shank Dia.			Tool Dia.	Flute Length	Overall Length	Shank Dia.
4NKRC2	☐	2	7	55	6	4NKRC6.8	☐	6.8	20	70	8	4NKRC11.6	☐	11.6	30	95	12
4NKRC2.1	☐	2.1	7	55	6	4NKRC6.9	☐	6.9	20	70	8	4NKRC11.7	☐	11.7	30	95	12
4NKRC2.2	☐	2.2	7	55	6	4NKRC7	☒	7	20	70	8	4NKRC11.8	☐	11.8	30	95	12
4NKRC2.3	☐	2.3	7	55	6	4NKRC7.1	☐	7.1	20	70	8	4NKRC11.9	☐	11.9	30	95	12
4NKRC2.4	☐	2.4	7	55	6	4NKRC7.2	☐	7.2	20	70	8	4NKRC12	☒	12	30	95	12
4NKRC2.5	☒	2.5	7	55	6	4NKRC7.3	☐	7.3	20	70	8	4NKRC12.1	☐	12.1	35	105	16
4NKRC2.6	☐	2.6	10	55	6	4NKRC7.4	☐	7.4	20	70	8	4NKRC12.2	☐	12.2	35	105	16
4NKRC2.7	☐	2.7	10	55	6	4NKRC7.5	☒	7.5	20	70	8	4NKRC12.3	☐	12.3	35	105	16
4NKRC2.8	☐	2.8	10	55	6	4NKRC7.6	☐	7.6	20	70	8	4NKRC12.4	☐	12.4	35	105	16
4NKRC2.9	☐	2.9	10	55	6	4NKRC7.7	☐	7.7	20	70	8	4NKRC12.5	☐	12.5	35	105	16
4NKRC3	☒	3	10	55	6	4NKRC7.8	☐	7.8	20	70	8	4NKRC12.6	☐	12.6	35	105	16
4NKRC3.1	☐	3.1	12	60	6	4NKRC7.9	☐	7.9	20	70	8	4NKRC12.7	☐	12.7	35	105	16
4NKRC3.2	☐	3.2	12	60	6	4NKRC8	☒	8	20	70	8	4NKRC12.8	☐	12.8	35	105	16
4NKRC3.3	☐	3.3	12	60	6	4NKRC8.1	☐	8.1	25	80	10	4NKRC12.9	☐	12.9	35	105	16
4NKRC3.4	☐	3.4	12	60	6	4NKRC8.2	☐	8.2	25	80	10	4NKRC13	☒	13	35	105	16
4NKRC3.5	☒	3.5	12	60	6	4NKRC8.3	☐	8.3	25	80	10	4NKRC13.1	☐	13.1	35	105	16
4NKRC3.6	☐	3.6	12	60	6	4NKRC8.4	☐	8.4	25	80	10	4NKRC13.2	☐	13.2	35	105	16
4NKRC3.7	☐	3.7	12	60	6	4NKRC8.5	☒	8.5	25	80	10	4NKRC13.3	☐	13.3	35	105	16
4NKRC3.8	☐	3.8	12	60	6	4NKRC8.6	☐	8.6	25	80	10	4NKRC13.4	☐	13.4	35	105	16
4NKRC3.9	☐	3.9	12	60	6	4NKRC8.7	☐	8.7	25	80	10	4NKRC13.5	☐	13.5	35	105	16
4NKRC4	☒	4	12	60	6	4NKRC8.8	☐	8.8	25	80	10	4NKRC13.6	☐	13.6	35	105	16
4NKRC4.1	☐	4.1	15	60	6	4NKRC8.9	☐	8.9	25	80	10	4NKRC13.7	☐	13.7	35	105	16
4NKRC4.2	☐	4.2	15	60	6	4NKRC9	☒	9	25	80	10	4NKRC13.8	☐	13.8	35	105	16
4NKRC4.3	☐	4.3	15	60	6	4NKRC9.1	☐	9.1	25	80	10	4NKRC13.9	☐	13.9	35	105	16
4NKRC4.4	☐	4.4	15	60	6	4NKRC9.2	☐	9.2	25	80	10	4NKRC14	☒	14	35	105	16
4NKRC4.5	☒	4.5	15	60	6	4NKRC9.3	☐	9.3	25	80	10	4NKRC14.1	☐	14.1	40	110	16
4NKRC4.6	☐	4.6	15	60	6	4NKRC9.4	☐	9.4	25	80	10	4NKRC14.2	☐	14.2	40	110	16
4NKRC4.7	☐	4.7	15	60	6	4NKRC9.5	☒	9.5	25	80	10	4NKRC14.3	☐	14.3	40	110	16
4NKRC4.8	☐	4.8	15	60	6	4NKRC9.6	☐	9.6	25	80	10	4NKRC14.4	☐	14.4	40	110	16
4NKRC4.9	☐	4.9	15	60	6	4NKRC9.7	☐	9.7	25	80	10	4NKRC14.5	☐	14.5	40	110	16
4NKRC5	☒	5	15	60	6	4NKRC9.8	☐	9.8	25	80	10	4NKRC14.6	☐	14.6	40	110	16
4NKRC5.1	☐	5.1	15	60	6	4NKRC9.9	☐	9.9	25	80	10	4NKRC14.7	☐	14.7	40	110	16
4NKRC5.2	☐	5.2	15	60	6	4NKRC10	☒	10	25	80	10	4NKRC14.8	☐	14.8	40	110	16
4NKRC5.3	☐	5.3	15	60	6	4NKRC10.1	☐	10.1	30	95	12	4NKRC14.9	☐	14.9	40	110	16
4NKRC5.4	☐	5.4	15	60	6	4NKRC10.2	☐	10.2	30	95	12	4NKRC15	☒	15	40	110	16
4NKRC5.5	☒	5.5	15	60	6	4NKRC10.3	☐	10.3	30	95	12	4NKRC15.1	☐	15.1	40	110	16
4NKRC5.6	☐	5.6	15	60	6	4NKRC10.4	☐	10.4	30	95	12	4NKRC15.2	☐	15.2	40	110	16
4NKRC5.7	☐	5.7	15	60	6	4NKRC10.5	☐	10.5	30	95	12	4NKRC15.3	☐	15.3	40	110	16
4NKRC5.8	☐	5.8	15	60	6	4NKRC10.6	☐	10.6	30	95	12	4NKRC15.4	☐	15.4	40	110	16
4NKRC5.9	☐	5.9	15	60	6	4NKRC10.7	☐	10.7	30	95	12	4NKRC15.5	☐	15.5	40	110	16
4NKRC6	☒	6	15	60	6	4NKRC10.8	☐	10.8	30	95	12	4NKRC15.6	☐	15.6	40	110	16
4NKRC6.1	☐	6.1	20	70	8	4NKRC10.9	☐	10.9	30	95	12	4NKRC15.7	☐	15.7	40	110	16
4NKRC6.2	☐	6.2	20	70	8	4NKRC11	☒	11	30	95	12	4NKRC15.8	☐	15.8	40	110	16
4NKRC6.3	☐	6.3	20	70	8	4NKRC11.1	☐	11.1	30	95	12	4NKRC15.9	☐	15.9	40	110	16
4NKRC6.4	☐	6.4	20	70	8	4NKRC11.2	☐	11.2	30	95	12	4NKRC16	☒	16	40	110	16
4NKRC6.5	☒	6.5	20	70	8	4NKRC11.3	☐	11.3	30	95	12	4NKRC16.1	☐	16.1	40	120	20
4NKRC6.6	☐	6.6	20	70	8	4NKRC11.4	☐	11.4	30	95	12	4NKRC16.2	☐	16.2	40	120	20
4NKRC6.7	☐	6.7	20	70	8	4NKRC11.5	☐	11.5	30	95	12	4NKRC16.3	☐	16.3	40	120	20

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



Order No.	Stock	Size (mm)				Order No.	Stock	Size (mm)				Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.			Tool Dia.	Flute Length	Overall Length	Shank Dia.			Tool Dia.	Flute Length	Overall Length	Shank Dia.
4NKRC16.4	□	16.4	40	120	20	4NKRC19	●	19	45	125	20	4NKRC28	●	28	55	145	25
4NKRC16.5	□	16.5	40	120	20	4NKRC19.1	□	19.1	45	125	20	4NKRC28.5	□	28.5	55	145	25
4NKRC16.6	□	16.6	40	120	20	4NKRC19.2	□	19.2	45	125	20	4NKRC29	●	29	55	145	25
4NKRC16.7	□	16.7	40	120	20	4NKRC19.3	□	19.3	45	125	20	4NKRC29.5	□	29.5	55	145	25
4NKRC16.8	□	16.8	40	120	20	4NKRC19.4	□	19.4	45	125	20	4NKRC30	●	30	55	145	25
4NKRC16.9	□	16.9	40	120	20	4NKRC19.5	□	19.5	45	125	20	4NKRC30.5	□	30.5	60	160	32
4NKRC17	●	17	40	120	20	4NKRC19.6	□	19.6	45	125	20	4NKRC31	□	31	60	160	32
4NKRC17.1	□	17.1	40	120	20	4NKRC19.7	□	19.7	45	125	20	4NKRC32	●	32	60	160	32
4NKRC17.2	□	17.2	40	120	20	4NKRC19.8	□	19.8	45	125	20	4NKRC33	□	33	60	160	32
4NKRC17.3	□	17.3	40	120	20	4NKRC19.9	□	19.9	45	125	20	4NKRC34	●	34	60	160	32
4NKRC17.4	□	17.4	40	120	20	4NKRC20	●	20	45	125	20	4NKRC35	●	35	60	160	32
4NKRC17.5	□	17.5	40	120	20	4NKRC20.5	□	20.5	45	135	25	4NKRC36	●	36	60	160	32
4NKRC17.6	□	17.6	40	120	20	4NKRC21	●	21	45	125	20	4NKRC37	□	37	60	160	32
4NKRC17.7	□	17.7	40	120	20	4NKRC21.5	□	21.5	45	135	25	4NKRC38	●	38	65	165	32
4NKRC17.8	□	17.8	40	120	20	4NKRC22	●	22	45	125	20	4NKRC39	□	39	65	165	32
4NKRC17.9	□	17.9	40	120	20	4NKRC22.5	□	22.5	50	140	25	4NKRC40	●	40	65	165	32
4NKRC18	●	18	40	110	16	4NKRC23	●	23	50	140	25						
4NKRC18.1	□	18.1	45	125	20	4NKRC23.5	□	23.5	50	140	25						
4NKRC18.2	□	18.2	45	125	20	4NKRC24	●	24	50	140	25						
4NKRC18.3	□	18.3	45	125	20	4NKRC24.5	□	24.5	50	140	25						
4NKRC18.4	□	18.4	45	125	20	4NKRC25	●	25	50	140	25						
4NKRC18.5	□	18.5	45	125	20	4NKRC25.5	□	25.5	50	140	25						
4NKRC18.6	□	18.6	45	125	20	4NKRC26	●	26	50	140	25						
4NKRC18.7	□	18.7	45	125	20	4NKRC26.5	□	26.5	55	145	25						
4NKRC18.8	□	18.8	45	125	20	4NKRC27	●	27	55	145	25						
4NKRC18.9	□	18.9	45	125	20	4NKRC27.5	□	27.5	55	145	25						

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกั๊กมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

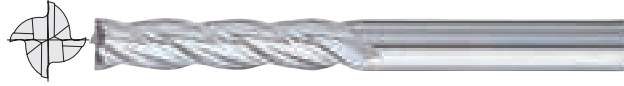
Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ รุ่น NE
NE END MILL
4NKLC... (x...)



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้น R

Square

หัวสี่

Taper Ball

หัวแปเปอร์บอล

Roughing

Long, Center-cut



+0.03 ~ 0



Ds ≤ 6 : 0 ~ -0.012
6 < Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds ≤ 30 : 0 ~ -0.021
30 < Ds : 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4NKLC2.5	☐	2.5	15	60	6
4NKLC3	●	3	15	60	6
4NKLC3.5	☐	3.5	20	65	6
4NKLC4	●	4	20	65	6
4NKLC4.5	☐	4.5	25	70	6
4NKLC5	●	5	25	70	6
4NKLC5.5	☐	5.5	25	70	6
4NKLC6	●	6	25	70	6
4NKLC6.5	☐	6.5	35	85	8
4NKLC7	●	7	35	85	8
4NKLC7.5	☐	7.5	35	85	8
4NKLC8	●	8	35	85	8
4NKLC8.5	☐	8.5	45	100	10
4NKLC9	●	9	45	100	10
4NKLC9.5	☐	9.5	45	100	10
4NKLC10	●	10	45	100	10
4NKLC10.5	☐	10.5	55	120	12
4NKLC11	●	11	55	120	12
4NKLC11.5	☐	11.5	55	120	12
4NKLC12	●	12	55	120	12
4NKLC12.5	☐	12.5	55	125	16
4NKLC13	●	13	55	120	12
4NKLC13x16	●	13	55	125	16
4NKLC13.5	☐	13.5	55	125	16
4NKLC14	●	14	55	125	16
4NKLC14.5	☐	14.5	65	135	16
4NKLC15	●	15	65	135	16
4NKLC15.5	☐	15.5	65	135	16
4NKLC16	●	16	65	135	16
4NKLC16.5	☐	16.5	65	145	20
4NKLC17	●	17	65	135	16
4NKLC17x20	☐	17	65	135	20
4NKLC17.5	☐	17.5	65	145	20
4NKLC18	●	18	65	135	16
4NKLC18x20	☐	18	65	135	20
4NKLC18.5	☐	18.5	75	155	20

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4NKLC19	●	19	75	155	20
4NKLC19.5	☐	19.5	75	155	20
4NKLC20	●	20	75	155	20
4NKLC20.5	☐	20.5	75	165	25
4NKLC21	☐	21	75	155	20
4NKLC21x25	☐	21	75	155	25
4NKLC21.5	☐	21.5	75	165	25
4NKLC22	●	22	75	155	20
4NKLC22x25	☐	22	75	155	25
4NKLC22.5	☐	22.5	90	180	25
4NKLC23	☐	23	90	180	25
4NKLC23.5	☐	23.5	90	180	25
4NKLC24	●	24	90	180	25
4NKLC24.5	☐	24.5	90	180	25
4NKLC25	●	25	90	180	25
4NKLC25.5	☐	25.5	90	180	25
4NKLC26	●	26	90	180	25
4NKLC26.5	☐	26.5	90	180	25
4NKLC27	☐	27	90	180	25
4NKLC27.5	☐	27.5	90	180	25
4NKLC28	●	28	90	180	25
4NKLC28.5	☐	28.5	90	180	25
4NKLC29	☐	29	90	180	25
4NKLC29.5	☐	29.5	90	180	25
4NKLC30	●	30	90	180	25
4NKLC31	☐	31	95	195	32
4NKLC32	●	32	95	195	32
4NKLC33	☐	33	95	195	32
4NKLC34	☐	34	95	195	32
4NKLC35	●	35	100	200	32
4NKLC36	☐	36	100	200	32
4NKLC37	☐	37	100	200	32
4NKLC38	☐	38	105	205	32
4NKLC39	☐	39	110	210	32
4NKLC40x32	●	40	110	210	32

● : Stocked Items. ☐ : Stocked by specified distributor. Contact with our sales department.

เอ็นมิลล์ รุ่น NE
NE END MILL
4NKX ϕ x ϕ 

Extra Long



+0.03 ~ 0


 $D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)				Note
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
4NKX3X30	☐	3	30	65	6	Center eyed
4NKX3X40	☐	3	40	85	6	Center eyed
4NKX4X30	☐	4	30	65	6	Center eyed
4NKX4X40	☐	4	40	85	6	Center eyed
4NKX5X40	☐	5	40	75	6	Center eyed
4NKX5X50	☐	5	50	95	6	Center eyed
4NKX6X40	☐	6	40	75	6	Center eyed
4NKX6X50	☐	6	50	95	6	Center eyed
4NKX6X60	☐	6	60	95	6	Center eyed
4NKX7X50	☐	7	50	90	8	Center eyed
4NKX7X60	☐	7	60	100	8	Center eyed
4NKX8X50	☐	8	50	90	8	Center eyed
4NKX8X60	☐	8	60	100	8	Center eyed
4NKX9X60	☐	9	60	100	10	Center eyed
4NKX10X60	☐	10	60	105	10	Center eyed
4NKX10X80	☐	10	80	125	10	Center eyed
4NKX11X80	☐	11	80	125	12	Center eyed
4NKX12X80	☐	12	80	130	12	Center eyed
4NKX12X100	☐	12	100	150	12	Center eyed
4NKX13X80	☐	13	80	150	16	Center eyed
4NKX13X100	☐	13	100	150	16	Center eyed
4NKX14X80	☐	14	80	130	16	Center eyed
4NKX14X100	☐	14	100	150	16	Center eyed
4NKX14X120	☐	14	120	150	16	Center eyed
4NKX14X150	☐	14	150	220	16	Center eyed
4NKX15X80	☐	15	80	135	16	Center eyed
4NKX15X100	☐	15	100	155	16	Center eyed
4NKX16X80	☐	16	80	135	16	Center eyed
4NKX16X100	☐	16	100	155	16	Center eyed
4NKX17X100	☐	17	100	180	20	Center eyed
4NKX18X80	☐	18	80	135	20	Center eyed
4NKX18X100	☐	18	100	155	20	Center eyed
4NKX19X100	☐	19	100	180	20	Center eyed
4NKX20X100	☐	20	100	165	20	Center eyed
4NKX20X120	☐	20	120	185	20	Center eyed
4NKX20X150	☐	20	150	230	20	Center eyed
4NKX21X100	☐	21	100	190	25	Center eyed
4NKX21X120	☐	21	120	210	25	Center eyed
4NKX21X150	☐	21	150	240	25	Center eyed
4NKX22X100	☐	22	100	190	25	Center eyed
4NKX22X120	☐	22	120	185	25	Center eyed
4NKX22X150	☐	22	150	240	25	Center eyed

Order No.	Stock	Size (mm)				Note
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
4NKX23X100	☐	23	100	190	25	Center eyed
4NKX23X120	☐	23	120	210	25	Center eyed
4NKX23X150	☐	23	150	240	25	Center eyed
4NKX24X100	☐	24	100	190	25	Center eyed
4NKX24X120	☐	24	120	190	25	Center eyed
4NKX24X150	☐	24	150	240	25	Center eyed
4NKX25X100	☐	25	100	190	25	Center eyed
4NKX25X120	☐	25	120	210	25	Center eyed
4NKX25X150	☐	25	150	220	25	Center eyed
4NKX26X100	☐	26	100	190	25	Center eyed
4NKX26X120	☐	26	120	190	25	Center eyed
4NKX26X150	☐	26	150	240	25	Center eyed
4NKX28X120	☐	28	120	210	25	Center eyed
4NKX28X150	☐	28	150	220	25	Center eyed
4NKX30X120	☐	30	120	210	25	Center eyed
4NKX30X150	☐	30	150	220	25	Center eyed
4NKX30X200	☐	30	200	290	25	Center eyed
4NKX32X150	☐	32	150	235	32	Center eyed
4NKX32X200	☐	32	200	300	32	Center eyed
4NKX35X150	☐	35	150	235	32	Center eyed
4NKX35X200	☐	35	200	300	32	Center eyed
4NKX35X250	☐	35	250	350	32	Center eyed
4NKX36X120	☐	36	120	205	32	Center eyed
4NKX38X150	☐	38	150	235	32	Center eyed
4NKX38X200	☐	38	200	300	32	Center eyed
4NKX38X250	☐	38	250	350	32	Center eyed
4NKX40X150	☐	40	150	235	32	Center eyed
4NKX40X200	☐	40	200	310	42	Center eyed
4NKX40X200X32	☐	40	200	300	32	Center eyed
4NKX40X250	☐	40	250	360	42	Center eyed
4NKX40X250X32	☐	40	250	350	32	Center eyed
4NKX45X150	☐	45	150	260	42	Center eyed
4NKX45X200	☐	45	200	310	42	Center eyed
4NKX45X250	☐	45	250	360	42	Center eyed
4NKX50X150	☐	50	150	260	42	Center eyed
4NKX50X200	☐	50	200	310	42	Center eyed
4NKX50X250	☐	50	250	360	42	Center eyed
4NKX50X300	☐	50	300	410	42	Center eyed
4NKX60X150	☐	60	150	260	42	Center eyed
4NKX60X200	☐	60	200	310	42	Center eyed
4NKX60X250	☐	60	250	360	42	Center eyed

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัดมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ รุ่น ESM
ESM END MILL
4ESMR



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวสี่

Taper Ball

หัวเตเปอร์บอล

Roughing

Regular



+0.03~ 0



Ds ≤ 6 : 0~-0.012
6 < Ds ≤ 10 : 0~-0.015
10 < Ds ≤ 18 : 0~-0.018
18 < Ds ≤ 30 : 0~-0.021
30 < Ds : 0~-0.025

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESMR2.5	☐	2.5	10	55	6
4ESMR3	☒	3	10	55	6
4ESMR3.5	☐	3.5	12	60	8
4ESMR4	☒	4	12	60	8
4ESMR4.5	☐	4.5	15	60	8
4ESMR5	☒	5	15	65	8
4ESMR5.5	☐	5.5	15	65	8
4ESMR6	☒	6	15	65	8
4ESMR6.5	☐	6.5	20	75	10
4ESMR7	☒	7	20	75	10
4ESMR7.5	☐	7.5	20	75	10
4ESMR8	☒	8	20	75	10
4ESMR8.5	☐	8.5	25	80	10
4ESMR9	☒	9	25	80	10
4ESMR9.5	☐	9.5	25	90	10
4ESMR10	☒	10	25	90	10
4ESMR11	☒	11	30	95	12
4ESMR12	☒	12	30	95	12
4ESMR13	☒	13	35	100	12
4ESMR14	☒	14	35	105	16
4ESMR15	☒	15	40	110	16
4ESMR16	☒	16	40	110	16
4ESMR17	☒	17	40	110	16

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESMR18	☒	18	40	110	16
4ESMR19	☒	19	45	125	20
4ESMR20	☒	20	45	125	20
4ESMR21	☐	21	45	125	20
4ESMR22	☒	22	45	125	20
4ESMR23	☐	23	50	125	25
4ESMR24	☒	24	50	125	25
4ESMR25	☒	25	50	125	25
4ESMR26	☒	26	50	125	25
4ESMR27	☐	27	55	125	25
4ESMR28	☒	28	55	125	25
4ESMR29	☐	29	55	125	25
4ESMR30	☒	30	55	125	25
4ESMR31	☐	31	60	160	32
4ESMR32	☐	32	60	160	32
4ESMR33	☐	33	60	160	32
4ESMR34	☐	34	60	160	32
4ESMR35	☐	35	60	160	32
4ESMR36	☐	36	60	160	32
4ESMR37	☐	37	60	160	32
4ESMR38	☐	38	65	165	32
4ESMR39	☐	39	65	165	32
4ESMR40	☐	40	65	165	32

● : Stocked Items.

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

เอ็นมิลล์ รุ่น ESM
ESM END MILL
4ESML

Long



+0.03 ~ 0



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESML3	●	3	15	60	6
4ESML4	●	4	20	65	6
4ESML5	●	5	25	70	6
4ESML6	●	6	25	70	6
4ESML7	□	7	35	85	8
4ESML8	●	8	35	85	8
4ESML9	□	9	45	100	10
4ESML10	●	10	45	100	10
4ESML11	□	11	55	120	12
4ESML12	●	12	55	120	12
4ESML13	□	13	55	120	12
4ESML14	●	14	55	125	16
4ESML15	●	15	65	135	16
4ESML16	●	16	65	135	16
4ESML17	□	17	65	135	16
4ESML18	●	18	65	135	16
4ESML19	□	19	75	155	20
4ESML20	●	20	75	155	20
4ESML21	□	21	75	155	20

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESML22	□	22	75	155	20
4ESML23	□	23	90	180	25
4ESML24	□	24	90	180	25
4ESML25	●	25	90	180	25
4ESML26	□	26	90	180	25
4ESML27	□	27	90	180	25
4ESML28	□	28	90	180	25
4ESML29	□	29	90	180	25
4ESML30	●	30	90	180	25
4ESML31	□	31	95	195	32
4ESML32	□	32	95	195	32
4ESML33	□	33	95	195	32
4ESML34	□	34	95	195	32
4ESML35	●	35	100	200	32
4ESML36	□	36	100	200	32
4ESML37	□	37	100	200	32
4ESML38	□	38	105	205	32
4ESML39	□	39	110	210	32
4ESML40	●	40	110	210	32

● : Stocked Items.

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัณฐ R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ รุ่น ESM เคลือบผิว

C-COATED ESM END MILL
4ESMRC



Regular



+0.03 ~ 0



Ds ≤ 6 : 0 ~ -0.012
6 < Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds : 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESMRC2.5	☐	2.5	10	55	6
4ESMRC3	☒	3	10	55	6
4ESMRC3.5	☐	3.5	12	60	8
4ESMRC4	☒	4	12	60	8
4ESMRC4.5	☐	4.5	15	60	8
4ESMRC5	☒	5	15	65	8
4ESMRC5.5	☐	5.5	15	65	8
4ESMRC6	☒	6	15	65	8
4ESMRC6.5	☐	6.5	20	75	10
4ESMRC7	☒	7	20	75	10
4ESMRC7.5	☐	7.5	20	75	10
4ESMRC8	☒	8	20	75	10
4ESMRC8.5	☐	8.5	25	80	10
4ESMRC9	☒	9	25	80	10
4ESMRC9.5	☐	9.5	25	90	10
4ESMRC10	☒	10	25	90	10

● : Stocked Items.

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

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESMRC11	☒	11	30	95	12
4ESMRC12	☒	12	30	95	12
4ESMRC13	☒	13	35	100	12
4ESMRC14	☒	14	35	105	16
4ESMRC15	☒	15	40	110	16
4ESMRC16	☒	16	40	110	16
4ESMRC17	☒	17	40	110	16
4ESMRC18	☒	18	40	110	16
4ESMRC20	☒	20	45	125	20
4ESMRC22	☒	22	45	125	20
4ESMRC24	☒	24	50	125	25
4ESMRC25	☒	25	50	125	25
4ESMRC26	☒	26	50	125	25
4ESMRC28	☒	28	55	125	25
4ESMRC30	☒	30	55	125	25

เอ็นมิลล์ รุ่น ESM เคลือบผิว

C-COATED ESM END MILL
4ESMLC



Long



+0.03 ~ 0



Ds ≤ 6 : 0 ~ -0.012
6 < Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds : 0 ~ -0.021

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESMLC3	☐	3	15	60	6
4ESMLC4	☐	4	20	65	6
4ESMLC5	☐	5	25	70	6
4ESMLC6	☐	6	25	70	6
4ESMLC8	☐	8	35	85	8
4ESMLC10	☐	10	45	100	10
4ESMLC12	☐	12	55	120	12
4ESMLC14	☐	14	55	125	16

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

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4ESMLC15	☐	15	65	135	16
4ESMLC16	☐	16	65	135	16
4ESMLC18	☐	18	65	135	16
4ESMLC20	☐	20	75	155	20
4ESMLC22	☐	22	75	155	20
4ESMLC25	☐	25	90	180	25
4ESMLC30	☐	30	90	180	25



เอ็นมิลล์ รุ่น NE เคลือบผิว

G-COATED NE END MILL

4GNKR

φ More than 31
Center cutφ More than 31
Center eyed

Regular



+0.03 ~ 0



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)				Note
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
4GNKR2.5	☐	2.5	7	55	6	
4GNKR3	☐	3	10	55	6	
4GNKR3.5	☐	3.5	12	60	6	
4GNKR4	☐	4	12	60	6	
4GNKR4.5	☐	4.5	15	60	6	
4GNKR5	☐	5	15	60	6	
4GNKR5.5	☐	5.5	15	60	6	
4GNKR6	☐	6	15	60	6	
4GNKR6.5	☐	6.5	20	70	8	
4GNKR7	☐	7	20	70	8	
4GNKR7.5	☐	7.5	20	70	8	
4GNKR8	☐	8	20	70	8	
4GNKR8.5	☐	8.5	25	80	10	
4GNKR9	☐	9	25	80	10	
4GNKR9.5	☐	9.5	25	80	10	
4GNKR10	☐	10	25	80	10	
4GNKR11	☐	11	30	95	12	
4GNKR12	☐	12	30	95	12	
4GNKR13	☐	13	35	100	12	
4GNKR14	☐	14	35	105	16	
4GNKR15	☐	15	40	110	16	
4GNKR16	☐	16	40	110	16	
4GNKR17	☐	17	40	110	16	
4GNKR18	☐	18	40	110	16	
4GNKR19	☐	19	45	125	20	
4GNKR20	☐	20	45	125	20	
4GNKR21	☐	21	45	125	20	
4GNKR22	☐	22	45	125	20	
4GNKR23	☐	23	50	140	25	
4GNKR24	☐	24	50	140	25	
4GNKR25	☐	25	50	140	25	
4GNKR26	☐	26	50	140	25	
4GNKR27	☐	27	55	145	25	
4GNKR28	☐	28	55	145	25	
4GNKR29	☐	29	55	145	25	
4GNKR30	☐	30	55	145	25	
4GNKR31	☐	31	60	160	32	Center eyed
4GNKR32	☐	32	60	160	32	Center eyed
4GNKR33	☐	33	60	160	32	Center eyed
4GNKR34	☐	34	60	160	32	Center eyed
4GNKR35	☐	35	60	160	32	Center eyed
4GNKR36	☐	36	60	160	32	Center eyed
4GNKR37	☐	37	60	160	32	Center eyed
4GNKR38	☐	38	65	165	32	Center eyed
4GNKR39	☐	39	65	165	32	Center eyed
4GNKR40	☐	40	65	165	32	Center eyed
4GNKR42	☐	42	65	165	32	Center eyed
4GNKR44	☐	44	70	170	32	Center eyed
4GNKR45	☐	45	70	170	32	Center eyed
4GNKR46	☐	46	70	170	32	Center eyed
4GNKR48	☐	48	70	170	32	Center eyed
4GNKR50	☐	50	70	170	32	Center eyed

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



ตัวทำแฉมเฟอร์

AT COATED NE END MILL
4NER...-AT



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวก้นมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

Regular



0 ~ -0.03



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Order No.	Stock	Size (mm)			
		Tool Dia.	Flute Length	Overall Length	Shank Dia.
4NER2.5-AT	●	2.5	7	55	6
4NER3-AT	●	3	10	55	6
4NER3.5-AT	●	3.5	12	60	6
4NER4-AT	●	4	12	60	6
4NER4.5-AT	●	4.5	15	60	6
4NER5-AT	●	5	15	60	6
4NER5.5-AT	●	5.5	15	60	6
4NER6-AT	●	6	15	60	6
4NER6.5-AT	●	6.5	20	70	8
4NER7-AT	●	7	20	70	8
4NER7.5-AT	●	7.5	20	70	8
4NER8-AT	●	8	20	70	8
4NER8.5-AT	●	8.5	25	80	10
4NER9-AT	●	9	25	80	10
4NER9.5-AT	●	9.5	25	80	10
4NER10-AT	●	10	25	80	10
4NER11-AT	●	11	30	95	12
4NER12-AT	●	12	30	95	12
4NER13-AT	●	13	35	100	12
4NER14-AT	●	14	35	105	16
4NER15-AT	●	15	40	110	16
4NER16-AT	●	16	40	110	16
4NER17-AT	●	17	40	110	16
4NER18-AT	●	18	40	110	16
4NER19-AT	●	19	45	125	20
4NER20-AT	●	20	45	125	20
4NER21-AT	●	21	45	125	20
4NER22-AT	●	22	45	125	20
4NER23-AT	●	23	50	140	25
4NER24-AT	●	24	50	140	25
4NER25-AT	●	25	50	140	25
4NER26-AT	●	26	50	140	25
4NER27-AT	●	27	55	145	25
4NER28-AT	●	28	55	145	25
4NER29-AT	●	29	55	145	25
4NER30-AT	●	30	55	145	25

● : Stocked Items.



เอ็นมิลล์

SUPER-CUT END MILL

RFR

φ 6 ~ φ 31
Center cutφ 32 Or more
Center eyed

Regular



+ 0.04 ~ 0



$D_s \leq 6$: 0 ~ -0.012
 $6 < D_s \leq 10$: 0 ~ -0.015
 $10 < D_s \leq 18$: 0 ~ -0.018
 $18 < D_s \leq 30$: 0 ~ -0.021
 $30 < D_s$: 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
RFR6	●	6	15	60	6	4
RFR7	●	7	20	70	8	4
RFR8	●	8	20	70	8	4
RFR9	●	9	25	80	10	4
RFR10	●	10	25	80	10	4
RFR11	●	11	30	95	12	4
RFR12	●	12	30	95	12	4
RFR13	●	13	35	105	16	4
RFR14	●	14	35	105	16	4
RFR15	●	15	40	110	16	4
RFR16	●	16	40	110	16	4
RFR17	□	17	40	120	20	4
RFR18	●	18	40	120	20	4
RFR19	□	19	45	125	20	4
RFR20	●	20	45	125	20	4
RFR21	□	21	45	135	25	4
RFR22	●	22	45	135	25	4
RFR23	□	23	50	140	25	4
RFR24	□	24	50	140	25	4
RFR25	●	25	50	140	25	4
RFR26	□	26	50	140	25	4

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
RFR27	□	27	55	145	25	4
RFR28	□	28	55	145	25	4
RFR29	□	29	55	145	25	4
RFR30	●	30	55	145	25	4
RFR31	□	31	60	160	32	4
RFR32	□	32	60	160	32	6
RFR33	□	33	60	160	32	6
RFR34	□	34	60	160	32	6
RFR35	□	35	60	160	32	6
RFR36	□	36	60	160	32	6
RFR37	□	37	60	160	32	6
RFR38	□	38	65	165	32	6
RFR39	□	39	65	165	32	6
RFR40	□	40	65	165	32	6
RFR42	□	42	65	175	42	6
RFR44	□	44	70	180	42	6
RFR45	□	45	70	180	42	6
RFR46	□	46	70	180	42	6
RFR48	□	48	70	180	42	6
RFR50	□	50	70	180	42	6

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

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัดมุม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์

SUPER-CUT END MILL RFL



φ 31 Or less
Center cut



φ 32 Or more
Center eyed



Long



+ 0.04 ~ 0



Ds ≤ 6 : 0 ~ -0.012
6 < Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds ≤ 30 : 0 ~ -0.021
30 < Ds : 0 ~ -0.025

(mm)

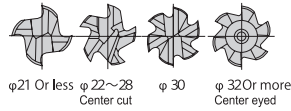
Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
RFL6	●	6	25	70	6	4
RFL7	●	7	35	85	8	4
RFL8	●	8	35	85	8	4
RFL9	●	9	45	100	10	4
RFL10	●	10	45	100	10	4
RFL11	●	11	55	120	12	4
RFL12	●	12	55	120	12	4
RFL13	●	13	55	125	16	4
RFL14	●	14	55	125	16	4
RFL15	●	15	65	135	16	4
RFL16	●	16	65	135	16	4
RFL17	□	17	65	145	20	4
RFL18	●	18	65	145	20	4
RFL19	□	19	75	155	20	4
RFL20	●	20	75	155	20	4
RFL21	□	21	75	165	25	4
RFL22	●	22	75	165	25	4
RFL23	□	23	90	180	25	4
RFL24	□	24	90	180	25	4
RFL25	●	25	90	180	25	4
RFL26	□	26	90	180	25	4

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
RFL27	□	27	90	180	25	4
RFL28	□	28	90	180	25	4
RFL29	□	29	90	180	25	4
RFL30	●	30	90	180	25	4
RFL31	□	31	95	195	32	4
RFL32	□	32	95	195	32	6
RFL33	□	33	95	195	32	6
RFL34	□	34	95	195	32	6
RFL35	□	35	100	200	32	6
RFL36	□	36	100	200	32	6
RFL37	□	37	100	200	32	6
RFL38	□	38	105	205	32	6
RFL39	□	39	110	210	32	6
RFL40	□	40	110	210	32	6
RFL42	□	42	110	220	42	6
RFL44	□	44	115	225	42	6
RFL45	□	45	115	225	42	6
RFL46	□	46	115	225	42	6
RFL48	□	48	120	230	42	6
RFL50	□	50	120	230	42	6

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



เอ็นมิลล์

ROUGHING END MILL
HQS

Short



Ø6 ~ Ø12 : 0 ~ -0.1
Ø13 ~ Ø16 : 0 ~ -0.15
Ø17 ~ Ø50 : 0 ~ -0.2



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
HQS6	●	6	15	80	6	4
HQS7	●	7	20	90	8	4
HQS8	●	8	20	90	8	4
HQS9	●	9	25	100	10	4
HQS10	●	10	25	100	10	4
HQS11	●	11	30	110	12	4
HQS12	●	12	30	110	12	4
HQS13	●	13	30	110	12	4
HQS14	●	14	30	110	12	4
HQS15	●	15	30	110	12	4
HQS16	●	16	35	125	16	4
HQS17	●	17	35	125	16	4
HQS18	●	18	35	125	16	4
HQS19	●	19	40	140	16	4

● : Stocked Items.

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
HQS20	●	20	40	140	20	4
HQS21	●	21	40	140	20	4
HQS22	●	22	40	140	20	5
HQS23	●	23	45	160	20	5
HQS24	●	24	45	160	25	5
HQS25	●	25	45	160	25	5
HQS26	●	26	45	160	25	5
HQS28	●	28	45	160	25	5
HQS30	●	30	45	160	25	6
HQS32	●	32	55	180	32	6
HQS35	●	35	55	180	32	6
HQS40	●	40	65	200	32	6
HQS50	●	50	75	225	42	6

DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกั๊กมุม R

Square

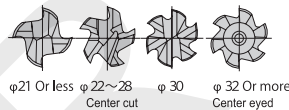
หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

เอ็นมิลล์

ROUGHING END MILL
HQR

Regular



Ø6 ~ Ø12 : 0 ~ -0.1
Ø13 ~ Ø16 : 0 ~ -0.15
Ø17 ~ Ø50 : 0 ~ -0.2



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
HQR6	●	6	20	80	6	4
HQR7	●	7	25	90	8	4
HQR8	●	8	25	90	8	4
HQR9	●	9	35	100	10	4
HQR10	●	10	35	100	10	4
HQR11	●	11	40	110	12	4
HQR12	●	12	40	110	12	4
HQR13	●	13	40	110	12	4
HQR14	●	14	40	110	12	4
HQR15	●	15	40	110	12	4
HQR16	●	16	50	125	16	4
HQR17	●	17	50	125	16	4
HQR18	●	18	50	125	16	4
HQR19	●	19	55	140	16	4

● : Stocked Items.

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
HQR20	●	20	55	140	20	4
HQR21	●	21	55	140	20	4
HQR22	●	22	55	140	20	5
HQR23	●	23	70	160	20	5
HQR24	●	24	70	160	25	5
HQR25	●	25	70	160	25	5
HQR26	●	26	70	160	25	5
HQR28	●	28	75	160	25	5
HQR30	●	30	80	160	25	6
HQR32	●	32	80	180	32	6
HQR35	●	35	90	180	32	6
HQR40	●	40	100	200	32	6
HQR45	●	45	110	200	42	6
HQR50	●	50	120	225	42	6

Designed by JSR GROUP

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ห้ามนำไปเผยแพร่ก่อนได้รับอนุญาตจากทางบริษัท

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์

ROUGHING END MILL

HQL



φ20 Or less φ 22~28 φ 30 Or more



Long



Ø10 ~ Ø12 : 0 ~ -0.1
Ø14 ~ Ø16 : 0 ~ -0.15
Ø18 ~ Ø50 : 0 ~ -0.2



Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
HQL10	●	10	45	100	10	4
HQL12	●	12	55	110	12	4
HQL14	●	14	55	110	12	4
HQL15	●	15	55	110	12	4
HQL16	●	16	65	125	16	4
HQL18	●	18	65	125	16	4
HQL20	●	20	75	140	20	4
HQL22	●	22	75	140	20	5
HQL25	●	25	90	165	25	5
HQL28	●	28	90	165	25	5
HQL30	●	30	90	165	25	6
HQL32	●	32	110	190	32	6
HQL35	●	35	110	190	32	6
HQL40	●	40	125	205	32	6
HQL45	●	45	125	230	42	6
HQL50	●	50	150	255	42	6

● : Stocked Items.

เอ็นมิลล์

ROUGHING END MILL

HQLS



Ø20 or less Ø2~28 Ø30 or more
Center cut

Long



Ø12 : 0 ~ -0.1
Ø14 ~ Ø16 : 0 ~ -0.15
Ø18 ~ Ø50 : 0 ~ -0.2



Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

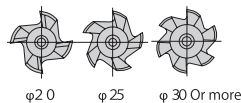
(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
HQLS12	●	12	30	150	10	4
HQLS14	●	14	30	150	12	4
HQLS16	●	16	30	150	12	4
HQLS18	●	18	35	180	16	4
HQLS20	●	20	40	200	16	4
HQLS22	●	22	40	225	20	5
HQLS25	●	25	45	225	20	5
HQLS28	●	28	45	250	25	5
HQLS30	●	30	45	250	25	6
HQLS40	●	40	65	300	32	6
HQLS50	●	50	75	320	42	6

● : Stocked Items.



เอ็นมิลล์

ROUGHING END MILL
HQXL (x)

Extra Long



0 ~ -0.2

Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
HQXL20	●	20	100	180	20	4
HQXL25X125	●	25	125	215	25	5
HQXL25X150	●	25	150	240	25	5
HQXL30X125	●	30	125	215	25	6
HQXL30X150	●	30	150	240	25	6
HQXL35X125	●	35	125	225	32	6
HQXL35X150	●	35	150	250	32	6
HQXL40	●	40	180	280	32	6
HQXL45	●	45	180	290	42	6
HQXL50	●	50	205	315	42	6

● : Stocked Items.

DEEP SERIES

เอ็นมิลล์ตระกูลดัดฟ้า

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวตัด

Taper Ball

หัวเตเปอร์บอล

Roughing

เอ็นมิลล์ เคลือบผิว

C-COATED ESM ROUGHING END MILL
ESMQS ()

Short


 Ø6 ~ Ø12 : 0 ~ -0.05
 Ø14 ~ Ø50 : 0 ~ -0.1

 Ds ≤ 6 : 0 ~ -0.008
 6 < Ds ≤ 10 : 0 ~ -0.009
 10 < Ds ≤ 18 : 0 ~ -0.011
 18 < Ds ≤ 30 : 0 ~ -0.013
 30 < Ds : 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
ESMQS6	●	6	15	80	6	4
ESMQS8	●	8	20	90	8	4
ESMQS10	●	10	25	100	10	4
ESMQS12	●	12	30	110	12	4
ESMQS14	●	14	30	110	12	4
ESMQS15	●	15	30	110	12	4
ESMQS16	●	16	35	125	16	4
ESMQS18	●	18	35	125	16	4
ESMQS20	●	20	40	140	20	4
ESMQS22	□	22	40	140	20	4
5ESMQS22	●	22	40	140	20	5

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
ESMQS25	□	25	45	160	25	4
5ESMQS25	●	25	45	160	25	5
ESMQS28	□	28	45	160	25	4
5ESMQS28	●	28	45	160	25	5
ESMQS30	□	30	45	160	25	4
6ESMQS30	●	30	45	160	25	6
ESMQS32	●	32	55	180	32	6
ESMQS35	●	35	55	180	32	6
ESMQS40	●	40	65	200	32	6
ESMQS45	●	45	65	200	42	6
ESMQS50	●	50	75	225	42	6

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

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ เคลือบผิว

C-COATED ESM ROUGHING END MILL

ESMQR



Regular



Ø6 ~ Ø12 : 0 ~ -0.05
Ø14 ~ Ø30 : 16 ~ -0.1



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds : 0 ~ -0.013

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
ESMQR6	●	6	20	80	6	4
ESMQR8	●	8	25	90	8	4
ESMQR10	●	10	35	100	10	4
ESMQR12	●	12	40	110	12	4
ESMQR16	●	16	50	125	16	4
ESMQR20	●	20	55	140	20	4
ESMQR25	●	25	70	160	25	4
ESMQR30	●	30	80	160	25	4

● : Stocked Items.

เอ็นมิลล์ เคลือบผิว

C-COATED ESM ROUGHING END MILL

ESMQL



Φ30 Or less Φ40 Or more

Long



Ø10 ~ Ø12 : 0 ~ -0.05
Ø14 ~ Ø50 : 0 ~ -0.1



Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds ≤ 30 : 0 ~ -0.021
30 < Ds : 0 ~ -0.025

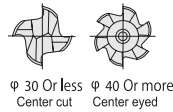
(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
ESMQL10	●	10	45	100	10	4
ESMQL12	●	12	55	110	12	4
ESMQL14	●	14	55	110	12	4
ESMQL15	●	15	55	110	16	4
ESMQL16	●	16	65	125	16	4
ESMQL18	●	18	65	125	16	4
ESMQL20	●	20	75	140	20	4
ESMQL22	●	22	75	140	20	4
ESMQL25	●	25	90	165	25	4
ESMQL28	●	28	90	165	25	4
ESMQL30	●	30	90	165	25	4
ESMQL40	●	40	125	205	32	6
ESMQL50	●	50	150	255	42	6

● : Stocked Items.



เอ็นมิลล์ เคลือบผิว

C-COATED ESM ROUGHING END MILL
ESMQLS

Long Shank



Ø12 : 0 ~ -0.05
Ø14 ~ Ø50 : 0 ~ -0.1



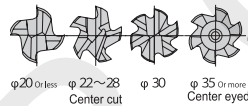
Ds ≤ 10 : 0 ~ -0.015
10 < Ds ≤ 18 : 0 ~ -0.018
18 < Ds ≤ 30 : 0 ~ -0.021
30 < Ds : 0 ~ -0.025

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
ESMQLS12	●	12	30	150	10	4
ESMQLS14	●	14	35	150	12	4
ESMQLS16	●	16	40	150	12	4
ESMQLS18	●	18	40	180	16	4
ESMQLS20	●	20	45	200	16	4
ESMQLS22	●	22	45	225	20	4
ESMQLS25	●	25	50	225	20	4
ESMQLS28	●	28	50	250	25	4
ESMQLS30	●	30	55	250	25	4
ESMQLS40	●	40	65	300	32	6
ESMQLS50	●	50	70	320	42	6

● : Stocked Items.

เอ็นมิลล์ เคลือบผิว

AT COATED ROUGHING END MILL
RQS-AT

Short



Ø6 ~ Ø12 : 0 ~ -0.1
Ø14 ~ Ø16 : 0 ~ -0.15
Ø18 ~ Ø50 : 0 ~ -0.2



Ds ≤ 6 : 0 ~ -0.008
6 < Ds ≤ 10 : 0 ~ -0.009
10 < Ds ≤ 18 : 0 ~ -0.011
18 < Ds ≤ 30 : 0 ~ -0.013
30 < Ds : 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
RQS6-AT	●	6	15	80	6	4
RQS8-AT	●	8	20	90	8	4
RQS10-AT	●	10	25	100	10	4
RQS12-AT	●	12	30	110	12	4
RQS14-AT	●	14	30	110	12	4
RQS16-AT	●	16	35	125	16	4
RQS18-AT	●	18	35	125	16	4
RQS20-AT	●	20	40	140	20	4
RQS22-AT	●	22	40	140	20	5
RQS25-AT	●	25	45	160	25	5
RQS28-AT	●	28	45	160	25	5
RQS30-AT	●	30	45	160	25	6
RQS35-AT	●	35	55	180	32	6
RQS40-AT	●	40	65	200	32	6
RQS50-AT	●	50	75	225	42	6

● : Stocked Items.

END MILL

ดอกเอ็นมิลล์



เอ็นมิลล์ เคลือบผิว

AT COATED ROUGHING END MILL RQR-AT



DEEP SERIES

เอ็นมิลล์ตระกูลดีฟ

CBN END MILL

CBN เอ็นมิลล์

Carbide Endmill

เอ็นมิลล์คาร์ไบด์

HSS Endmill

เอ็นมิลล์ไฮสปีด

Ball

หัวบอล

Radius

หัวกัศม R

Square

หัวสี่

Taper Ball

หัวแปเปอร์บอล

Roughing

Regular



$\phi 6 \sim \phi 12$: 0 ~ -0.1
 $\phi 14 \sim \phi 16$: 0 ~ -0.15
 $\phi 18 \sim \phi 50$: 0 ~ -0.2



$Ds \leq 6$: 0 ~ -0.008
 $6 < Ds \leq 10$: 0 ~ -0.009
 $10 < Ds \leq 18$: 0 ~ -0.011
 $18 < Ds \leq 30$: 0 ~ -0.013
 $30 < Ds$: 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
RQR6-AT	●	6	20	80	6	4
RQR8-AT	●	8	25	90	8	4
RQR10-AT	●	10	35	100	10	4
RQR12-AT	●	12	40	110	12	4
RQR16-AT	●	16	50	125	16	4
RQR18-AT	●	18	50	125	16	4
RQR20-AT	●	20	55	140	20	4
RQR25-AT	●	25	70	160	25	5
RQR30-AT	●	30	80	160	25	6
RQR35-AT	●	35	90	180	32	6
RQR40-AT	●	40	100	200	32	6
RQR50-AT	●	50	120	225	42	6

● : Stocked Items.

เอ็นมิลล์ เคลือบผิว

AT COATED ROUGHING END MILL RQL-AT



Long



$\phi 10 \sim \phi 12$: 0 ~ -0.1
 $\phi 16$: 0 ~ -0.15
 $\phi 18 \sim \phi 50$: 0 ~ -0.2



$Ds \leq 10$: 0 ~ -0.009
 $10 < Ds \leq 18$: 0 ~ -0.011
 $18 < Ds \leq 30$: 0 ~ -0.013
 $30 < Ds$: 0 ~ -0.016

(mm)

Order No.	Stock	Size (mm)				No. of Flutes
		Tool Dia.	Flute Length	Overall Length	Shank Dia.	
RQL10-AT	●	10	45	100	10	4
RQL12-AT	●	12	55	110	12	4
RQL16-AT	●	16	65	125	16	4
RQL18-AT	●	18	65	125	16	4
RQL20-AT	●	20	75	140	20	4
RQL25-AT	●	25	90	165	25	5
RQL30-AT	●	30	90	165	25	6
RQL35-AT	●	35	110	190	32	6
RQL40-AT	●	40	125	205	32	6
RQL50-AT	●	50	150	255	42	6

● : Stocked Items.