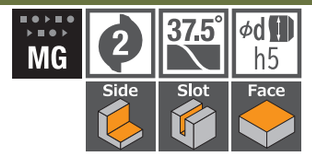
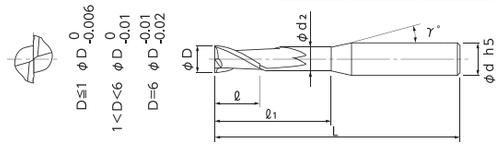
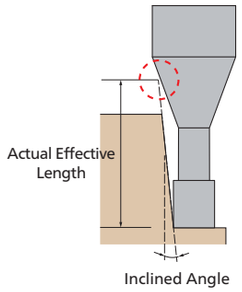
Long neck square end mill specialized for machining copper alloy
Sharpe cutting edge makes less burr and high quality surface





- Long neck square end mill specialized for machining copper electrode.
- Helix angle 37.5 degrees to achieve both sharpness and finished surface quality that prevents scratches on cutting surface.
- High quality and stable milling performance with long tool life by optimized design and DLC COATING.
- Machining copper tungsten electrodes is also effective.



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°
07-00100-01003	0.1	0.3	0.2	0.085	12°	4	45	0.34	0.36	0.38	0.40	0.44
07-00100-01005		0.5	0.2	0.085	12°	4	45	0.55	0.58	0.61	0.64	0.71
07-00100-01007		0.75	0.2	0.085	12°	4	45	0.81	0.85	0.89	0.93	1.04
07-00100-01010		1	0.2	0.085	12°	4	45	1.07	1.12	1.18	1.23	1.37
07-00100-02005	0.2	0.5	0.4	0.18	12°	4	45	0.57	0.59	0.62	0.65	0.72
07-00100-02010		1	0.4	0.18	12°	4	45	1.09	1.14	1.19	1.25	1.38
07-00100-02015		1.5	0.4	0.18	12°	4	45	1.61	1.68	1.76	1.85	2.05
07-00100-02020		2	0.4	0.18	12°	4	45	2.13	2.23	2.33	2.44	2.71
07-00100-03010	0.3	1	0.6	0.28	12°	4	45	1.09	1.14	1.19	1.25	1.38
07-00100-03015		1.5	0.6	0.28	12°	4	45	1.61	1.68	1.76	1.85	2.05
07-00100-03020		2	0.6	0.28	12°	4	45	2.13	2.23	2.33	2.44	2.71
07-00100-03030		3	0.6	0.28	12°	4	45	3.17	3.31	3.47	3.64	4.04
07-00100-04010	0.4	1	0.8	0.37	12°	4	45	1.11	1.16	1.22	1.28	1.42
07-00100-04020		2	0.8	0.37	12°	4	45	2.15	2.25	2.36	2.47	2.74
07-00100-04030		3	0.8	0.37	12°	4	45	3.20	3.34	3.50	3.67	4.07
07-00100-04040		4	0.8	0.37	12°	4	45	4.24	4.43	4.64	4.87	5.40
07-00100-05015	0.5	1.5	1	0.46	12°	4	45	1.66	1.73	1.81	1.90	2.11
07-00100-05020		2	1	0.46	12°	4	45	2.18	2.28	2.38	2.50	2.77
07-00100-05030		3	1	0.46	12°	4	45	3.22	3.37	3.52	3.70	4.10
07-00100-05040		4	1	0.46	12°	4	45	4.26	4.46	4.66	4.89	5.43
07-00100-05060		6	1	0.46	12°	4	45	6.35	6.63	6.95	7.29	8.08
07-00100-06020	0.6	2	1.2	0.56	12°	4	45	2.18	2.28	2.38	2.50	2.77
07-00100-06030		3	1.2	0.56	12°	4	45	3.22	3.37	3.52	3.70	4.10
07-00100-06040		4	1.2	0.56	12°	4	45	4.26	4.46	4.66	4.89	5.43
07-00100-06060		6	1.2	0.56	12°	4	45	6.35	6.63	6.95	7.29	8.08

How to Order — When you order, indicate DHR237 (D)×(ℓ1).

※(γ) is reference value.

Machining case — S-030

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°
07-00100-08030	0.8	3	1.6	0.76	12°	4	45	3.22	3.37	3.52	3.70	4.10
07-00100-08040		4	1.6	0.76	12°	4	45	4.26	4.46	4.66	4.89	5.43
07-00100-08060		6	1.6	0.76	12°	4	45	6.35	6.63	6.95	7.29	8.08
07-00100-08080		8	1.6	0.76	12°	4	50	8.44	8.81	9.23	9.68	10.74
07-00100-10030	1	3	2	0.95	12°	4	45	3.25	3.39	3.55	3.73	4.13
07-00100-10040		4	2	0.95	12°	4	45	4.29	4.48	4.69	4.92	5.46
07-00100-10050		5	2	0.95	12°	4	45	5.33	5.57	5.83	6.12	6.79
07-00100-10060		6	2	0.95	12°	4	45	6.37	6.66	6.97	7.32	8.11
07-00100-10080		8	2	0.95	12°	4	50	8.46	8.84	9.25	9.71	10.77
07-00100-10100		10	2	0.95	12°	4	50	10.55	11.02	11.53	12.10	13.42
07-00100-10120		12	2	0.95	12°	4	50	12.63	13.20	13.82	14.49	16.08
07-00100-15040	1.5	4	3	1.45	12°	4	45	4.29	4.48	4.69	4.92	5.46
07-00100-15060		6	3	1.45	12°	4	50	6.37	6.66	6.97	7.32	8.11
07-00100-15080		8	3	1.45	12°	4	50	8.46	8.84	9.25	9.71	10.77
07-00100-15100		10	3	1.45	12°	4	50	10.55	11.02	11.53	12.10	13.42
07-00100-15120		12	3	1.45	12°	4	50	12.63	13.20	13.82	14.49	16.08
07-00100-15160		16	3	1.45	12°	4	60	16.80	17.55	18.38	19.28	21.39
07-00100-20060	2	6	4	1.94	12°	4	50	6.40	6.69	7.00	7.34	8.15
07-00100-20080		8	4	1.94	12°	4	50	8.48	8.86	9.28	9.74	10.80
07-00100-20100		10	4	1.94	12°	4	50	10.57	11.04	11.56	12.13	13.45
07-00100-20120		12	4	1.94	12°	4	50	12.66	13.22	13.84	14.52	16.11
07-00100-20140		14	4	1.94	12°	4	50	14.74	15.40	16.12	16.92	18.76
07-00100-20160		16	4	1.94	12°	4	60	16.83	17.58	18.40	19.31	Free
07-00100-20200		20	4	1.94	12°	4	60	21.00	21.94	22.97	24.10	Free
07-00100-25060	2.5	6	5	2.4	12°	4	45	6.50	6.79	7.11	7.46	8.27
07-00100-25080		8	5	2.4	12°	4	50	8.58	8.97	9.39	9.85	10.93
07-00100-25100		10	5	2.4	12°	4	50	10.67	11.15	11.67	12.24	13.58
07-00100-25120		12	5	2.4	12°	4	50	12.75	13.32	13.95	14.64	Free
07-00100-25140		14	5	2.4	12°	4	50	14.84	15.50	16.23	17.03	Free
07-00100-25160		16	5	2.4	12°	4	50	16.93	17.68	18.51	19.42	Free
07-00100-25200		20	5	2.4	12°	4	60	21.10	22.04	23.07	Free	Free
07-00100-30080	3	8	6	2.85	12°	6	50	8.71	9.10	9.52	9.99	11.08
07-00100-30100		10	6	2.85	12°	6	50	10.79	11.27	11.80	12.38	13.74
07-00100-30150		15	6	2.85	12°	6	60	16.01	16.72	17.50	18.37	20.37
07-00100-30200		20	6	2.85	12°	6	60	21.22	22.17	23.21	24.35	27.01
07-00100-30250		25	6	2.85	12°	6	70	26.43	27.62	28.91	30.33	Free
07-00100-40100	4	10	8	3.8	12°	6	50	10.91	11.40	11.94	12.52	13.89
07-00100-40150		15	8	3.8	12°	6	60	16.13	16.85	17.64	18.51	Free
07-00100-40200		20	8	3.8	12°	6	60	21.34	22.30	23.34	24.49	Free
07-00100-40250		25	8	3.8	12°	6	70	26.56	27.74	29.04	Free	Free
07-00100-40300		30	8	3.8	12°	6	70	31.77	33.19	34.75	Free	Free
07-00100-50150	5	15	10	4.8	12°	6	50	16.13	16.85	17.64	Free	Free
07-00100-50200		20	10	4.8	12°	6	60	21.34	22.30	Free	Free	Free
07-00100-50250		25	10	4.8	12°	6	60	26.56	27.74	Free	Free	Free
07-00100-50300		30	10	4.8	12°	6	70	31.77	Free	Free	Free	Free
07-00100-60150	6	15	12	5.8	–	6	50	Free	Free	Free	Free	Free
07-00100-60200		20	12	5.8	–	6	60	Free	Free	Free	Free	Free
07-00100-60300		30	12	5.8	–	6	70	Free	Free	Free	Free	Free
07-00100-60500		50	12	5.8	–	6	90	Free	Free	Free	Free	Free

DHR237

Recommended Milling Conditions

Copper Electrode Milling

Aluminium Alloy N

Copper Copper Tungsten N

Resin O

Long Neck Square Coating

Work Material			Copper							Copper Tungsten (W70%-Cu30%)						
			Side Milling				Slotting			Side Milling				Slotting		
Dia.	Under Neck Length	L/D	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm
0.1	0.3	3	40,000	180	0.1	0.006	40,000	170	0.01	30,000	120	0.05	0.004	30,000	110	0.006
	0.5	5	40,000	140	0.1	0.004	40,000	130	0.007	30,000	80	0.05	0.003	30,000	70	0.004
	0.75	7.5	40,000	100	0.1	0.003	40,000	90	0.005	30,000	50	0.05	0.003	30,000	45	0.003
	1	10	40,000	80	0.1	0.003	40,000	70	0.003	30,000	40	0.05	0.003	30,000	35	0.002
0.2	0.5	2.5	40,000	400	0.2	0.008	40,000	380	0.02	30,000	260	0.1	0.006	30,000	250	0.01
	1	5	40,000	350	0.2	0.006	40,000	320	0.015	30,000	220	0.1	0.004	30,000	200	0.008
	1.5	7.5	40,000	300	0.2	0.004	40,000	250	0.01	30,000	200	0.1	0.003	30,000	130	0.005
	2	10	40,000	250	0.2	0.003	40,000	180	0.005	30,000	150	0.1	0.003	30,000	90	0.003
0.3	1	3.3	40,000	500	0.3	0.01	40,000	450	0.035	30,000	350	0.15	0.008	30,000	280	0.014
	1.5	5	40,000	450	0.3	0.008	40,000	400	0.025	30,000	300	0.15	0.006	30,000	250	0.012
	2	6.7	40,000	380	0.3	0.006	40,000	350	0.017	30,000	250	0.15	0.004	30,000	220	0.008
	3	10	35,000	300	0.3	0.004	35,000	250	0.01	30,000	200	0.15	0.003	30,000	150	0.005
0.4	1	2.5	40,000	700	0.4	0.02	40,000	650	0.045	30,000	500	0.2	0.014	30,000	450	0.025
	2	5	40,000	600	0.4	0.015	40,000	550	0.03	30,000	450	0.2	0.01	30,000	400	0.02
	3	7.5	35,000	500	0.4	0.01	35,000	450	0.02	26,000	350	0.2	0.007	26,000	300	0.015
	4	10	28,000	350	0.4	0.006	28,000	300	0.015	24,000	220	0.2	0.004	22,000	200	0.01
0.5	1.5	3	40,000	900	0.5	0.025	40,000	800	0.07	30,000	650	0.3	0.02	30,000	550	0.05
	2	4	38,000	800	0.5	0.02	35,000	700	0.055	28,000	550	0.3	0.016	26,000	450	0.04
	3	6	35,000	700	0.5	0.015	32,000	600	0.04	26,000	500	0.3	0.012	25,000	400	0.03
	4	8	28,000	550	0.5	0.008	26,000	500	0.03	24,000	400	0.3	0.005	22,000	300	0.02
	6	12	18,000	350	0.5	0.005	18,000	300	0.015	15,000	220	0.3	0.003	15,000	180	0.01
0.6	2	3.3	38,000	1,000	0.6	0.025	35,000	850	0.1	28,000	700	0.4	0.018	26,000	650	0.08
	3	5	32,000	800	0.6	0.02	30,000	700	0.08	24,000	550	0.4	0.014	22,000	500	0.06
	4	6.7	28,000	700	0.6	0.015	26,000	600	0.06	22,000	500	0.4	0.012	20,000	400	0.04
	6	10	20,000	450	0.6	0.01	20,000	400	0.03	18,000	350	0.4	0.008	16,000	300	0.02
0.8	3	3.8	30,000	1,300	0.8	0.04	28,000	1,200	0.15	24,000	1,000	0.6	0.03	22,000	900	0.1
	4	5	26,000	1,100	0.8	0.03	24,000	1,000	0.12	22,000	850	0.6	0.02	18,000	650	0.08
	6	7.5	22,000	900	0.8	0.02	18,000	650	0.08	16,000	600	0.6	0.014	14,000	500	0.06
	8	10	16,000	600	0.8	0.01	16,000	500	0.05	14,000	450	0.6	0.01	13,000	350	0.03
1	3	3	24,000	2,200	1	0.06	24,000	2,000	0.22	20,000	1,600	0.8	0.04	20,000	1,400	0.16
	4	4	24,000	2,000	1	0.05	22,000	1,800	0.2	20,000	1,400	0.8	0.035	18,000	1,100	0.14
	5	5	22,000	1,700	1	0.04	20,000	1,500	0.16	18,000	1,200	0.8	0.028	16,000	950	0.12
	6	6	20,000	1,500	1	0.03	18,000	1,200	0.14	16,000	1,000	0.8	0.02	14,000	800	0.1
	8	8	16,000	1,200	1	0.025	15,000	1,000	0.1	14,000	800	0.8	0.018	12,000	650	0.08
	10	10	14,000	1,000	1	0.02	12,000	800	0.07	12,000	650	0.8	0.014	11,000	550	0.05
	12	12	10,000	700	1	0.01	10,000	650	0.05	9,000	450	0.8	0.007	8,000	400	0.035
1.5	4	2.7	20,000	2,500	1.5	0.08	18,000	2,000	0.35	17,000	1,850	1	0.06	15,000	1,300	0.22
	6	4	18,000	2,200	1.5	0.08	16,000	1,800	0.3	15,000	1,600	1	0.05	14,000	1,200	0.2
	8	5.3	16,000	1,700	1.5	0.06	14,000	1,400	0.25	13,000	1,200	1	0.04	12,000	950	0.18
	10	6.7	14,000	1,450	1.5	0.05	12,000	1,150	0.2	11,000	950	1	0.035	10,000	750	0.15
	12	8	12,000	1,200	1.5	0.04	11,000	1,000	0.15	10,000	800	1	0.03	9,000	650	0.1
	16	10.7	10,000	900	1.5	0.02	10,000	800	0.08	8,000	600	1	0.015	7,000	500	0.06

Work Material			Copper							Copper Tungsten (W70%-Cu30%)						
			Side Milling				Slotting			Side Milling				Slotting		
Dia.	Under Neck Length	L/D	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut
			min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm	min^{-1}	mm/min	ap mm	ae mm	min^{-1}	mm/min	ap mm
2	6	3	18,000	2,500	2	0.1	16,000	2,200	0.45	14,000	1,800	1.5	0.08	12,000	1,500	0.3
	8	4	16,000	2,200	2	0.09	14,000	1,900	0.4	12,000	1,500	1.5	0.07	12,000	1,400	0.28
	10	5	14,000	1,900	2	0.08	12,000	1,600	0.35	10,000	1,200	1.5	0.06	10,000	1,000	0.24
	12	6	12,000	1,600	2	0.07	11,000	1,400	0.28	10,000	1,100	1.5	0.05	9,000	900	0.2
	14	7	11,000	1,400	2	0.06	10,000	1,200	0.24	9,000	950	1.5	0.04	8,000	800	0.16
	16	8	10,000	1,200	2	0.045	9,000	1,000	0.18	8,000	800	1.5	0.03	7,000	650	0.12
	20	10	9,000	1,000	2	0.03	8,000	850	0.12	7,000	700	1.5	0.02	6,000	550	0.08
2.5	6	2.4	17,000	2,450	2.5	0.13	15,000	2,100	0.55	13,000	1,800	2	0.1	12,000	1,600	0.4
	8	3.2	16,000	2,300	2.5	0.12	14,000	1,950	0.5	12,000	1,650	2	0.09	11,000	1,450	0.35
	10	4	15,000	2,100	2.5	0.1	13,000	1,700	0.4	11,000	1,500	2	0.07	10,000	1,300	0.3
	12	4.8	14,000	1,900	2.5	0.08	12,000	1,550	0.35	10,000	1,300	2	0.065	9,000	1,100	0.25
	14	5.6	13,000	1,700	2.5	0.07	11,000	1,350	0.3	10,000	1250	2	0.06	9,000	1050	0.2
	16	6.4	11,000	1,400	2.5	0.06	10,000	1,200	0.25	9,000	1100	2	0.05	8,000	850	0.15
	20	8	10,000	1,250	2.5	0.05	9,000	1000	0.2	8,000	950	2	0.04	7,000	700	0.12
3	8	2.7	16,000	2,400	3	0.15	14,000	2,000	0.75	12,000	1,800	2.4	0.11	11,000	1500	0.55
	10	3.3	16,000	2,400	3	0.12	14,000	2,000	0.7	12,000	1,800	2.4	0.08	11,000	1,500	0.5
	15	5	14,000	2,100	3	0.1	12,000	1,600	0.6	11,000	1,600	2.4	0.07	9,000	1,100	0.4
	20	6.7	11,000	1,500	3	0.07	10,000	1,200	0.4	9,000	1,100	2.4	0.05	8,000	900	0.3
	25	8.3	10,000	1,300	3	0.05	9,000	1,000	0.2	8,000	900	2.4	0.03	7,000	700	0.15
4	10	2.5	12,000	2,400	4	0.2	10,000	2,000	1	9,000	1,600	3	0.15	8,000	1,400	0.8
	15	3.8	12,000	2,400	4	0.2	10,000	2,000	0.9	9,000	1,600	3	0.15	8,000	1,400	0.7
	20	5	10,000	2,000	4	0.15	8,000	1,600	0.7	8,000	1,400	3	0.1	6,000	1,000	0.5
	25	6.3	9,000	1,700	4	0.1	8,000	1,500	0.5	7,000	1,200	3	0.07	6,000	1,000	0.3
	30	7.5	8,000	1,500	4	0.07	7,000	1,300	0.3	6,000	1,000	3	0.05	5,000	800	0.2
5	15	3	9,500	2,600	5	0.25	8,500	2,200	1.1	7,000	1,800	3.5	0.18	6,000	1,400	0.8
	20	4	8,000	2,150	5	0.2	7,000	1,750	1	6,500	1,650	3.5	0.15	5,500	1,150	0.6
	25	5	7,000	1,800	5	0.15	6,000	1,400	0.9	5,800	1,300	3.5	0.12	4,800	1,000	0.5
	30	6	6,000	1,500	5	0.1	5,000	1,100	0.7	5,000	1,000	3.5	0.1	4,000	830	0.4
6	15	2.5	8,000	2,750	6	0.3	7,000	2,350	1.2	6,000	1,950	4	0.2	5,000	1400	0.9
	20	3.3	7,000	2,400	6	0.3	6,000	2,000	1.2	5,000	1,600	4	0.2	4,500	1,200	0.8
	30	5	5,000	1,600	6	0.2	4,000	1,200	1	4,000	1,100	4	0.15	3,500	900	0.6
	50	8.3	3,500	800	6	0.1	3,000	650	0.4	3,000	600	4	0.07	3,000	500	0.25

Notes

※1 Recommend to use the milling condition as just reference. Adjust milling conditions according to machining shape and machine status.
※2 Depth of Cut : ap=Axial Depth of Cut / ae=Radial Depth of Cut.
※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine.
※4 Water-insoluble fluid is recommended.

N Aluminium Alloy

N Copper Copper Tungsten

O Resin

Long Neck Square Coating