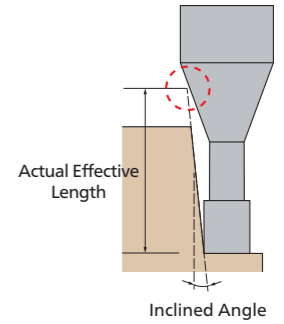
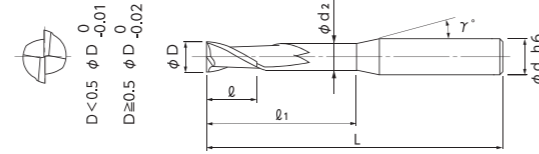
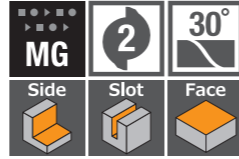


MUGEN COATING 2 -Flute Long Neck End Mill

Total 217 sizes

MUGEN COATING 2 -Flute Long Neck End Mill

2-flute long neck square end mill. Maximum L/D=30



- MUGEN COATING has been put on our original end mill for deep rib.
- The Long Neck type is suitable for narrow and deep machining.

Unit : mm

Code No.	Dia. (D)	Under Neck Length (l1)	Length of Cut (l)	Neck Dia. (d2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece									
								30°	1°	1°30'	2°	3°					
08-00200-01003	0.1	0.3	0.15	0.085	12°	4	45	0.34	0.36	0.38	0.4	0.44					
08-00200-01005		0.5					45	0.55	0.58	0.61	0.64	0.71					
08-00200-01007		0.75					45	0.81	0.85	0.89	0.93	1.04					
08-00200-01010		1					45	1.07	1.12	1.18	1.23	1.37					
08-00200-01503	0.15	0.3	0.2	0.13	12°	4	45	0.36	0.37	0.39	0.41	0.46					
08-00200-01505		0.5					45	0.57	0.59	0.62	0.65	0.72					
08-00200-01507		0.75					45	0.83	0.86	0.9	0.95	1.05					
08-00200-01510		1					45	1.09	1.14	1.19	1.25	1.38					
08-00200-01515	1.5	45	1.61	1.68	1.76	1.85	2.05										
08-00200-02005	0.2	0.5	0.3	0.18	12°	4	45	0.57	0.59	0.62	0.65	0.72					
08-00200-02007		0.75					45	0.83	0.86	0.9	0.95	1.05					
08-00200-02010		1					45	1.09	1.14	1.19	1.25	1.38					
08-00200-02015		1.5					45	1.61	1.68	1.76	1.85	2.05					
08-00200-02020		2					45	2.13	2.23	2.33	2.44	2.71					
08-00200-02025		2.5					45	2.65	2.77	2.9	3.04	3.38					
08-00200-02030		3					45	3.17	3.31	3.47	3.64	4.04					
08-00200-02035		3.5					45	3.69	3.86	4.04	4.24	4.7					
08-00200-02040		4					45	4.22	4.4	4.61	4.84	5.37					
08-00200-03010		0.3					1	0.4	0.28	12°	4	45	1.09	1.14	1.19	1.25	1.38
08-00200-03015							1.5					45	1.61	1.68	1.76	1.85	2.05
08-00200-03020							2					45	2.13	2.23	2.33	2.44	2.71
08-00200-03025	2.5		45	2.65	2.77	2.9	3.04					3.38					
08-00200-03030	3		45	3.17	3.31	3.47	3.64					4.04					
08-00200-03040	4		45	4.22	4.4	4.61	4.84					5.37					
08-00200-03050	5		45	5.26	5.49	5.75	6.03					6.69					
08-00200-03060	6		45	6.3	6.58	6.89	7.23					8.02					
08-00200-03090	9		45	9.43	9.85	10.31	10.82					12					
08-00200-04010	0.4		1	0.6	0.37	12°	4					45	1.11	1.16	1.22	1.28	1.42
08-00200-04015		1.5	45					1.63	1.71	1.79	1.87	2.08					
08-00200-04020		2	45					2.15	2.25	2.36	2.47	2.74					
08-00200-04025		2.5	45					2.68	2.8	2.93	3.07	3.41					
08-00200-04030		3	45					3.2	3.34	3.5	3.67	4.07					

How to Order

When you order, indicate MHR230 (D)×(l1). ※(γ) is reference value.

Unit : mm

Code No.	Dia. (D)	Under Neck Length (l1)	Length of Cut (l)	Neck Dia. (d2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece				
								30°	1°	1°30'	2°	3°
08-00200-04035	0.4	3.5	0.6	0.37	12°	4	45	3.72	3.89	4.07	4.27	4.73
08-00200-04040		4					45	4.24	4.43	4.64	4.87	5.4
08-00200-04050		5					45	5.28	5.52	5.78	6.06	6.72
08-00200-04060		6					45	6.33	6.61	6.92	7.26	8.05
08-00200-04070		7					45	7.37	7.7	8.06	8.46	9.38
08-00200-04080		8					45	8.41	8.79	9.2	9.65	10.71
08-00200-04090		9					45	9.45	9.88	10.34	10.85	12.03
08-00200-04100		10					45	10.5	10.97	11.48	12.05	13.36
08-00200-04120		12					45	12.58	13.15	13.76	14.44	16.02
08-00200-05010		0.5					1	0.7	0.46	12°	4	45
08-00200-05015	1.5		45	1.66	1.73	1.81	1.9					2.11
08-00200-05020	2		45	2.18	2.28	2.38	2.5					2.77
08-00200-05025	2.5		45	2.7	2.82	2.95	3.1					3.44
08-00200-05030	3		45	3.22	3.37	3.52	3.7					4.1
08-00200-05035	3.5		45	3.74	3.91	4.09	4.3					4.77
08-00200-05040	4		45	4.26	4.46	4.66	4.89					5.43
08-00200-05045	4.5		45	4.79	5	5.23	5.49					6.09
08-00200-05050	5		45	5.31	5.54	5.8	6.09					6.76
08-00200-05060	6		45	6.35	6.63	6.95	7.29					8.08
08-00200-05070	7		45	7.39	7.72	8.09	8.48					9.41
08-00200-05080	8		50	8.44	8.81	9.23	9.68					10.74
08-00200-05090	9		50	9.48	9.9	10.37	10.88					12.07
08-00200-05100	10		50	10.52	10.99	11.51	12.07					13.39
08-00200-05120	12		50	12.61	13.17	13.79	14.47					16.05
08-00200-05150	15	50	15.74	16.44	17.21	18.06	20.03					
08-00200-06015	0.6	1.5	0.9	0.56	12°	4	45	1.66	1.73	1.81	1.9	2.11
08-00200-06020		2					45	2.18	2.28	2.38	2.5	2.77
08-00200-06030		3					45	3.22	3.37	3.52	3.7	4.1
08-00200-06040		4					45	4.26	4.46	4.66	4.89	5.43
08-00200-06050		5					45	5.31	5.54	5.8	6.09	6.76
08-00200-06060		6					45	6.35	6.63	6.95	7.29	8.08
08-00200-06070		7					45	7.39	7.72	8.09	8.48	9.41

M Stainless Steel

N Aluminium Alloy

N Copper

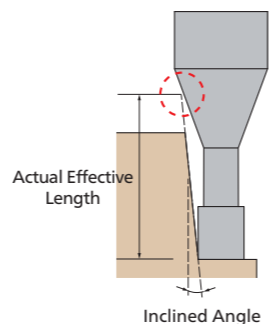
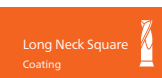
O Resin

Long Neck Square Coating

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel ~55 HRC **H**

- Stainless Steel **M**

- Aluminium Alloy **N**
- Copper **N**
- Resin **O**

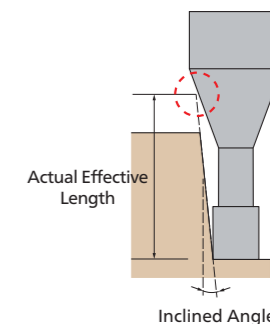


Unit : mm

Code No.	Dia. (D)	Under Neck Length (ℓ1)	Length of Cut (ℓ)	Neck Dia. (d2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece				
								30°	1°	1°30'	2°	3°
08-00200-06080	0.6	8	0.9	0.56	12°	4	50	8.44	8.81	9.23	9.68	10.74
08-00200-06090							50	9.48	9.9	10.37	10.88	12.07
08-00200-06100							50	10.52	10.99	11.51	12.07	13.39
08-00200-06120							50	12.61	13.17	13.79	14.47	16.05
08-00200-06150							50	15.74	16.44	17.21	18.06	20.03
08-00200-06180							50	18.86	19.71	20.63	21.65	24.01
08-00200-07020	0.7	2	1	0.66	12°	4	45	2.18	2.28	2.38	2.5	2.77
08-00200-07040							45	4.26	4.46	4.66	4.89	5.43
08-00200-07060							45	6.35	6.63	6.95	7.29	8.08
08-00200-07080							50	8.44	8.81	9.23	9.68	10.74
08-00200-07100							50	10.52	10.99	11.51	12.07	13.39
08-00200-08030							45	3.22	3.37	3.52	3.7	4.1
08-00200-08040	45	4.26	4.46	4.66	4.89	5.43						
08-00200-08050	45	5.31	5.54	5.8	6.09	6.76						
08-00200-08060	45	6.35	6.63	6.95	7.29	8.08						
08-00200-08080	50	8.44	8.81	9.23	9.68	10.74						
08-00200-08100	50	10.52	10.99	11.51	12.07	13.39						
08-00200-08120	50	12.61	13.17	13.79	14.47	16.05						
08-00200-08140	50	14.69	15.35	16.07	16.86	18.7						
08-00200-08160	50	16.78	17.53	18.35	19.25	21.36						
08-00200-08200	60	20.95	21.89	22.91	24.04	26.66						
08-00200-08240	60	25.12	26.24	27.47	28.83	Free						
08-00200-09040	0.9	4	1.4	0.86	12°	4	45	4.26	4.46	4.66	4.89	5.43
08-00200-09060							45	6.35	6.63	6.95	7.29	8.08
08-00200-09080							50	8.44	8.81	9.23	9.68	10.74
08-00200-09100							50	10.52	10.99	11.51	12.07	13.39
08-00200-09120							50	12.61	13.17	13.79	14.47	16.05
08-00200-09150							60	15.74	16.44	17.21	18.06	20.03
08-00200-10020	1	2	1.5	0.95	12°	4	50	2.2	2.3	2.41	2.53	2.81
08-00200-10030							50	3.25	3.39	3.55	3.73	4.13
08-00200-10040							50	4.29	4.48	4.69	4.92	5.46
08-00200-10050							50	5.33	5.57	5.83	6.12	6.79

How to Order

When you order, indicate MHR230 (D)×(ℓ1). ※(γ) is reference value.



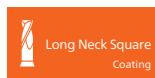
Unit : mm

Code No.	Dia. (D)	Under Neck Length (ℓ1)	Length of Cut (ℓ)	Neck Dia. (d2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece				
								30°	1°	1°30'	2°	3°
08-00200-10060	1	6	1.5	0.95	12°	4	50	6.37	6.66	6.97	7.32	8.11
08-00200-10070							50	7.42	7.75	8.11	8.51	9.44
08-00200-10080							50	8.46	8.84	9.25	9.71	10.77
08-00200-10090							50	9.5	9.93	10.39	10.91	12.1
08-00200-10100							50	10.55	11.02	11.53	12.1	13.42
08-00200-10120							50	12.63	13.2	13.82	14.49	16.08
08-00200-10140							50	14.72	15.38	16.1	16.89	18.73
08-00200-10160							60	16.8	17.55	18.38	19.28	21.39
08-00200-10180							60	18.89	19.73	20.66	21.67	24.04
08-00200-10200							60	20.97	21.91	22.94	24.07	26.7
08-00200-10220							60	23.06	24.09	25.22	26.46	Free
08-00200-10250							70	26.19	27.36	28.64	30.05	Free
08-00200-10300							70	31.4	32.81	34.34	36.03	Free
08-00200-12040							1.2	4	1.8	1.15	12°	4
08-00200-12060	50	6.37	6.66	6.97	7.32	8.11						
08-00200-12080	50	8.46	8.84	9.25	9.71	10.77						
08-00200-12100	50	10.55	11.02	11.53	12.1	13.42						
08-00200-12120	50	12.63	13.2	13.82	14.49	16.08						
08-00200-12160	60	16.8	17.55	18.38	19.28	21.39						
08-00200-12200	60	20.97	21.91	22.94	24.07	26.7						
08-00200-14060	1.4	6	2.1	1.35	12°	4						
08-00200-14080							50	8.46	8.84	9.25	9.71	10.77
08-00200-14100							50	10.55	11.02	11.53	12.1	13.42
08-00200-14120							50	12.63	13.2	13.82	14.49	16.08
08-00200-14140							60	14.72	15.38	16.1	16.89	18.73
08-00200-14160							60	16.8	17.55	18.38	19.28	21.39
08-00200-14220	60	23.06	24.09	25.22	26.46	Free						
08-00200-15040	1.5	4	2.3	1.45	12°	4	50	4.29	4.48	4.69	4.92	5.46
08-00200-15060							50	6.37	6.66	6.97	7.32	8.11
08-00200-15080							50	8.46	8.84	9.25	9.71	10.77
08-00200-15100							50	10.55	11.02	11.53	12.1	13.42
08-00200-15120							50	12.63	13.2	13.82	14.49	16.08

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel ~55 HRC **H**

- Stainless Steel **M**

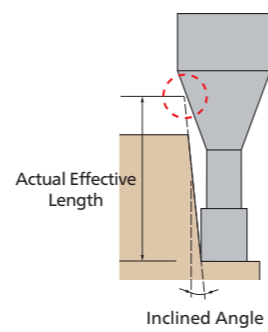
- Aluminium Alloy **N**
- Copper **N**
- Resin **O**



- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel ~55 HRC **H**

- Stainless Steel **M**

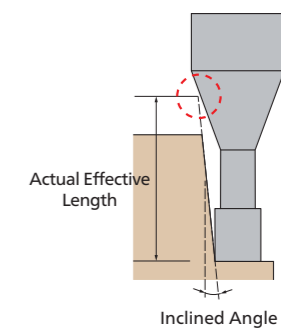
- Aluminium Alloy **N**
- Copper **N**
- Resin **O**



Unit : mm

Code No.	Dia. (D)	Under Neck Length (ℓ1)	Length of Cut (ℓ)	Neck Dia. (d2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece				
								30°	1°	1°30'	2°	3°
08-00200-15140	1.5	14	2.3	1.45	12°	4	60	14.72	15.38	16.1	16.89	18.73
08-00200-15160		16					60	16.8	17.55	18.38	19.28	21.39
08-00200-15180		18					60	18.89	19.73	20.66	21.67	Free
08-00200-15200		20					60	20.97	21.91	22.94	24.07	Free
08-00200-15250		25					70	26.19	27.36	28.64	30.05	Free
08-00200-15300		30					70	31.4	32.81	34.34	Free	Free
08-00200-15350		35					80	36.62	38.25	40.05	Free	Free
08-00200-15380		38					80	39.74	41.52	43.47	Free	Free
08-00200-15400		40					80	41.83	43.7	45.75	Free	Free
08-00200-15450		45					80	47.04	49.15	Free	Free	Free
08-00200-16060	1.6	6	2.4	1.55	12°	4	50	6.37	6.66	6.97	7.32	8.11
08-00200-16080		8					50	8.46	8.84	9.25	9.71	10.77
08-00200-16100		10					50	10.55	11.02	11.53	12.1	13.42
08-00200-16120		12					50	12.63	13.2	13.82	14.49	16.08
08-00200-16140		14					60	14.72	15.38	16.1	16.89	18.73
08-00200-16160		16					60	16.8	17.55	18.38	19.28	21.39
08-00200-16180		18					60	18.89	19.73	20.66	21.67	Free
08-00200-16200		20					60	20.97	21.91	22.94	24.07	Free
08-00200-16260		26					60	27.23	28.45	29.78	31.25	Free
08-00200-18060		1.8					6	2.7	1.75	12°	4	50
08-00200-18080	8		50	8.46	8.84	9.25	9.71					10.77
08-00200-18100	10		50	10.55	11.02	11.53	12.1					13.42
08-00200-18120	12		50	12.63	13.2	13.82	14.49					16.08
08-00200-18140	14		50	14.72	15.38	16.1	16.89					18.73
08-00200-18160	16		60	16.8	17.55	18.38	19.28					Free
08-00200-18180	18		60	18.89	19.73	20.66	21.67					Free
08-00200-18200	20		60	20.97	21.91	22.94	24.07					Free
08-00200-18250	25		70	26.19	27.36	28.64	30.05					Free
08-00200-20040	2		4	3	1.94	12°	4					50
08-00200-20060		6	50					6.4	6.69	7	7.34	8.15
08-00200-20080		8	50					8.48	8.86	9.28	9.74	10.8
08-00200-20100		10	50					10.57	11.04	11.56	12.13	13.45

How to Order When you order, indicate MHR230 (D)×(ℓ1). ※(γ) is reference value.



Unit : mm

Code No.	Dia. (D)	Under Neck Length (ℓ1)	Length of Cut (ℓ)	Neck Dia. (d2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece				
								30°	1°	1°30'	2°	3°
08-00200-20120	2	12	3	1.94	12°	4	50	12.66	13.22	13.84	14.52	16.11
08-00200-20140		14					60	14.74	15.4	16.12	16.92	18.76
08-00200-20160		16					60	16.83	17.58	18.4	19.31	Free
08-00200-20180		18					60	18.91	19.76	20.69	21.7	Free
08-00200-20200		20					60	21	21.94	22.97	24.1	Free
08-00200-20250		25					70	26.21	27.39	28.67	Free	Free
08-00200-20300		30					70	31.43	32.83	34.37	Free	Free
08-00200-20350		35					80	36.64	38.28	Free	Free	Free
08-00200-20400		40					90	41.85	43.73	Free	Free	Free
08-00200-20500		50					100	52.28	54.62	Free	Free	Free
08-00200-20600	60	110	62.71	Free	Free	Free	Free					
08-00200-25080	2.5	8	3.7	2.4	12°	4	50	8.58	8.97	9.39	9.85	10.93
08-00200-25100		10					50	10.67	11.15	11.67	12.24	13.58
08-00200-25120		12					50	12.75	13.32	13.95	14.64	Free
08-00200-25140		14					50	14.84	15.5	16.23	17.03	Free
08-00200-25160		16					60	16.93	17.68	18.51	19.42	Free
08-00200-25180		18					60	19.01	19.86	20.79	Free	Free
08-00200-25200		20					60	21.1	22.04	23.07	Free	Free
08-00200-25250		25					70	26.31	27.49	Free	Free	Free
08-00200-25300		30					70	31.52	32.94	Free	Free	Free
08-00200-25400		40					90	41.95	Free	Free	Free	Free
08-00200-25500	50	100	52.38	Free	Free	Free	Free					
08-00200-30080	3	8	4.5	2.85	12°	6	50	8.71	9.1	9.52	9.99	11.08
08-00200-30100		10					50	10.79	11.27	11.8	12.38	13.74
08-00200-30120		12					50	12.88	13.45	14.08	14.78	16.39
08-00200-30140		14					50	14.96	15.63	16.36	17.17	19.04
08-00200-30160		16					60	17.05	17.81	18.65	19.56	21.7
08-00200-30180		18					60	19.13	19.99	20.93	21.96	24.35
08-00200-30200		20					60	21.22	22.17	23.21	24.35	27.01
08-00200-30250		25					70	26.43	27.62	28.91	30.33	Free
08-00200-30300		30					70	31.65	33.06	34.61	36.31	Free
08-00200-30350		35					80	36.86	38.51	40.32	42.3	Free

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel ~55 HRC **H**

- Stainless Steel **M**

- Aluminium Alloy **N**
- Copper **N**
- Resin **O**



MUGEN COATING 2 -Flute Long Neck End Mill

Recommended Milling Conditions

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel ~55 HRC **H**

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- ~55 HRC Hardened Steel **H**

- Stainless Steel **M**

- Stainless Steel **M**

- Aluminium Alloy **N**

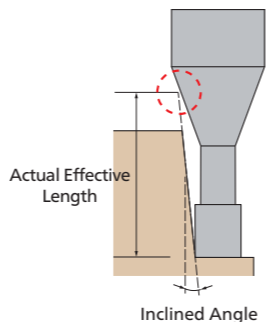
- Aluminium Alloy **N**

- Copper **N**

- Copper **N**

- Resin **O**

- Resin **O**



Unit : mm

Code No.	Dia. (D)	Under Neck Length (ℓ1)	Length of Cut (ℓ)	Neck Dia. (d2)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece									
								30°	1°	1°30'	2°	3°					
								Free	Free	Free	Free	Free					
08-00200-30400	3	40	4.5	2.85	12°	6	90	42.08	43.96	46.02	Free	Free					
08-00200-30500		50					100	52.5	54.85	Free	Free						
08-00200-40120	4	12	6	3.8	12°	6	50	13	13.58	14.22	14.92	16.55					
08-00200-40160		16					60	17.17	17.94	18.78	19.7	Free					
08-00200-40200		20					60	21.34	22.3	23.34	24.49	Free					
08-00200-40250		25					70	26.56	27.74	29.04	Free	Free					
08-00200-40300		30					70	31.77	33.19	34.75	Free	Free					
08-00200-40350		35					80	36.98	38.64	Free	Free	Free					
08-00200-40400		40					90	42.2	44.09	Free	Free	Free					
08-00200-40450		45					90	47.41	49.53	Free	Free	Free					
08-00200-40500		50					100	52.63	54.98	Free	Free	Free					
08-00200-40600		60					110	63.05	Free	Free	Free	Free					
08-00200-50160	5	16	7.5	4.8	12°	6	60	17.17	17.94	18.78	Free	Free					
08-00200-50200		20					60	21.34	22.3	Free	Free	Free					
08-00200-50250		25					70	26.56	27.74	Free	Free	Free					
08-00200-50300		30					80	31.77	Free	Free	Free	Free					
08-00200-50350		35					80	36.98	Free	Free	Free	Free					
08-00200-50400		40					90	42.2	Free	Free	Free	Free					
08-00200-50500		50					110	52.63	Free	Free	Free	Free					
08-00200-50600		60					120	Free	Free	Free	Free	Free					
08-00200-60200		6					20	9	5.8	-	6	80	Free	Free	Free	Free	Free
08-00200-60300							30					90	Free	Free	Free	Free	Free
08-00200-60400	40		100	Free	Free	Free	Free					Free					
08-00200-60500	50		110	Free	Free	Free	Free					Free					
08-00200-60600	60		120	Free	Free	Free	Free					Free					

How to Order When you order, indicate MHR230 (D)×(ℓ1). ※(γ) is reference value.

Work Material	Dia.	Under Neck Length	Carbon Steels·Alloy Steels*1· Stainless Steels*1 S50C·SCM*1·SKD*1·SUS*1			Prehardened Steels NAK55·NAK80·HPM1 (~43HRC)			Copper·Aluminium Alloy		
			Spindle Speed min ⁻¹	Feed mm/min	Depth of Cut ap mm	Spindle Speed min ⁻¹	Feed mm/min	Depth of Cut ap mm	Spindle Speed min ⁻¹	Feed mm/min	Depth of Cut ap mm
0.1	0.3	0.3	40,000	150	0.005	40,000	120	0.004	40,000	150	0.006
		0.5	40,000	100	0.004	40,000	75	0.003	40,000	100	0.005
		0.75	40,000	60	0.003	40,000	50	0.002	40,000	60	0.003
		1	40,000	40	0.002	40,000	30	0.002	40,000	40	0.002
0.15	0.3	0.3	40,000	200	0.005	40,000	150	0.004	40,000	200	0.008
		0.5	40,000	150	0.005	40,000	120	0.004	40,000	150	0.008
		0.75	40,000	100	0.004	40,000	90	0.003	40,000	100	0.006
		1	40,000	80	0.003	40,000	60	0.002	40,000	80	0.004
0.2	0.5	0.5	40,000	330	0.01	40,000	250	0.007	40,000	330	0.012
		0.75	40,000	280	0.008	40,000	220	0.006	40,000	280	0.01
		1	40,000	250	0.007	40,000	180	0.005	40,000	250	0.008
		1.5	40,000	180	0.005	35,000	120	0.004	40,000	180	0.006
		2	40,000	100	0.003	35,000	65	0.002	40,000	100	0.004
		2.5	35,000	80	0.003	30,000	50	0.002	40,000	90	0.003
		3	30,000	60	0.002	25,000	40	0.002	35,000	70	0.002
		3.5	25,000	40	0.002	22,000	30	0.002	30,000	50	0.002
		4	23,000	30	0.001	20,000	20	0.001	25,000	35	0.001
		0.3	1	1	40,000	400	0.02	35,000	260	0.015	40,000
1.5	40,000			350	0.015	35,000	230	0.01	40,000	350	0.018
2	35,000			300	0.01	30,000	180	0.007	40,000	320	0.012
2.5	30,000			250	0.007	25,000	160	0.005	35,000	280	0.008
3	30,000			200	0.005	25,000	130	0.004	35,000	250	0.006
4	25,000			120	0.004	22,000	80	0.003	30,000	150	0.004
5	22,000			80	0.003	20,000	55	0.002	25,000	90	0.003
6	20,000			60	0.002	18,000	40	0.002	22,000	65	0.002
9	18,000			30	0.001	16,000	20	0.001	20,000	35	0.001
0.4	1			1	35,000	500	0.025	30,000	330	0.018	40,000
		1.5	35,000	450	0.02	30,000	280	0.014	40,000	500	0.026
		2	35,000	400	0.02	30,000	260	0.014	40,000	450	0.024
		2.5	30,000	350	0.015	25,000	230	0.01	40,000	400	0.02
		3	30,000	300	0.015	25,000	190	0.01	35,000	350	0.018
		3.5	25,000	250	0.01	25,000	160	0.008	35,000	280	0.015
		4	25,000	200	0.01	22,000	140	0.007	30,000	240	0.012
		5	22,000	160	0.008	20,000	110	0.005	25,000	180	0.01
		6	20,000	120	0.005	18,000	80	0.003	22,000	130	0.006
		7	18,000	100	0.003	16,000	70	0.002	20,000	110	0.003
		8	18,000	80	0.002	16,000	60	0.002	20,000	85	0.002
		9	18,000	70	0.002	16,000	50	0.002	20,000	75	0.002
0.5	1	1	30,000	550	0.03	25,000	350	0.022	35,000	650	0.036
		1.5	30,000	520	0.028	25,000	330	0.02	35,000	630	0.033
		2	30,000	500	0.025	25,000	320	0.018	35,000	600	0.03
		2.5	30,000	470	0.023	25,000	290	0.016	35,000	580	0.027
		3	30,000	450	0.02	25,000	280	0.014	35,000	550	0.024
		3.5	30,000	420	0.018	22,000	250	0.012	30,000	500	0.021
		4	25,000	350	0.015	22,000	230	0.01	30,000	420	0.018
		4.5	25,000	320	0.013	20,000	200	0.008	30,000	380	0.015
		5	25,000	300	0.01	20,000	180	0.007	30,000	350	0.012

*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

Recommended Milling Conditions

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel ~55 HRC **H**

Stainless Steel **M**

Aluminium Alloy **N**

Copper **N**

Resin **O**

Long Neck Square Coating

Work Material		Carbon Steels·Alloy Steels*1·Stainless Steels*1 S50C·SCM*1·SKD*1·SUS*1			Prehardened Steels NAK55·NAK80·HPM1 (~43HRC)			Copper·Aluminium Alloy			
Dia.	Under Neck Length	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut	
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	
0.5	6	20,000	200	0.008	18,000	140	0.005	25,000	250	0.01	
	7	20,000	180	0.005	16,000	110	0.003	22,000	200	0.006	
	8	18,000	150	0.003	14,000	90	0.002	20,000	160	0.003	
	9	16,000	120	0.003	14,000	80	0.002	18,000	135	0.003	
	10	16,000	100	0.002	14,000	65	0.002	18,000	110	0.002	
	12	16,000	80	0.002	14,000	50	0.002	18,000	90	0.002	
	15	16,000	50	0.002	14,000	35	0.002	18,000	55	0.002	
0.6	1.5	30,000	600	0.035	25,000	400	0.025	35,000	700	0.04	
	2	30,000	600	0.035	25,000	380	0.025	35,000	700	0.04	
	3	30,000	550	0.03	25,000	350	0.02	35,000	650	0.035	
	4	25,000	450	0.025	22,000	300	0.018	30,000	550	0.03	
	5	25,000	400	0.02	20,000	240	0.014	30,000	480	0.024	
	6	20,000	300	0.015	18,000	200	0.01	25,000	380	0.018	
	7	20,000	250	0.012	16,000	150	0.008	22,000	280	0.014	
	8	18,000	200	0.01	15,000	130	0.007	20,000	230	0.012	
	9	18,000	180	0.008	15,000	110	0.005	20,000	200	0.009	
	10	16,000	150	0.005	14,000	100	0.003	18,000	170	0.006	
0.7	2	30,000	650	0.04	25,000	400	0.03	35,000	750	0.05	
	4	25,000	500	0.03	22,000	330	0.02	30,000	600	0.04	
	6	20,000	350	0.02	18,000	240	0.015	25,000	450	0.03	
	8	18,000	280	0.015	15,000	180	0.01	22,000	350	0.02	
	10	16,000	220	0.008	14,000	150	0.005	20,000	280	0.01	
	0.8	3	25,000	700	0.05	22,000	500	0.03	35,000	850	0.06
		4	25,000	600	0.045	22,000	400	0.03	30,000	720	0.055
		5	22,000	500	0.035	20,000	350	0.025	30,000	650	0.05
		6	20,000	450	0.03	18,000	300	0.02	25,000	560	0.04
		8	18,000	350	0.02	15,000	240	0.015	22,000	430	0.025
10		16,000	300	0.01	14,000	200	0.007	20,000	380	0.012	
12		14,000	250	0.008	12,000	170	0.005	16,000	290	0.01	
14		12,000	200	0.005	10,000	140	0.003	14,000	230	0.006	
16		12,000	150	0.003	10,000	110	0.002	14,000	170	0.003	
20		12,000	120	0.002	10,000	80	0.002	14,000	140	0.002	
0.9	4	25,000	900	0.05	22,000	600	0.035	30,000	1,000	0.06	
	6	20,000	600	0.04	18,000	400	0.03	25,000	750	0.05	
	8	18,000	500	0.03	16,000	330	0.02	22,000	620	0.04	
	10	16,000	400	0.02	14,000	260	0.015	20,000	500	0.025	
	12	14,000	300	0.01	12,000	200	0.008	16,000	400	0.015	
	15	12,000	250	0.008	10,000	160	0.005	14,000	300	0.01	
1	2	25,000	1,500	0.07	22,000	1,000	0.06	30,000	1,800	0.08	
	3	25,000	1,200	0.06	22,000	800	0.05	30,000	1,500	0.07	
	4	25,000	1,100	0.055	22,000	700	0.045	30,000	1,300	0.065	
	5	22,000	900	0.05	20,000	600	0.04	27,000	1,100	0.06	
	6	20,000	800	0.045	18,000	500	0.035	25,000	1,000	0.055	
	7	20,000	800	0.04	18,000	500	0.03	25,000	1,000	0.05	
	8	18,000	700	0.035	15,000	400	0.025	22,000	850	0.045	
	9	18,000	700	0.03	15,000	400	0.02	22,000	850	0.04	

*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

Recommended Milling Conditions

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel ~55 HRC **H**

Stainless Steel **M**

Aluminium Alloy **N**

Copper **N**

Resin **O**

Long Neck Square Coating

Work Material		Carbon Steels·Alloy Steels*1·Stainless Steels*1 S50C·SCM*1·SKD*1·SUS*1			Prehardened Steels NAK55·NAK80·HPM1 (~43HRC)			Copper·Aluminium Alloy		
Dia.	Under Neck Length	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
1	10	16,000	600	0.025	14,000	350	0.018	20,000	750	0.03
	12	14,000	500	0.02	12,000	300	0.014	18,000	650	0.025
	14	13,000	400	0.015	11,000	250	0.01	15,000	450	0.018
	16	12,000	300	0.01	10,000	200	0.007	14,000	350	0.012
	18	12,000	250	0.008	10,000	150	0.005	14,000	300	0.01
	20	11,000	200	0.005	9,000	120	0.003	13,000	230	0.006
	22	11,000	160	0.003	9,000	100	0.002	13,000	190	0.003
	25	10,000	120	0.002	8,500	80	0.002	12,000	140	0.002
	30	10,000	80	0.002	8,500	50	0.002	12,000	100	0.002
	1.2	4	23,000	1,200	0.06	20,000	800	0.05	27,000	1,400
6		20,000	900	0.05	18,000	600	0.04	25,000	1,200	0.06
8		18,000	800	0.04	15,000	500	0.03	22,000	1,000	0.05
10		16,000	700	0.03	14,000	450	0.02	20,000	850	0.04
12		14,000	600	0.025	12,000	350	0.018	17,000	700	0.03
16		12,000	400	0.015	10,000	250	0.01	14,000	450	0.02
20		10,000	300	0.01	8,000	180	0.007	12,000	360	0.012
1.4	6	20,000	1,200	0.07	16,000	720	0.06	24,000	1,500	0.08
	8	18,000	1,000	0.06	14,000	580	0.05	22,000	1,300	0.07
	10	16,000	850	0.05	13,000	520	0.04	20,000	1,100	0.06
	12	14,000	700	0.04	12,000	450	0.03	17,000	850	0.05
	14	13,000	600	0.035	11,000	350	0.025	15,000	700	0.04
	16	12,000	500	0.025	10,000	300	0.018	13,000	550	0.03
	22	10,000	350	0.015	8,000	210	0.01	10,000	350	0.012
1.5	4	22,000	1,400	0.09	18,000	860	0.08	26,000	1,700	0.1
	6	20,000	1,200	0.08	16,000	720	0.07	24,000	1,500	0.09
	8	18,000	1,000	0.07	14,000	580	0.06	22,000	1,300	0.08
	10	16,000	850	0.06	13,000	520	0.05	20,000	1,100	0.07
	12	14,000	700	0.05	12,000	450	0.04	17,000	850	0.06
	14	13,000	600	0.04	11,000	380	0.03	16,000	750	0.05
	16	12,000	500	0.035	10,000	320	0.025	15,000	650	0.04
	18	11,000	450	0.03	9,000	280	0.02	13,000	530	0.035
	20	10,000	400	0.02	8,000	240	0.014	12,000	480	0.025
	25	9,000	350	0.015	7,000	200	0.01	9,000	350	0.018
	30	8,000	300	0.008	6,000	170	0.005	8,000	300	0.01
	35	7,000	200	0.005	5,500	130	0.003	7,000	200	0.006
	38	6,700	170	0.003	5,200	110	0.002	6,700	170	0.003
	40	6,500	150	0.002	5,000	90	0.002	6,500	150	0.002
45	6,000	100	0.002	4,500	60	0.002	6,000	100	0.002	
1.6	6	20,000	1,200	0.09	16,000	720	0.08	24,000	1,500	0.1
	8	18,000	1,000	0.08	14,000	580	0.07	22,000	1,300	0.09
	10	16,000	850	0.07	13,000	520	0.06	20,000	1,100	0.08
	12	14,000	700	0.06	12,000	450	0.05	18,000	900	0.07
	14	13,000	600	0.05	11,000	380	0.04	16,000	750	0.06
	16	12,000	500	0.04	10,000	320	0.03	14,000	620	0.05
	18	11,000	450	0.03	9,000	280	0.025	13,000	530	0.035
20	10,000	400	0.025	8,000	240	0.018	12,000	480	0.03	
26	9,000	350	0.02	7,000	200	0.014	9,000	350	0.025	

*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

Recommended Milling Conditions

Recommended Milling Conditions

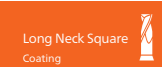
- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel **H**
~55 HRC

- Stainless Steel **M**

- Aluminium Alloy **N**

- Copper **N**

- Resin **O**



Work Material		Carbon Steels·Alloy Steels*1· Stainless Steels*1 S50C·SCM*1·SKD*1·SUS*1			Prehardened Steels NAK55·NAK80·HPM1 (~43HRC)			Copper·Aluminium Alloy		
Dia.	Under Neck Length	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
1.8	6	18,000	1,300	0.1	14,000	760	0.09	22,000	1,600	0.12
	8	18,000	1,100	0.09	14,000	640	0.08	22,000	1,400	0.11
	10	16,000	900	0.08	13,000	550	0.07	20,000	1,200	0.1
	12	14,000	750	0.07	12,000	480	0.06	17,000	900	0.085
	14	13,000	650	0.06	11,000	420	0.05	16,000	800	0.07
	16	12,000	550	0.05	10,000	350	0.04	15,000	700	0.06
	18	11,000	500	0.04	9,000	310	0.03	13,000	600	0.05
	20	10,000	450	0.035	8,000	270	0.025	12,000	540	0.04
	25	9,000	400	0.025	7,000	230	0.018	11,000	480	0.03
	30	8,000	350	0.02	6,000	200	0.014	9,000	450	0.025
2	4	16,000	1,500	0.13	13,000	900	0.12	20,000	1,850	0.15
	6	16,000	1,400	0.12	13,000	850	0.1	20,000	1,750	0.14
	8	16,000	1,300	0.11	13,000	800	0.09	20,000	1,650	0.13
	10	16,000	1,200	0.1	13,000	750	0.08	20,000	1,500	0.12
	12	14,000	1,000	0.09	12,000	650	0.07	17,000	1,200	0.11
	14	13,000	900	0.08	11,000	570	0.06	16,000	1,100	0.1
	16	12,000	800	0.07	10,000	500	0.05	15,000	1,000	0.085
	18	11,000	700	0.06	9,000	430	0.04	13,000	800	0.07
	20	10,000	600	0.05	8,000	360	0.035	12,000	720	0.06
	25	9,000	500	0.03	7,000	300	0.02	11,000	600	0.035
2.5	8	13,000	1,400	0.15	11,000	900	0.12	16,000	1,700	0.18
	10	13,000	1,300	0.14	11,000	800	0.11	16,000	1,600	0.17
	12	13,000	1,200	0.13	11,000	750	0.1	16,000	1,500	0.16
	14	12,000	1,000	0.12	10,000	650	0.09	14,000	1,200	0.15
	16	11,000	900	0.1	9,000	550	0.07	13,000	1,100	0.12
	18	10,000	800	0.09	8,000	480	0.06	12,000	950	0.11
	20	9,000	700	0.08	7,000	400	0.05	11,000	850	0.1
	25	8,000	600	0.05	6,000	330	0.035	10,000	750	0.06
	30	7,000	500	0.03	5,500	280	0.02	8,500	600	0.035
	40	6,000	300	0.015	4,500	180	0.01	6,000	300	0.018
3	8	11,000	1,500	0.2	9,000	1,000	0.16	13,000	1,800	0.24
	10	11,000	1,400	0.18	9,000	900	0.14	13,000	1,700	0.22
	12	11,000	1,300	0.16	9,000	800	0.12	13,000	1,600	0.2
	14	11,000	1,200	0.14	9,000	700	0.1	13,000	1,400	0.17
	16	10,000	1,000	0.12	8,000	600	0.09	12,000	1,200	0.15
	18	10,000	900	0.11	8,000	550	0.08	12,000	1,100	0.13
	20	9,000	800	0.1	7,000	450	0.07	11,000	1,000	0.12
	25	8,000	700	0.08	6,000	380	0.06	10,000	900	0.1
	30	7,000	600	0.06	5,000	300	0.045	8,500	730	0.07
	40	6,000	500	0.03	4,500	260	0.02	7,200	600	0.035
50	5,000	400	0.025	4,000	220	0.018	6,000	480	0.03	
60	4,500	300	0.015	3,500	180	0.01	4,500	300	0.018	

*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions.

Work Material		Carbon Steels·Alloy Steels*1· Stainless Steels*1 S50C·SCM*1·SKD*1·SUS*1			Prehardened Steels NAK55·NAK80·HPM1 (~43HRC)			Copper·Aluminium Alloy		
Dia.	Under Neck Length	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
4	12	8,000	1,500	0.3	6,000	850	0.25	10,000	1,900	0.36
	16	8,000	1,400	0.25	6,000	800	0.2	10,000	1,800	0.3
	20	8,000	1,300	0.2	6,000	730	0.15	10,000	1,600	0.24
	25	7,000	1,100	0.15	5,000	600	0.1	8,500	1,300	0.18
	30	7,000	1,000	0.12	5,000	540	0.08	8,500	1,200	0.15
	35	6,000	800	0.1	4,500	450	0.07	7,200	1,000	0.12
	40	5,000	600	0.08	4,000	360	0.06	6,000	720	0.1
	45	4,500	500	0.06	3,500	300	0.04	5,400	600	0.07
	50	4,000	400	0.04	3,000	220	0.03	4,800	480	0.05
	60	3,500	300	0.02	2,500	160	0.014	4,200	360	0.025
5	16	6,000	1,400	0.35	4,500	800	0.3	7,200	1,700	0.42
	20	6,000	1,300	0.3	4,500	730	0.25	7,200	1,600	0.36
	25	6,000	1,200	0.25	4,500	680	0.2	7,200	1,500	0.3
	30	5,000	900	0.2	4,000	540	0.15	6,000	1,100	0.24
	35	5,000	800	0.15	3,500	420	0.1	6,000	1,000	0.18
	40	4,000	600	0.1	3,000	340	0.07	4,800	720	0.12
	50	3,500	450	0.07	2,500	240	0.05	4,200	540	0.085
6	20	5,000	1,200	0.4	3,500	630	0.35	6,000	1,500	0.48
	30	4,000	900	0.35	3,000	500	0.3	4,800	1,100	0.42
	40	3,500	650	0.25	2,700	380	0.2	4,200	780	0.3
	50	3,000	500	0.15	2,200	280	0.1	3,600	600	0.18
	60	2,700	400	0.05	2,000	220	0.04	3,200	480	0.06

Notes	
<p>*1 Reference value for Alloy and Stainless Steels are 80% of recommended cutting conditions. *2 These recommended cutting conditions indicate just reference. It should be adjusted according to milling shape and machine type. *3 ap: Axial Depth of Cut. *4 Select a cutting fluid appropriate to work material, milling shape and machining content. *5 Coolant supply and chip disposal in the deep portion are very important. *6 Recommend to apply ramping for approaching into axial direction. *7 Recommend reciprocating cutting. *8 Recommend guide slotting process with short neck tool before milling with L/D 5 times or longer neck tool. *9 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine. *10 Major adjustment of milling conditions appropriately on milling profile, machine tool and etc. required for the tools smaller than Dia. 0.5mm, or L/D 15 times longer. *11 Major adjustment of milling conditions, e.g. adjust spindle and feed speed at same rate, required on condition of a tool overhang length exceeding a shank diameter 5 times due to possible accuracy impact by chuck runout etc.</p>	

- Carbon Steel **P**
- Alloy Steel **P**
- Prehardened Steel **P**
- Hardened Steel **H**
~55 HRC

- Stainless Steel **M**

- Aluminium Alloy **N**

- Copper **N**

- Resin **O**

