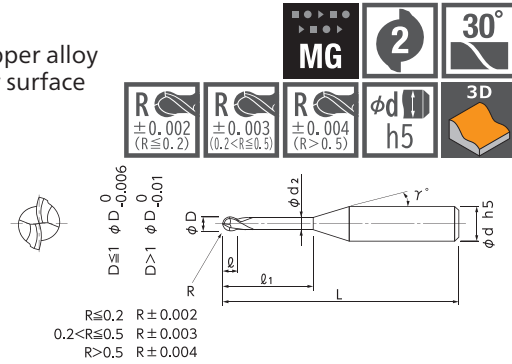
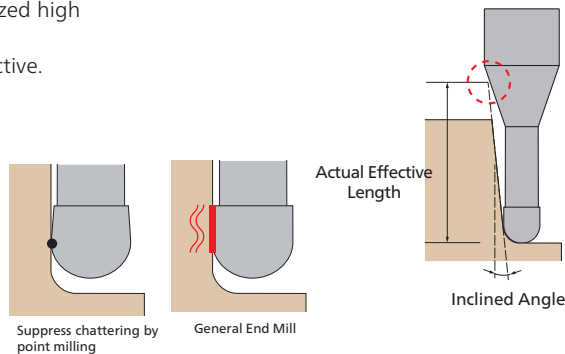


Long neck ball end mill specialized for machining copper alloy
 Sharpe cutting edge makes less burr and high quality surface



- Long neck ball end mill specialized for machining copper electrode.
- Sharp edge shearing ability and DLC coating realized high quality and stable a long life machining.
- Machining copper tungsten electrodes is also effective.

※ R accuracy of DRB230 is based on a half value.



Unit : mm

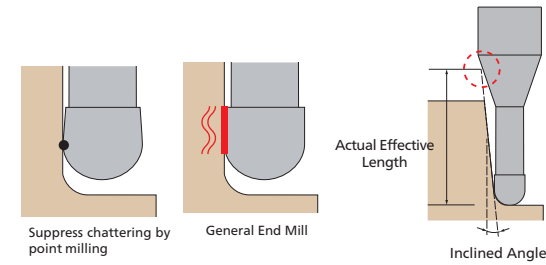
Code No.	Radius (R)	Under Neck Length (ℓ ₁)	Length of Cut (ℓ)	Dia. (D)	Neck Dia. (d ₂)	Neck Taper Angle (γ)	Shank Dia. (d)	Overall Length (L)	Actual effective length depending on inclined angle of workpiece				
									30°	1°	1°30'	2°	3°
07-00530-00503	R0.05	0.3	0.07	0.1	0.085	12°	4	45	0.34	0.36	0.37	0.39	0.42
07-00530-00505		0.5	0.07	0.1	0.085	12°	4	45	0.55	0.57	0.60	0.63	0.69
07-00530-00703	R0.075	0.3	0.1	0.15	0.13	12°	4	45	0.35	0.37	0.38	0.40	0.43
07-00530-00705		0.5	0.1	0.15	0.13	12°	4	45	0.56	0.58	0.61	0.64	0.70
07-00530-00710	R0.1	1	0.1	0.15	0.13	12°	4	45	1.08	1.13	1.18	1.23	1.36
07-00530-01005		0.5	0.15	0.2	0.18	12°	4	45	0.56	0.58	0.61	0.63	0.69
07-00530-01007	R0.1	0.75	0.15	0.2	0.18	12°	4	45	0.82	0.85	0.89	0.93	1.02
07-00530-01010		1	0.15	0.2	0.18	12°	4	45	1.08	1.13	1.18	1.23	1.35
07-00530-01015		1.5	0.15	0.2	0.18	12°	4	45	1.60	1.67	1.75	1.83	2.02
07-00530-01020		2	0.15	0.2	0.18	12°	4	45	2.13	2.22	2.32	2.43	2.68
07-00530-01505	R0.15	0.5	0.2	0.3	0.28	12°	4	45	0.56	0.58	0.60	0.62	0.67
07-00530-01510		1	0.2	0.3	0.28	12°	4	45	1.08	1.12	1.17	1.22	1.34
07-00530-01515		1.5	0.2	0.3	0.28	12°	4	45	1.60	1.67	1.74	1.82	2.00
07-00530-01520	R0.2	2	0.2	0.3	0.28	12°	4	45	2.12	2.21	2.31	2.42	2.66
07-00530-02005		0.5	0.3	0.4	0.37	12°	4	45	0.58	0.60	0.62	0.64	0.69
07-00530-02010		1	0.3	0.4	0.37	12°	4	45	1.10	1.14	1.19	1.24	1.35
07-00530-02015		1.5	0.3	0.4	0.37	12°	4	45	1.62	1.69	1.76	1.84	2.02
07-00530-02020		2	0.3	0.4	0.37	12°	4	45	2.15	2.23	2.33	2.43	2.68
07-00530-02030		3	0.3	0.4	0.37	12°	4	45	3.19	3.32	3.47	3.63	4.01
07-00530-02040	R0.2	4	0.3	0.4	0.37	12°	4	45	4.23	4.41	4.61	4.83	5.33
07-00530-02050		5	0.3	0.4	0.37	12°	4	45	5.27	5.50	5.75	6.02	6.66
07-00530-02060		6	0.3	0.4	0.37	12°	4	45	6.32	6.59	6.89	7.22	7.99

How to Order

When you order, indicate DRB230 (R)×(ℓ₁). ※ (γ) is reference value.

Machining case

S-029

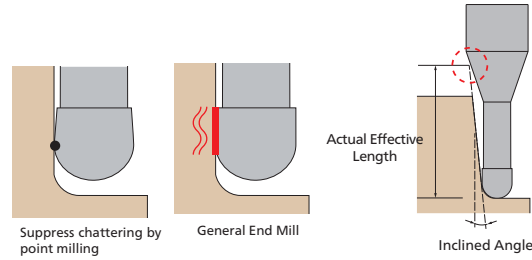


Unit : mm

Code No.	Radius (R)	Under Neck Length (ℓ ₁)	Length of Cut (ℓ)	Dia. (D)	Neck Dia. (d ₂)	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°	
07-00530-02510	R0.25	1	0.35	0.5	0.46	12°	4	45	1.13	1.16	1.21	1.26	1.37	
07-00530-02515		1.5	0.35	0.5	0.46	12°	4	45	1.65	1.71	1.78	1.85	2.03	
07-00530-02520		2	0.35	0.5	0.46	12°	4	45	2.17	2.25	2.35	2.45	2.69	
07-00530-02530		3	0.35	0.5	0.46	12°	4	45	3.21	3.34	3.49	3.65	4.02	
07-00530-02540		4	0.35	0.5	0.46	12°	4	45	4.25	4.43	4.63	4.85	5.35	
07-00530-02550		5	0.35	0.5	0.46	12°	4	45	5.30	5.52	5.77	6.04	6.68	
07-00530-02560	R0.3	6	0.35	0.5	0.46	12°	4	45	6.34	6.61	6.91	7.24	8.00	
07-00530-03010		1	0.45	0.6	0.56	12°	4	45	1.12	1.16	1.20	1.25	1.35	
07-00530-03015		1.5	0.45	0.6	0.56	12°	4	45	1.64	1.71	1.77	1.84	2.02	
07-00530-03020		2	0.45	0.6	0.56	12°	4	45	2.17	2.25	2.34	2.44	2.68	
07-00530-03030		3	0.45	0.6	0.56	12°	4	45	3.21	3.34	3.48	3.64	4.01	
07-00530-03040		4	0.45	0.6	0.56	12°	4	45	4.25	4.43	4.62	4.84	5.33	
07-00530-03050		5	0.45	0.6	0.56	12°	4	45	5.29	5.52	5.76	6.03	6.66	
07-00530-03060		6	0.45	0.6	0.56	12°	4	45	6.34	6.61	6.90	7.23	7.99	
07-00530-03080		8	0.45	0.6	0.56	12°	4	45	8.42	8.79	9.18	9.62	10.64	
07-00530-03100		10	0.45	0.6	0.56	12°	4	50	10.51	10.97	11.47	12.02	13.30	
07-00530-04015	R0.4	1.5	0.6	0.8	0.76	12°	4	45	1.64	1.70	1.76	1.83	1.98	
07-00530-04020		2	0.6	0.8	0.76	12°	4	45	2.16	2.24	2.33	2.42	2.65	
07-00530-04030		3	0.6	0.8	0.76	12°	4	45	3.20	3.33	3.47	3.62	3.97	
07-00530-04040		4	0.6	0.8	0.76	12°	4	45	4.25	4.42	4.61	4.82	5.30	
07-00530-04050		5	0.6	0.8	0.76	12°	4	45	5.29	5.51	5.75	6.01	6.63	
07-00530-04060		6	0.6	0.8	0.76	12°	4	45	6.33	6.60	6.89	7.21	7.96	
07-00530-04080		8	0.6	0.8	0.76	12°	4	45	8.42	8.78	9.17	9.60	10.61	
07-00530-04100		10	0.6	0.8	0.76	12°	4	50	10.50	10.96	11.45	12.00	13.26	
07-00530-05020		R0.5	2	0.75	1	0.95	12°	4	45	2.18	2.26	2.34	2.43	2.65
07-00530-05030			3	0.75	1	0.95	12°	4	45	3.22	3.35	3.48	3.63	3.97
07-00530-05040	4		0.75	1	0.95	12°	4	45	4.27	4.44	4.62	4.83	5.30	
07-00530-05050	5		0.75	1	0.95	12°	4	45	5.31	5.53	5.76	6.02	6.63	
07-00530-05060	6		0.75	1	0.95	12°	4	45	6.35	6.62	6.90	7.22	7.96	
07-00530-05080	8		0.75	1	0.95	12°	4	45	8.44	8.79	9.18	9.61	10.61	
07-00530-05100	10		0.75	1	0.95	12°	4	45	10.52	10.97	11.46	12.01	13.26	
07-00530-05120	12		0.75	1	0.95	12°	4	45	12.61	13.15	13.75	14.40	15.92	
07-00530-05140	14		0.75	1	0.95	12°	4	50	14.70	15.33	16.03	16.79	18.57	
07-00530-05160	16		0.75	1	0.95	12°	4	50	16.78	17.51	18.31	19.18	21.23	
07-00530-07504	R0.75	4	1.1	1.5	1.45	12°	4	50	4.26	4.41	4.59	4.78	5.22	
07-00530-07506		6	1.1	1.5	1.45	12°	4	50	6.34	6.59	6.87	7.17	7.88	
07-00530-07508		8	1.1	1.5	1.45	12°	4	50	8.43	8.77	9.15	9.56	10.53	
07-00530-07510		10	1.1	1.5	1.45	12°	4	50	10.51	10.95	11.43	11.96	13.18	
07-00530-07512		12	1.1	1.5	1.45	12°	4	50	12.60	13.13	13.71	14.35	15.84	
07-00530-07514		14	1.1	1.5	1.45	12°	4	50	14.69	15.31	15.99	16.74	18.49	
07-00530-07516		16	1.1	1.5	1.45	12°	4	50	16.77	17.49	18.27	19.14	21.15	
07-00530-07518		18	1.1	1.5	1.45	12°	4	50	18.86	19.67	20.55	21.53	23.80	

- Aluminium Alloy N
- Copper N
- Copper Tungsten N
- Resin O

Long Neck Ball Coating



Unit : mm

Code No.	Radius (R)	Under Neck Length (ℓ ₁)	Length of Cut (ℓ)	Dia. (D)	Neck Dia. (d ₂)	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°
07-00530-10030	R1	3	1.5	2	1.94	12°	4	50	3.23	3.33	3.44	3.56	3.85
07-00530-10040		4	1.5	2	1.94	12°	4	50	4.27	4.42	4.58	4.76	5.17
07-00530-10060		6	1.5	2	1.94	12°	4	50	6.36	6.60	6.86	7.15	7.83
07-00530-10080		8	1.5	2	1.94	12°	4	50	8.44	8.78	9.14	9.54	10.48
07-00530-10100		10	1.5	2	1.94	12°	4	50	10.53	10.95	11.42	11.94	13.14
07-00530-10120		12	1.5	2	1.94	12°	4	50	12.61	13.13	13.70	14.33	15.79
07-00530-10140		14	1.5	2	1.94	12°	4	50	14.70	15.31	15.98	16.72	18.45
07-00530-10160		16	1.5	2	1.94	12°	4	50	16.78	17.49	18.27	19.12	Free
07-00530-10200		20	1.5	2	1.94	12°	4	60	20.96	21.85	22.83	23.90	Free
07-00530-10250		25	1.5	2	1.94	12°	4	60	26.17	27.30	28.53	Free	Free
07-00530-15060	R1.5	6	2.5	3	2.85	12°	6	60	6.56	6.78	7.03	7.31	7.95
07-00530-15080		8	2.5	3	2.85	12°	6	60	8.64	8.96	9.31	9.70	10.60
07-00530-15100		10	2.5	3	2.85	12°	6	60	10.73	11.14	11.59	12.09	13.26
07-00530-15120		12	2.5	3	2.85	12°	6	60	12.81	13.32	13.88	14.49	15.91
07-00530-15150		15	2.5	3	2.85	12°	6	70	15.94	16.59	17.30	18.08	19.89
07-00530-15200		20	2.5	3	2.85	12°	6	70	21.16	22.04	23.00	24.06	26.53
07-00530-15250		25	2.5	3	2.85	12°	6	70	26.37	27.48	28.70	30.04	Free
07-00530-15300	30	2.5	3	2.85	12°	6	70	31.58	32.93	34.40	36.03	Free	
07-00530-20100	R2	10	3	4	3.8	12°	6	60	10.83	11.22	11.66	12.14	13.25
07-00530-20120		12	3	4	3.8	12°	6	60	12.91	13.40	13.94	14.53	15.91
07-00530-20150		15	3	4	3.8	12°	6	60	16.04	16.67	17.36	18.12	19.89
07-00530-20200		20	3	4	3.8	12°	6	60	21.26	22.12	23.06	24.10	Free
07-00530-20250		25	3	4	3.8	12°	6	70	26.47	27.57	28.77	30.09	Free
07-00530-20300		30	3	4	3.8	12°	6	70	31.68	33.01	34.47	Free	Free
07-00530-20400		40	3	4	3.8	12°	6	80	42.11	43.91	Free	Free	Free
07-00530-30200	R3	20	6	6	5.7	-	6	70	Free	Free	Free	Free	Free
07-00530-30250		25	6	6	5.7	-	6	70	Free	Free	Free	Free	Free
07-00530-30300		30	6	6	5.7	-	6	80	Free	Free	Free	Free	Free
07-00530-30400		40	6	6	5.7	-	6	80	Free	Free	Free	Free	Free
07-00530-30500		50	6	6	5.7	-	6	100	Free	Free	Free	Free	Free

How to Order

When you order, indicate DRB230 (R)×(ℓ₁). ※(γ) is reference value.

Machining case

S-029



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

 Long Neck Ball
Coating

Recommended Milling Conditions

Recommended Milling Conditions

Work Material			Copper				Copper Tungsten (W70% - Cu30%)			
Radius	Under Neck Length	L/D	Depth of Cut		Feed mm/min	Spindle Speed min ⁻¹	Depth of Cut		Feed mm/min	Spindle Speed min ⁻¹
			ap mm	ae mm			ap mm	ae mm		
0.05	0.3	3	0.01	0.01	200	40,000	0.008	0.008	150	30,000
	0.5	5	0.007	0.007	150	40,000	0.005	0.005	100	30,000
0.075	0.3	2	0.015	0.02	250	40,000	0.01	0.015	180	30,000
	0.5	3.3	0.015	0.02	200	40,000	0.008	0.015	150	30,000
0.1	1	6.7	0.007	0.01	150	40,000	0.005	0.008	100	30,000
	0.5	2.5	0.025	0.05	500	40,000	0.02	0.04	350	30,000
	0.75	3.75	0.025	0.05	450	40,000	0.02	0.04	300	30,000
	1	5	0.02	0.04	400	40,000	0.015	0.03	250	30,000
0.15	1.5	7.5	0.015	0.03	300	40,000	0.008	0.02	150	30,000
	2	10	0.008	0.015	200	40,000	0.005	0.01	100	30,000
	0.5	1.7	0.03	0.07	700	40,000	0.03	0.07	500	30,000
	1	3.3	0.03	0.07	700	40,000	0.03	0.07	500	30,000
0.2	1.5	5	0.025	0.05	500	40,000	0.02	0.05	300	30,000
	2	6.7	0.015	0.03	400	40,000	0.01	0.02	200	30,000
	0.5	1.3	0.05	0.1	1,000	40,000	0.04	0.08	700	30,000
	1	2.5	0.05	0.1	1,000	40,000	0.04	0.08	700	30,000
0.25	1.5	3.8	0.04	0.08	1,000	40,000	0.03	0.06	700	30,000
	2	5	0.035	0.06	600	40,000	0.02	0.05	350	30,000
	3	7.5	0.02	0.04	400	30,000	0.01	0.03	200	25,000
	4	10	0.008	0.015	250	25,000	0.005	0.01	100	18,000
	5	12.5	0.005	0.015	200	25,000	0.005	0.01	80	16,000
	6	15	0.005	0.015	150	22,000	0.005	0.01	70	14,000
	1	2	0.08	0.15	800	40,000	0.08	0.15	500	30,000
	1.5	3	0.08	0.15	800	40,000	0.08	0.15	500	30,000
0.3	2	4	0.08	0.15	800	40,000	0.08	0.15	500	30,000
	3	6	0.06	0.1	600	35,000	0.06	0.08	400	27,000
	4	8	0.04	0.08	400	30,000	0.025	0.05	200	22,000
	5	10	0.02	0.04	300	25,000	0.01	0.02	150	18,000
	6	12	0.015	0.03	250	22,000	0.005	0.01	120	16,000
	1	1.7	0.12	0.2	1,600	40,000	0.12	0.2	1,200	30,000
	1.5	2.5	0.12	0.2	1,600	40,000	0.12	0.2	1,200	30,000
	2	3.3	0.12	0.2	1,600	40,000	0.12	0.2	1,200	30,000
0.4	3	5	0.1	0.14	1,000	40,000	0.08	0.1	700	30,000
	4	6.7	0.07	0.1	700	30,000	0.04	0.06	400	25,000
	5	8.3	0.05	0.08	600	27,000	0.02	0.04	300	22,000
	6	10	0.04	0.06	500	25,000	0.01	0.03	200	20,000
	8	13.3	0.015	0.05	400	22,000	0.005	0.02	150	18,000
	10	16.7	0.015	0.03	350	20,000	0.005	0.01	120	16,000
	1.5	1.9	0.15	0.3	2,000	40,000	0.15	0.3	1,400	30,000
	2	2.5	0.15	0.3	2,000	40,000	0.15	0.3	1,400	30,000
0.5	3	3.8	0.15	0.3	2,000	40,000	0.15	0.3	1,400	30,000
	4	5	0.12	0.2	1,600	35,000	0.1	0.16	1,000	27,000
	5	6.3	0.1	0.18	1,200	32,000	0.08	0.12	750	24,000
	6	7.5	0.08	0.15	1,000	30,000	0.05	0.1	500	20,000
	8	10	0.05	0.06	700	22,000	0.02	0.025	300	16,000
	10	12.5	0.02	0.05	600	20,000	0.01	0.02	200	14,000
	2	2	0.25	0.4	2,800	40,000	0.25	0.4	2,000	30,000
	3	3	0.25	0.4	2,800	40,000	0.25	0.4	2,000	30,000
0.5	4	4	0.2	0.4	2,400	40,000	0.2	0.4	1,600	30,000
	5	5	0.16	0.3	2,000	35,000	0.12	0.25	1,400	27,000
	6	6	0.14	0.3	1,600	30,000	0.1	0.25	1,000	25,000

Work Material			Copper				Copper Tungsten (W70% - Cu30%)			
Radius	Under Neck Length	L/D	Depth of Cut		Feed mm/min	Spindle Speed min ⁻¹	Depth of Cut		Feed mm/min	Spindle Speed min ⁻¹
			ap mm	ae mm			ap mm	ae mm		
0.5	8	8	0.12	0.2	1,000	25,000	0.06	0.1	500	18,000
	10	10	0.08	0.15	800	20,000	0.03	0.05	300	16,000
	12	12	0.06	0.1	600	16,000	0.015	0.04	200	12,000
	14	14	0.04	0.08	500	14,000	0.01	0.04	160	10,000
0.75	16	16	0.02	0.06	400	12,000	0.005	0.03	120	8,000
	4	2.7	0.3	0.6	2,800	35,000	0.3	0.6	2,200	30,000
	6	4	0.3	0.6	2,400	30,000	0.3	0.6	1,800	25,000
	8	5.3	0.25	0.5	1,800	25,000	0.2	0.4	1,200	20,000
	10	6.7	0.2	0.4	1,400	20,000	0.15	0.3	800	16,000
	12	8	0.15	0.3	1,000	16,000	0.1	0.2	500	12,000
	14	9.3	0.12	0.2	800	14,000	0.08	0.1	350	10,000
	16	10.7	0.1	0.15	650	12,000	0.05	0.08	280	9,000
1	18	12	0.08	0.12	500	10,000	0.02	0.06	200	8,000
	3	1.5	0.45	0.8	4,000	30,000	0.45	0.8	2,400	25,000
	4	2	0.45	0.8	4,000	30,000	0.45	0.8	2,400	22,000
	6	3	0.45	0.8	3,000	27,000	0.45	0.8	1,800	20,000
	8	4	0.4	0.8	2,400	25,000	0.4	0.8	1,600	18,000
	10	5	0.3	0.6	2,000	22,000	0.25	0.5	1,400	16,000
	12	6	0.3	0.6	1,400	16,000	0.25	0.5	900	12,000
	14	7	0.25	0.6	1,200	14,000	0.2	0.5	700	10,000
	16	8	0.25	0.5	1,000	12,000	0.12	0.25	500	9,000
	20	10	0.15	0.3	800	10,000	0.06	0.1	350	8,000
	25	12.5	0.08	0.15	600	8,000	0.03	0.05	200	6,000
	1.5	6	2	0.7	1.5	3,400	20,000	0.6	1.2	2,400
8		2.7	0.7	1.5	3,400	20,000	0.6	1.2	2,400	16,000
10		3.3	0.7	1.5	3,400	20,000	0.6	1.2	2,400	16,000
12		4	0.6	1.2	3,400	20,000	0.6	1	2,400	16,000
15		5	0.6	1	3,000	18,000	0.5	0.8	2,000	14,000
20		6.7	0.5	0.8	2,400	16,000	0.4	0.6	1,400	12,000
25		8.3	0.4	0.6	1,800	12,000	0.2	0.3	900	10,000
30		10	0.2	0.4	1,200	8,000	0.08	0.15	500	6,000
2	10	2.5	1	1.6	4,000	16,000	0.8	1.6	2,800	12,000
	12	3	1	1.6	3,600	16,000	0.8	1.6	2,800	12,000
	15	3.8	0.8	1.6	3,400	16,000	0.8	1.6	2,400	12,000
	20	5	0.8	1.6	3,000	14,000	0.8	1.6	2,000	10,000
	25	6.3	0.6	1.2	3,000	14,000	0.5	1	2,000	10,000
	30	7.5	0.5	1	2,400	12,000	0.3	0.5	1,200	7,000
	40	10	0.4	0.8	1,200	8,000	0.15	0.3	500	5,000
	3	20	3.3	1	2	3,600	12,000	1	2	2,400
25		4.2	1	1.8	3,300	11,000	0.8	1.2	2,100	8,000
30		5	0.8	1.6	3,000	10,000	0.4	0.8	1,800	7,000
40		6.7	0.6	1.2	2,400	8,000	0.3	0.6	1,250	5,500
50		8.3	0.5	1	1,800	6,000	0.25	0.5	800	4,000
Notes	※1 These recommended cutting conditions indicate just reference. It should be adjusted according to milling shape and machine type. ※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.									

