

铜电极加工用长颈铣刀系列

Long Neck End Mill for Copper Electrode

DHR237
DRB230
DHR237R

共 321 种规格

Total 321 sizes

N



无与伦比的长寿命和高切削性能,可抑制毛刺,实现高品质的加工面

Realized overwhelming long tool life and high quality burrless cutting performance

铜电极加工用铣刀系列规格从193种大幅扩大至321种

End Mill for Copper Electrode series with great size expansion from all 193 sizes to all 321 sizes.



74 种规格
Total 74 sizes
长颈平底铣刀
Long Neck Square End Mill

DHR237
 $\phi 0.1 \sim \phi 6$



94 种规格
Total 94 sizes
长颈球头铣刀
Long Neck Ball End Mill

DRB230
R 0.05 ~ R 3



153 种规格
Total 153 sizes
长颈圆鼻铣刀
Long Neck Radius End Mill

DHR237R
 $\phi 0.2 \times R 0.02 \sim \phi 6 \times R 1$

特点

Features

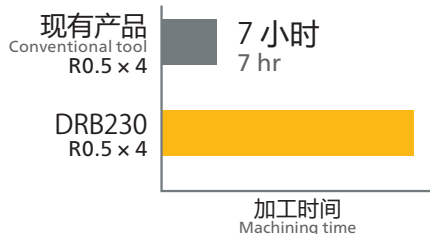
特点 1	长寿命 Long tool life	涂层 Coating	DLC 涂层 DLC COATING
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最适合用于铜、铜合金加工的DLC涂层,相比现有产品可大幅提升刀具寿命。

DLC Coating optimized for copper and copper alloy machining increases tool life compare to conventional tool.

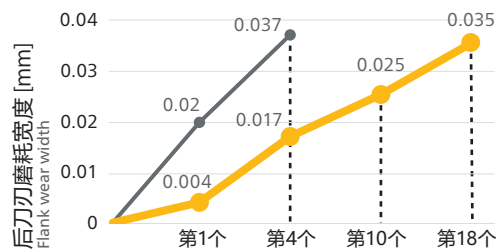
与现有产品的刀具寿命比较

Tool life comparison with conventional tool



寿命增加4.5倍
(与现有产品比较)

4.5 times longer tool life than conventional tool



后刀刀磨损宽度变化量 Flank wear progress



加工材料: 紫铜 (TPC)

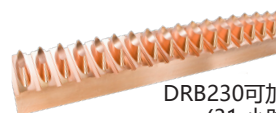
Material: Tough pitch copper

冷却方式: 水溶性切削油

Coolant: Water-soluble fluid

	加工第4个后 After machining 4pcs 7 小时 7hr	加工第10个后 After machining 10pcs 17 小时 30 分 17hr 30min	加工第18个后 After machining 18pcs 31 小时 30 分 31hr 30min
现有产品 Conventional tool R0.5 x 4			
DRB230 R0.5 x 4			

因为磨损量大,仅加工到第4个(7个小时)就无法继续加工
Ended at the fourth working piece by excess wear width.



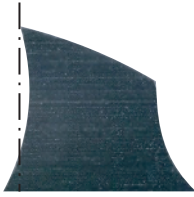
DRB230可加工到第18个(31小时30分)
DRB230 machined 18pieces.
(31 hr 30 min)

特点 2 **抑制毛刺** Burr suppression **形状 锋利的刃口形状** Shape Sharp cutting edge

2-1 刃口形状 Shape of cutting edge

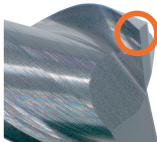

相比起现有产品, 采用锋利刃口设计, 更有效抑制毛刺和刀具歪斜, 实现高精度、高品质的加工面。
Adoption of sharper cutting edge to realize high precision machining by suppressing burr and deflection.

锋利的刃口
Sharp cutting edge




铜电极加工用铣刀系列
Copper Electrode series

长颈平底铣刀 DHR237
Long Neck Square





采用微小的尖角保护设计, 保持切削性能的同时增强角部的强度
Small gash land for cutting performance and better strength

与一般刃口形状比较
Comparison with general cutting edge

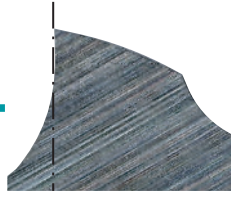


长颈球头铣刀 DRB230
Long Neck Ball




提高切削性能并可实现高精度和高品质加工面的强螺旋角无段差刃口形状
Smooth spiral radius end for high cutting quality and accuracy

一般刃口形状
General cutting edge



长颈圆鼻铣刀 DHR237R
Long Neck Radius



高精度和高性能的R角刃口形状, 可获得高品质的加工面
Corner part with high shearing ability realizes high precision machining surface.

2-2 外周刃螺旋角 Helix angle of peripheral flutes

采用强螺旋角可提升切削性能。但若螺旋角过强会增加刃部与加工面的接触点, 进而造成加工面的起伏, 所以采用37.5°螺旋角。
High helix angle improves shearing ability. Specialized 37.5° helix angle with high shearing ability and less contact point to reduce waviness.

加工深度为2D时
ap:2D

接触点: 1个点
Blade contact points: 1



铜电极加工用刀具 螺旋角 37.5°
DHR237 / DHR237R
Specialized for copper electrode machining
37.5° helix angle

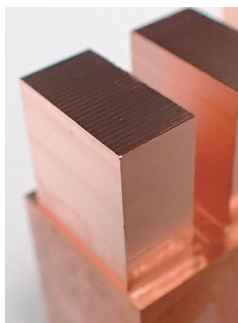
接触点: 2个点
Blade contact points: 2







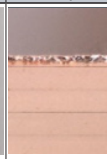

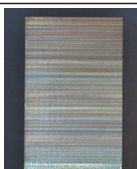
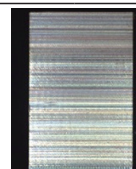
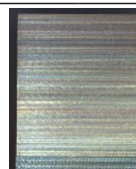



一般的强螺旋角类型
螺旋角 45°
General high helix angle type
45° helix angle

与现有产品加工结果的比较 Comparison with conventional tool

加工材料: 紫铜 (TPC)
Material: Tough pitch copper
加工尺寸: 8 × 15 mm
Work size
加工深度: 12 mm
Cutting depth
冷却方式: 切削油
Coolant: Water-insoluble fluid



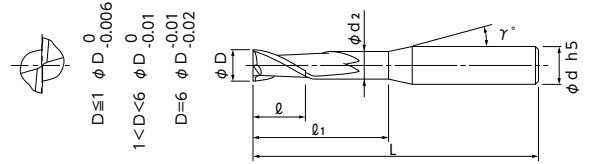
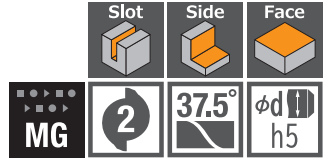
	DHR237 φ3×15				现有产品 φ3×14 Conventional tool			
	初期 Beginning		加工 10 小时后 After 10hr		初期 Beginning		加工 10 小时后 After 10hr	
	上面 Top	侧面 Side	上面 Top	侧面 Side	上面 Top	侧面 Side	上面 Top	侧面 Side
毛刺高度 Burr height								
	0.002mm/0.002mm		0.003mm/0.013mm		0.003mm/0.016mm		0.012mm/0.018mm	
面粗度 Roughness								
	Ra:0.075μm		Ra:0.076μm		Ra:0.120μm		Ra:0.350μm	

铜电极加工用长颈平底铣刀
Long Neck Square End Mill for Copper Electrode

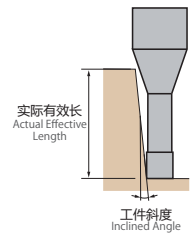
共 74 种规格
Total 74 sizes

针对铜电极加工特别研发的长颈平底铣刀，
锋利的刃口能有效抑制毛刺，实现良好的加工面

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



- 针对铜电极加工特别研发的长颈平底铣刀。
- 采用【37.5°】螺旋角，可在抑制加工横线痕产生的同时，实现高切削力和高精度加工品质。
- 采用最优化的刀刃形状与全新 DLC 涂层，实现了长时间高品质的安定加工。
- 也可有效加工钨铜电极。
- 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.



加工材料 Work material

铜 Copper	钨铜 Copper tungsten
◎	◎

单位 [尺寸 : mm / 价格 : 日元]
Unit [Size : mm / Retail price : JPY]

产品代码 Code No.	(D) 刃径 Dia.	(l1) 颈长 Under neck length	(l) 刃长 Length of cut	(d2) 颈径 Neck Dia.	(γ) 颈角 Neck taper angle	(d) 柄径 Shank Dia.	(L) 全长 Overall length	标准价格 Retail price	相对于工件斜度的有效长 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	12,700	0.34	0.36	0.38	0.40	0.44
07-00100-01005		0.5	0.2	0.085	12°	4	45	13,300	0.55	0.58	0.61	0.64	0.71
07-00100-01007		0.75	0.2	0.085	12°	4	45	14,000	0.81	0.85	0.89	0.93	1.04
07-00100-01010		1	0.2	0.085	12°	4	45	14,800	1.07	1.12	1.18	1.23	1.37
07-00100-02005	0.2	0.5	0.4	0.18	12°	4	45	9,500	0.57	0.59	0.62	0.65	0.72
07-00100-02010		1	0.4	0.18	12°	4	45	10,000	1.09	1.14	1.19	1.25	1.38
07-00100-02015		1.5	0.4	0.18	12°	4	45	10,500	1.61	1.68	1.76	1.85	2.05
07-00100-02020		2	0.4	0.18	12°	4	45	11,000	2.13	2.23	2.33	2.44	2.71
07-00100-03010	0.3	1	0.6	0.28	12°	4	45	10,000	1.09	1.14	1.19	1.25	1.38
07-00100-03015		1.5	0.6	0.28	12°	4	45	10,500	1.61	1.68	1.76	1.85	2.05
07-00100-03020		2	0.6	0.28	12°	4	45	11,000	2.13	2.23	2.33	2.44	2.71
07-00100-03030		3	0.6	0.28	12°	4	45	11,600	3.17	3.31	3.47	3.64	4.04
07-00100-04010	0.4	1	0.8	0.37	12°	4	45	8,700	1.11	1.16	1.22	1.28	1.42
07-00100-04020		2	0.8	0.37	12°	4	45	8,900	2.15	2.25	2.36	2.47	2.74
07-00100-04030		3	0.8	0.37	12°	4	45	9,100	3.20	3.34	3.50	3.67	4.07
07-00100-04040		4	0.8	0.37	12°	4	45	9,300	4.24	4.43	4.64	4.87	5.40
07-00100-05015	0.5	1.5	1	0.46	12°	4	45	8,500	1.66	1.73	1.81	1.90	2.11
07-00100-05020		2	1	0.46	12°	4	45	8,700	2.18	2.28	2.38	2.50	2.77
07-00100-05030		3	1	0.46	12°	4	45	8,900	3.22	3.37	3.52	3.70	4.10
07-00100-05040		4	1	0.46	12°	4	45	9,100	4.26	4.46	4.66	4.89	5.43
07-00100-05060	0.6	6	1	0.46	12°	4	45	9,400	6.35	6.63	6.95	7.29	8.08
07-00100-06020		2	1.2	0.56	12°	4	45	9,400	2.18	2.28	2.38	2.50	2.77
07-00100-06030		3	1.2	0.56	12°	4	45	9,600	3.22	3.37	3.52	3.70	4.10
07-00100-06040		4	1.2	0.56	12°	4	45	9,800	4.26	4.46	4.66	4.89	5.43
07-00100-06060	6	1.2	0.56	12°	4	45	10,100	6.35	6.63	6.95	7.29	8.08	

订购方式

请指定DHR237 刃径(D) × 颈长(l1)
When you order, indicate DHR237 (D) × (l1).

※(γ)为参考值。
※(γ) is reference value.

产品代码 Code No.	(D) 刃径 Dia.	(d ₁) 颈长 Under neck length	(ℓ) 刃长 Length of cut	(d ₂) 颈径 Neck Dia.	(γ) 颈角 Neck taper angle	(d) 柄径 Shank Dia.	(L) 全长 Overall length	标准价格 Retail price	相对于工件斜度的有效长 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	9,600	3.22	3.37	3.52	3.70	4.10
07-00100-08040		4	1.6	0.76	12°	4	45	9,800	4.26	4.46	4.66	4.89	5.43
07-00100-08060		6	1.6	0.76	12°	4	45	10,100	6.35	6.63	6.95	7.29	8.08
07-00100-08080		8	1.6	0.76	12°	4	50	10,300	8.44	8.81	9.23	9.68	10.74
07-00100-10030	1	3	2	0.95	12°	4	45	9,100	3.25	3.39	3.55	3.73	4.13
07-00100-10040		4	2	0.95	12°	4	45	9,200	4.29	4.48	4.69	4.92	5.46
07-00100-10050		5	2	0.95	12°	4	45	9,400	5.33	5.57	5.83	6.12	6.79
07-00100-10060		6	2	0.95	12°	4	45	9,600	6.37	6.66	6.97	7.32	8.11
07-00100-10080		8	2	0.95	12°	4	50	9,800	8.46	8.84	9.25	9.71	10.77
07-00100-10100		10	2	0.95	12°	4	50	10,000	10.55	11.02	11.53	12.10	13.42
07-00100-10120	12	2	0.95	12°	4	50	10,000	12.63	13.20	13.82	14.49	16.08	
07-00100-15040	1.5	4	3	1.45	12°	4	45	9,400	4.29	4.48	4.69	4.92	5.46
07-00100-15060		6	3	1.45	12°	4	50	9,400	6.37	6.66	6.97	7.32	8.11
07-00100-15080		8	3	1.45	12°	4	50	9,600	8.46	8.84	9.25	9.71	10.77
07-00100-15100		10	3	1.45	12°	4	50	9,900	10.55	11.02	11.53	12.10	13.42
07-00100-15120		12	3	1.45	12°	4	50	9,900	12.63	13.20	13.82	14.49	16.08
07-00100-15160		16	3	1.45	12°	4	60	10,200	16.80	17.55	18.38	19.28	21.39
07-00100-20060	2	6	4	1.94	12°	4	50	9,200	6.40	6.69	7.00	7.34	8.15
07-00100-20080		8	4	1.94	12°	4	50	9,200	8.48	8.86	9.28	9.74	10.80
07-00100-20100		10	4	1.94	12°	4	50	9,300	10.57	11.04	11.56	12.13	13.45
07-00100-20120		12	4	1.94	12°	4	50	9,300	12.66	13.22	13.84	14.52	16.11
07-00100-20140		14	4	1.94	12°	4	50	9,300	14.74	15.40	16.12	16.92	18.76
07-00100-20160		16	4	1.94	12°	4	60	9,500	16.83	17.58	18.40	19.31	Free
07-00100-20200	20	4	1.94	12°	4	60	9,500	21.00	21.94	22.97	24.10	Free	
07-00100-25060	2.5	6	5	2.4	12°	4	45	9,400	6.50	6.79	7.11	7.46	8.27
07-00100-25080		8	5	2.4	12°	4	50	9,400	8.58	8.97	9.39	9.85	10.93
07-00100-25100		10	5	2.4	12°	4	50	9,600	10.67	11.15	11.67	12.24	13.58
07-00100-25120		12	5	2.4	12°	4	50	10,000	12.75	13.32	13.95	14.64	Free
07-00100-25140		14	5	2.4	12°	4	50	10,000	14.84	15.50	16.23	17.03	Free
07-00100-25160		16	5	2.4	12°	4	50	10,200	16.93	17.68	18.51	19.42	Free
07-00100-25200	20	5	2.4	12°	4	60	10,800	21.10	22.04	23.07	Free	Free	
07-00100-30080	3	8	6	2.85	12°	6	50	9,500	8.71	9.10	9.52	9.99	11.08
07-00100-30100		10	6	2.85	12°	6	50	9,700	10.79	11.27	11.80	12.38	13.74
07-00100-30150		15	6	2.85	12°	6	60	10,100	16.01	16.72	17.50	18.37	20.37
07-00100-30200		20	6	2.85	12°	6	60	10,500	21.22	22.17	23.21	24.35	27.01
07-00100-30250		25	6	2.85	12°	6	70	11,500	26.43	27.62	28.91	30.33	Free
07-00100-40100	4	10	8	3.8	12°	6	50	8,800	10.91	11.40	11.94	12.52	13.89
07-00100-40150		15	8	3.8	12°	6	60	9,000	16.13	16.85	17.64	18.51	Free
07-00100-40200		20	8	3.8	12°	6	60	9,600	21.34	22.30	23.34	24.49	Free
07-00100-40250		25	8	3.8	12°	6	70	10,700	26.56	27.74	29.04	Free	Free
07-00100-40300		30	8	3.8	12°	6	70	11,100	31.77	33.19	34.75	Free	Free
07-00100-50150	5	15	10	4.8	12°	6	50	9,000	16.13	16.85	17.64	Free	Free
07-00100-50200		20	10	4.8	12°	6	60	9,600	21.34	22.30	Free	Free	Free
07-00100-50250		25	10	4.8	12°	6	60	10,700	26.56	27.74	Free	Free	Free
07-00100-50300		30	10	4.8	12°	6	70	11,100	31.77	Free	Free	Free	Free
07-00100-60150	6	15	12	5.8	-	6	50	9,600	Free	Free	Free	Free	Free
07-00100-60200		20	12	5.8	-	6	60	11,000	Free	Free	Free	Free	Free
07-00100-60300		30	12	5.8	-	6	70	12,000	Free	Free	Free	Free	Free
07-00100-60500		50	12	5.8	-	6	90	18,000	Free	Free	Free	Free	Free

加工材料 Work material			铜 Copper						钨铜 Copper tungsten (W70%-Cu30%)							
刃径 Dia.	颈长 Under neck length	L(颈长)/ D(刃径) L/D	侧面 Side Milling				沟槽 Slotting			侧面 Side Milling				沟槽 Slotting		
			主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut		主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut	主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut		主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut
					ap mm	ae mm						ap mm	ae mm			
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

加工材料 Work material			铜 Copper						钨铜 Copper tungsten (W70%-Cu30%)							
刃径 Dia.	颈长 Under neck length	L(颈长)/ D(刃径) L/D	侧面 Side Milling				沟槽 Slotting			侧面 Side Milling				沟槽 Slotting		
			主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut		主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut	主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut		主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut
					ap mm	ae mm						ap mm	ae mm			
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	1,250	2	0.06	9,000	1,050	0.2
	16	6.4	11,000	1,400	2.5	0.06	10,000	1,200	0.25	9,000	1,100	2	0.05	8,000	850	0.15
	20	8	10,000	1,250	2.5	0.05	9,000	1,000	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	1,500	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	1,400	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
备注 Notes			※1 上方切削参数参考表仅为参考值。请根据实际的加工形状及使用设备调整切削参数。 ※2 切深量的ap表示轴向切入量，ae表示步距量。 ※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速不足时，也请以相同的比率调整。 ※4 建议使用油冷冷却方式。 ※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.													

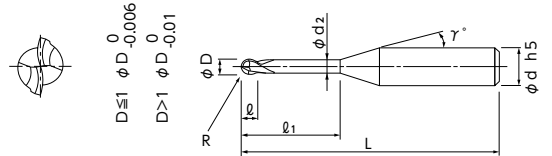
铜电极加工用长颈球头铣刀
Long Neck Ball End Mill for Copper Electrode

共 94 种规格

Total 94 sizes

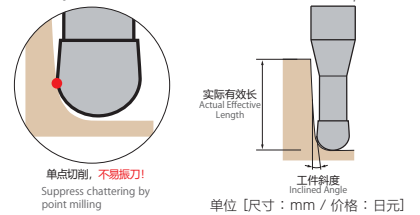
针对铜电极加工特别研发的长颈球头铣刀，
锋利的刃口能有效抑制毛刺，实现良好的加工面

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



R ≤ 0.2 R ± 0.002
0.2 < R ≤ 0.5 R ± 0.003
R > 0.5 R ± 0.004

※ DRB230的R角精度以实际刃径的1/2为基准精度。
R accuracy of DRB230 is based on a half value of φD.



单位 [尺寸: mm / 价格: 日元]
Unit [Size: mm / Retail price: JPY]

- 针对铜电极加工特别研发的长颈球头铣刀。
- 锋利的刃口形状和全新的 DLC 涂层实现了长时间安定的高品质加工。
- 也可有效加工钨铜电极。
- 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.

加工材料 Work material

铜 Copper	钨铜 Copper tungsten
◎	◎

产品代码 Code No.	(R)球头半径 Radius	(ℓ ₁)颈长 Under neck length	(ℓ)刃长 Length of cut	(D)刃径 Dia.	(d ₂)颈径 Neck Dia.	(γ)颈角 Neck taper angle	(d)柄径 Shank Dia.	(L)全长 Overall length	标准价格 Retail price	相对于工件斜度的有效长 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	13,900	0.34	0.36	0.37	0.39	0.42
07-00530-00505		0.5	0.07	0.1	0.085	12°	4	45	14,500	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	14,000	0.35	0.37	0.38	0.40	0.43
07-00530-00705		0.5	0.1	0.15	0.13	12°	4	45	14,400	0.56	0.58	0.61	0.64	0.70
07-00530-00710		1	0.1	0.15	0.13	12°	4	45	15,000	1.08	1.13	1.18	1.23	1.36
07-00530-01005	R0.1	0.5	0.15	0.2	0.18	12°	4	45	11,100	0.56	0.58	0.61	0.63	0.69
07-00530-01007		0.75	0.15	0.2	0.18	12°	4	45	11,400	0.82	0.85	0.89	0.93	1.02
07-00530-01010		1	0.15	0.2	0.18	12°	4	45	11,600	1.08	1.13	1.18	1.23	1.35
07-00530-01015		1.5	0.15	0.2	0.18	12°	4	45	12,100	1.60	1.67	1.75	1.83	2.02
07-00530-01020		2	0.15	0.2	0.18	12°	4	45	12,600	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	11,100	0.56	0.58	0.60	0.62	0.67
07-00530-01510		1	0.2	0.3	0.28	12°	4	45	11,600	1.08	1.12	1.17	1.22	1.34
07-00530-01515		1.5	0.2	0.3	0.28	12°	4	45	12,100	1.60	1.67	1.74	1.82	2.00
07-00530-01520		2	0.2	0.3	0.28	12°	4	45	12,600	2.12	2.21	2.31	2.42	2.66
07-00530-02005	R0.2	0.5	0.3	0.4	0.37	12°	4	45	10,100	0.58	0.60	0.62	0.64	0.69
07-00530-02010		1	0.3	0.4	0.37	12°	4	45	10,100	1.10	1.14	1.19	1.24	1.35
07-00530-02015		1.5	0.3	0.4	0.37	12°	4	45	10,300	1.62	1.69	1.76	1.84	2.02
07-00530-02020		2	0.3	0.4	0.37	12°	4	45	10,300	2.15	2.23	2.33	2.43	2.68
07-00530-02030		3	0.3	0.4	0.37	12°	4	45	10,500	3.19	3.32	3.47	3.63	4.01
07-00530-02040		4	0.3	0.4	0.37	12°	4	45	10,700	4.23	4.41	4.61	4.83	5.33
07-00530-02050		5	0.3	0.4	0.37	12°	4	45	10,900	5.27	5.50	5.75	6.02	6.66
07-00530-02060	6	0.3	0.4	0.37	12°	4	45	11,100	6.32	6.59	6.89	7.22	7.99	
07-00530-02510	R0.25	1	0.35	0.5	0.46	12°	4	45	9,800	1.13	1.16	1.21	1.26	1.37
07-00530-02515		1.5	0.35	0.5	0.46	12°	4	45	9,800	1.65	1.71	1.78	1.85	2.03
07-00530-02520		2	0.35	0.5	0.46	12°	4	45	9,900	2.17	2.25	2.35	2.45	2.69
07-00530-02530		3	0.35	0.5	0.46	12°	4	45	10,100	3.21	3.34	3.49	3.65	4.02
07-00530-02540		4	0.35	0.5	0.46	12°	4	45	10,300	4.25	4.43	4.63	4.85	5.35
07-00530-02550		5	0.35	0.5	0.46	12°	4	45	10,500	5.30	5.52	5.77	6.04	6.68
07-00530-02560	6	0.35	0.5	0.46	12°	4	45	10,700	6.34	6.61	6.91	7.24	8.00	
07-00530-03010	R0.3	1	0.45	0.6	0.56	12°	4	45	7,500	1.12	1.16	1.20	1.25	1.35
07-00530-03015		1.5	0.45	0.6	0.56	12°	4	45	7,700	1.64	1.71	1.77	1.84	2.02
07-00530-03020		2	0.45	0.6	0.56	12°	4	45	7,700	2.17	2.25	2.34	2.44	2.68
07-00530-03030		3	0.45	0.6	0.56	12°	4	45	7,900	3.21	3.34	3.48	3.64	4.01
07-00530-03040		4	0.45	0.6	0.56	12°	4	45	8,100	4.25	4.43	4.62	4.84	5.33
07-00530-03050		5	0.45	0.6	0.56	12°	4	45	8,300	5.29	5.52	5.76	6.03	6.66
07-00530-03060		6	0.45	0.6	0.56	12°	4	45	8,500	6.34	6.61	6.90	7.23	7.99
07-00530-03080		8	0.45	0.6	0.56	12°	4	45	9,000	8.42	8.79	9.18	9.62	10.64
07-00530-03100	10	0.45	0.6	0.56	12°	4	50	9,500	10.51	10.97	11.47	12.02	13.30	

订购方式

请指定DRB230 球头半径(R) × 颈长(ℓ₁)。
When you order, indicate DRB230 (R) × (ℓ₁).

※(γ)为参考值。
※(γ) is reference value.

产品代码 Code No.	(R)球头半径 Radius	(D1)颈长 Under neck length	(L)刃长 Length of cut	(D)刃径 Dia.	(d2)颈径 Neck Dia.	(γ)颈角 Neck taper angle	(d)柄径 Shank Dia.	(L)全长 Overall length	标准价格 Retail price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece.				
										30°	1°	1°30′	2°	3°
07-00530-04015	R0.4	1.5	0.6	0.8	0.76	12°	4	45	7,700	1.64	1.70	1.76	1.83	1.98
07-00530-04020		2	0.6	0.8	0.76	12°	4	45	7,700	2.16	2.24	2.33	2.42	2.65
07-00530-04030		3	0.6	0.8	0.76	12°	4	45	7,900	3.20	3.33	3.47	3.62	3.97
07-00530-04040		4	0.6	0.8	0.76	12°	4	45	8,100	4.25	4.42	4.61	4.82	5.30
07-00530-04050		5	0.6	0.8	0.76	12°	4	45	8,300	5.29	5.51	5.75	6.01	6.63
07-00530-04060		6	0.6	0.8	0.76	12°	4	45	8,300	6.33	6.60	6.89	7.21	7.96
07-00530-04080		8	0.6	0.8	0.76	12°	4	45	8,500	8.42	8.78	9.17	9.60	10.61
07-00530-04100		10	0.6	0.8	0.76	12°	4	50	9,000	10.50	10.96	11.45	12.00	13.26
07-00530-05020	R0.5	2	0.75	1	0.95	12°	4	45	7,400	2.18	2.26	2.34	2.43	2.65
07-00530-05030		3	0.75	1	0.95	12°	4	45	7,500	3.22	3.35	3.48	3.63	3.97
07-00530-05040		4	0.75	1	0.95	12°	4	45	7,500	4.27	4.44	4.62	4.83	5.30
07-00530-05050		5	0.75	1	0.95	12°	4	45	7,700	5.31	5.53	5.76	6.02	6.63
07-00530-05060		6	0.75	1	0.95	12°	4	45	7,700	6.35	6.62	6.90	7.22	7.96
07-00530-05080		8	0.75	1	0.95	12°	4	45	8,100	8.44	8.79	9.18	9.61	10.61
07-00530-05100		10	0.75	1	0.95	12°	4	45	8,100	10.52	10.97	11.46	12.01	13.26
07-00530-05120		12	0.75	1	0.95	12°	4	45	8,100	12.61	13.15	13.75	14.40	15.92
07-00530-05140		14	0.75	1	0.95	12°	4	50	8,500	14.70	15.33	16.03	16.79	18.57
07-00530-05160		16	0.75	1	0.95	12°	4	50	8,500	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	7,700	4.26	4.41	4.59	4.78	5.22
07-00530-07506		6	1.1	1.5	1.45	12°	4	50	7,700	6.34	6.59	6.87	7.17	7.88
07-00530-07508		8	1.1	1.5	1.45	12°	4	50	8,300	8.43	8.77	9.15	9.56	10.53
07-00530-07510		10	1.1	1.5	1.45	12°	4	50	8,300	10.51	10.95	11.43	11.96	13.18
07-00530-07512		12	1.1	1.5	1.45	12°	4	50	8,700	12.60	13.13	13.71	14.35	15.84
07-00530-07514		14	1.1	1.5	1.45	12°	4	50	8,700	14.69	15.31	15.99	16.74	18.49
07-00530-07516		16	1.1	1.5	1.45	12°	4	50	9,300	16.77	17.49	18.27	19.14	21.15
07-00530-07518		18	1.1	1.5	1.45	12°	4	50	9,700	18.86	19.67	20.55	21.53	23.80
07-00530-10030	R1	3	1.5	2	1.94	12°	4	50	7,900	3.23	3.33	3.44	3.56	3.85
07-00530-10040		4	1.5	2	1.94	12°	4	50	7,900	4.27	4.42	4.58	4.76	5.17
07-00530-10060		6	1.5	2	1.94	12°	4	50	7,900	6.36	6.60	6.86	7.15	7.83
07-00530-10080		8	1.5	2	1.94	12°	4	50	8,100	8.44	8.78	9.14	9.54	10.48
07-00530-10100		10	1.5	2	1.94	12°	4	50	8,100	10.53	10.95	11.42	11.94	13.14
07-00530-10120		12	1.5	2	1.94	12°	4	50	8,100	12.61	13.13	13.70	14.33	15.79
07-00530-10140		14	1.5	2	1.94	12°	4	50	8,100	14.70	15.31	15.98	16.72	18.45
07-00530-10160		16	1.5	2	1.94	12°	4	50	8,100	16.78	17.49	18.27	19.12	Free
07-00530-10200		20	1.5	2	1.94	12°	4	60	9,000	20.96	21.85	22.83	23.90	Free
07-00530-10250		25	1.5	2	1.94	12°	4	60	10,000	26.17	27.30	28.53	Free	Free
07-00530-15060	R1.5	6	2.5	3	2.85	12°	6	60	10,000	6.56	6.78	7.03	7.31	7.95
07-00530-15080		8	2.5	3	2.85	12°	6	60	10,300	8.64	8.96	9.31	9.70	10.60
07-00530-15100		10	2.5	3	2.85	12°	6	60	10,300	10.73	11.14	11.59	12.09	13.26
07-00530-15120		12	2.5	3	2.85	12°	6	60	10,300	12.81	13.32	13.88	14.49	15.91
07-00530-15150		15	2.5	3	2.85	12°	6	70	10,500	15.94	16.59	17.30	18.08	19.89
07-00530-15200		20	2.5	3	2.85	12°	6	70	11,000	21.16	22.04	23.00	24.06	26.53
07-00530-15250		25	2.5	3	2.85	12°	6	70	11,000	26.37	27.48	28.70	30.04	Free
07-00530-15300		30	2.5	3	2.85	12°	6	70	12,000	31.58	32.93	34.40	36.03	Free
07-00530-20100	R2	10	3	4	3.8	12°	6	60	9,500	10.83	11.22	11.66	12.14	13.25
07-00530-20120		12	3	4	3.8	12°	6	60	9,500	12.91	13.40	13.94	14.53	15.91
07-00530-20150		15	3	4	3.8	12°	6	60	9,500	16.04	16.67	17.36	18.12	19.89
07-00530-20200		20	3	4	3.8	12°	6	60	11,300	21.26	22.12	23.06	24.10	Free
07-00530-20250		25	3	4	3.8	12°	6	70	12,000	26.47	27.57	28.77	30.09	Free
07-00530-20300		30	3	4	3.8	12°	6	70	12,500	31.68	33.01	34.47	Free	Free
07-00530-20400		40	3	4	3.8	12°	6	80	13,500	42.11	43.91	Free	Free	Free
07-00530-30200	R3	20	6	6	5.7	-	6	70	12,500	Free	Free	Free	Free	Free
07-00530-30250		25	6	6	5.7	-	6	70	12,700	Free	Free	Free	Free	Free
07-00530-30300		30	6	6	5.7	-	6	80	13,100	Free	Free	Free	Free	Free
07-00530-30400		40	6	6	5.7	-	6	80	14,000	Free	Free	Free	Free	Free
07-00530-30500		50	6	6	5.7	-	6	100	15,200	Free	Free	Free	Free	Free

加工材料 Work material			铜 Copper				钨铜 Copper tungsten (W70% - Cu30%)			
(R) 球头半径 Radius	颈长 Under neck length	L(颈长)/ D(刃径) L/D	切深量 Depth of cut		进给速度 Feed	主轴转速 Spindle speed	切深量 Depth of cut		进给速度 Feed	主轴转速 Spindle speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
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	3.8	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
	1.5	7.5	0.015	0.03	300	40,000	0.008	0.02	150	30,000
0.15	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
	1.5	5	0.025	0.05	500	40,000	0.02	0.05	300	30,000
0.2	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
	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
0.25	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
	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
0.3	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
	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
0.4	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
	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
0.5	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
0.5	3	3	0.25	0.4	2,800	40,000	0.25	0.4	2,000	30,000
	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

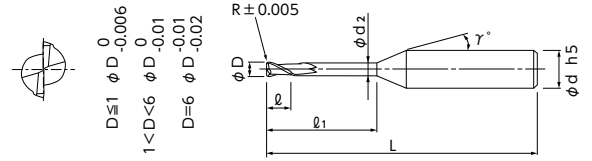
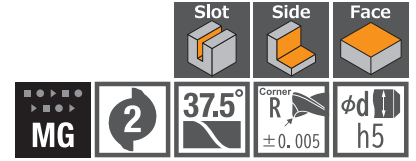
加工材料 Work material			铜 Copper				钨铜 Copper tungsten (W70% - Cu30%)			
(R) 球头半径 Radius	颈长 Under neck length	L(颈长)/ D(刃径) L/D	切深量 Depth of cut		进给速度 Feed	主轴转速 Spindle speed	切深量 Depth of cut		进给速度 Feed	主轴转速 Spindle speed
			ap mm	ae mm	mm/min	min ⁻¹	ap mm	ae mm	mm/min	min ⁻¹
0.5	8	8	0.12	0.2	1,000	25,000	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	0.035	160	10,000
	16	16	0.02	0.06	400	12,000	0.005	0.03	120	8,000
0.75	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
1.5	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
	6	2	0.7	1.5	3,400	20,000	0.6	1.2	2,400	16,000
	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
2	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
	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
3	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
	20	3.3	1	2	3,600	12,000	1	2	2,400	9,000
	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
3	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
	备注 Notes	※1 上方切削参数参考表仅为参考值。请根据实际的加工形状及使用设备调整切削参数。 ※2 切深量的ap表示轴向切入量，ae表示步距量。 ※3 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速不足时，也请以相同的比率调整。 ※4 建议使用油冷冷却方式。 ※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.								

铜电极加工用长颈圆鼻铣刀
Long Neck Radius End Mill for Copper Electrode

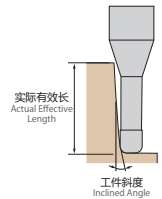
共 153 种规格
Total 153 sizes

针对铜电极加工特别研发的长颈圆鼻铣刀，
锋利的刃口能有效抑制毛刺，实现良好的加工面

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



- 针对铜电极加工特别研发的长颈圆鼻铣刀。
- 采用能实现高切削力和高品质加工面的【37.5°】螺旋角和最适合的刀尖设计。
- 采用最适合的刀刃形状与全新 DLC 涂层，实现了长时间高品质的安定加工。
- 也可有效加工钨铜电极。
- Long neck radius end mill specialized for machining copper electrode.
- 37.5°helix angle provides both sharpness shearing ability and finishing surface quality, combining the most suitable cutting edge design realizes the higher quality of finishing surface.
- High quality and stable milling performance with long tool life by optimized design and DLC COATING.
- Machining copper tungsten electrodes is also effective.



加工材料 Work material

铜 Copper	钨铜 Copper tungsten
◎	◎

单位 [尺寸: mm / 价格: 日元]
Unit [Size: mm / Retail price: JPY]

产品代码 Code No.	(D) 刃径 Dia.	(R) 角半径 Corner radius	(L ₁) 颈长 Underneck length	(L) 刃长 Length of cut	(d ₂) 颈径 Neck Dia.	(γ) 颈角 Neck taper angle	(d) 柄径 Shank Dia.	(L) 全长 Overall length	标准价格 Retail price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece.				
										30°	1°	1°30'	2°	3°
07-00110-02021	0.2	R0.02	0.5	0.4	0.18	12°	4	45	11,500	0.56	0.59	0.62	0.65	0.71
07-00110-02023			1	0.4	0.18	12°	4	45	12,000	1.09	1.13	1.19	1.24	1.38
07-00110-02025			1.5	0.4	0.18	12°	4	45	12,300	1.61	1.68	1.76	1.84	2.04
07-00110-02051		R0.05	0.5	0.4	0.18	12°	4	45	11,500	0.56	0.59	0.61	0.64	0.71
07-00110-02053			1	0.4	0.18	12°	4	45	12,000	1.08	1.13	1.18	1.24	1.37
07-00110-02055			1.5	0.4	0.18	12°	4	45	12,300	1.61	1.68	1.75	1.84	2.03
07-00110-03021	0.3	R0.02	1	0.6	0.28	12°	4	45	12,000	1.09	1.13	1.19	1.24	1.38
07-00110-03022			1.5	0.6	0.28	12°	4	45	12,300	1.61	1.68	1.76	1.84	2.04
07-00110-03023			2	0.6	0.28	12°	4	45	12,500	2.13	2.22	2.33	2.44	2.71
07-00110-03051		R0.05	1	0.6	0.28	12°	4	45	12,000	1.08	1.13	1.18	1.24	1.37
07-00110-03052			1.5	0.6	0.28	12°	4	45	12,300	1.61	1.68	1.75	1.84	2.03
07-00110-03053			2	0.6	0.28	12°	4	45	12,500	2.13	2.22	2.32	2.43	2.70
07-00110-04021	0.4	R0.02	1	0.8	0.37	12°	4	45	10,500	1.11	1.16	1.21	1.27	1.41
07-00110-04023			2	0.8	0.37	12°	4	45	10,700	2.15	2.25	2.35	2.47	2.74
07-00110-04025			3	0.8	0.37	12°	4	45	10,900	3.20	3.34	3.49	3.67	4.06
07-00110-04027			4	0.8	0.37	12°	4	45	11,100	4.24	4.43	4.63	4.86	5.39
07-00110-04051		R0.05	1	0.8	0.37	12°	4	45	10,500	1.11	1.16	1.21	1.27	1.40
07-00110-04053			2	0.8	0.37	12°	4	45	10,700	2.15	2.25	2.35	2.46	2.73
07-00110-04055			3	0.8	0.37	12°	4	45	10,900	3.19	3.34	3.49	3.66	4.05
07-00110-04057			4	0.8	0.37	12°	4	45	11,100	4.24	4.43	4.63	4.86	5.38
07-00110-04101		R0.1	1	0.8	0.37	12°	4	45	10,500	1.11	1.15	1.20	1.26	1.38
07-00110-04103			2	0.8	0.37	12°	4	45	10,700	2.15	2.24	2.34	2.45	2.71
07-00110-04105			3	0.8	0.37	12°	4	45	10,900	3.19	3.33	3.48	3.65	4.04
07-00110-04107			4	0.8	0.37	12°	4	45	11,100	4.24	4.42	4.62	4.85	5.37
07-00110-05022	0.5	R0.02	2	1	0.46	12°	4	45	10,400	2.18	2.27	2.38	2.50	2.77
07-00110-05023			3	1	0.46	12°	4	45	10,600	3.22	3.36	3.52	3.69	4.10
07-00110-05024			4	1	0.46	12°	4	45	10,800	4.26	4.45	4.66	4.89	5.42
07-00110-05025			5	1	0.46	12°	4	45	11,000	5.31	5.54	5.80	6.09	6.75
07-00110-05052		R0.05	2	1	0.46	12°	4	45	10,400	2.18	2.27	2.38	2.49	2.76
07-00110-05053			3	1	0.46	12°	4	45	10,600	3.22	3.36	3.52	3.69	4.09
07-00110-05054			4	1	0.46	12°	4	45	10,800	4.26	4.45	4.66	4.88	5.41
07-00110-05055			5	1	0.46	12°	4	45	11,000	5.31	5.54	5.80	6.08	6.74
07-00110-05102		R0.1	2	1	0.46	12°	4	45	10,400	2.17	2.27	2.37	2.48	2.74
07-00110-05103			3	1	0.46	12°	4	45	10,600	3.22	3.36	3.51	3.68	4.07
07-00110-05104			4	1	0.46	12°	4	45	10,800	4.26	4.45	4.65	4.87	5.40
07-00110-05105			5	1	0.46	12°	4	45	11,000	5.30	5.54	5.79	6.07	6.72

订购方式

请指定DHR237R 刃径(D) × 半径(R) × 颈长(L₁)。
When you order, indicate DHR237R (D) × (R) × (L₁).

※(γ)为参考值。
※(γ) is reference value.

产品代码 Code No.	(D)刃径 Dia.	(R)角半径 Corner radius	(ℓ1)颈长 Under neck length	(ℓ)刃长 Length of cut	(d2)颈径 Neck Dia.	(γ)颈角 Neck taper angle	(d)柄径 Shank Dia.	(L)全长 Overall length	标准价格 Retail price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece.					
										30°	1°	1°30'	2°	3°	
07-00110-06022	0.6	R0.02	2	1.2	0.56	12°	4	45	11,200	2.18	2.27	2.38	2.50	2.77	
07-00110-06024			4	1.2	0.56	12°	4	45	11,700	4.26	4.45	4.66	4.89	5.42	
07-00110-06026			6	1.2	0.56	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.08	
07-00110-06052		R0.05	2	1.2	0.56	12°	4	45	11,200	2.18	2.27	2.38	2.49	2.76	
07-00110-06054			4	1.2	0.56	12°	4	45	11,700	4.26	4.45	4.66	4.88	5.41	
07-00110-06056		6	1.2	0.56	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.07		
07-00110-06102		R0.1	2	1.2	0.56	12°	4	45	11,200	2.17	2.27	2.37	2.48	2.74	
07-00110-06104			4	1.2	0.56	12°	4	45	11,700	4.26	4.45	4.65	4.87	5.40	
07-00110-06106			6	1.2	0.56	12°	4	45	12,100	6.35	6.63	6.93	7.27	8.05	
07-00110-08024		0.8	R0.02	4	1.6	0.76	12°	4	45	11,700	4.26	4.45	4.66	4.89	5.42
07-00110-08026				6	1.6	0.76	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.08
07-00110-08028				8	1.6	0.76	12°	4	50	12,300	8.43	8.81	9.22	9.68	10.73
07-00110-08054	R0.05		4	1.6	0.76	12°	4	45	11,700	4.26	4.45	4.66	4.88	5.41	
07-00110-08056			6	1.6	0.76	12°	4	45	12,100	6.35	6.63	6.94	7.28	8.07	
07-00110-08058	8		1.6	0.76	12°	4	50	12,300	8.43	8.81	9.22	9.67	10.72		
07-00110-08104	R0.1		4	1.6	0.76	12°	4	45	11,700	4.26	4.45	4.65	4.87	5.40	
07-00110-08106			6	1.6	0.76	12°	4	45	12,100	6.35	6.63	6.93	7.27	8.05	
07-00110-08108			8	1.6	0.76	12°	4	50	12,300	8.43	8.80	9.21	9.66	10.71	
07-00110-10053	1		R0.05	3	2	0.95	12°	4	45	10,900	3.24	3.39	3.54	3.72	4.12
07-00110-10054				4	2	0.95	12°	4	45	11,000	4.29	4.48	4.68	4.91	5.44
07-00110-10055				5	2	0.95	12°	4	45	11,300	5.33	5.57	5.82	6.11	6.77
07-00110-10056		6		2	0.95	12°	4	45	11,500	6.37	6.66	6.97	7.31	8.10	
07-00110-10058		8		2	0.95	12°	4	50	11,700	8.46	8.83	9.25	9.70	10.75	
07-00110-10060		10		2	0.95	12°	4	50	12,000	10.54	11.01	11.53	12.09	13.41	
07-00110-10103		R0.1	3	2	0.95	12°	4	45	10,900	3.24	3.38	3.54	3.71	4.10	
07-00110-10104			4	2	0.95	12°	4	45	11,000	4.28	4.47	4.68	4.90	5.43	
07-00110-10105			5	2	0.95	12°	4	45	11,300	5.33	5.56	5.82	6.10	6.76	
07-00110-10106			6	2	0.95	12°	4	45	11,500	6.37	6.65	6.96	7.30	8.08	
07-00110-10108			8	2	0.95	12°	4	50	11,700	8.46	8.83	9.24	9.69	10.74	
07-00110-10110			10	2	0.95	12°	4	50	12,000	10.54	11.01	11.52	12.08	13.39	
07-00110-10203		R0.2	3	2	0.95	12°	4	45	10,900	3.24	3.37	3.52	3.69	4.07	
07-00110-10204			4	2	0.95	12°	4	45	11,000	4.28	4.46	4.66	4.88	5.40	
07-00110-10205			5	2	0.95	12°	4	45	11,300	5.32	5.55	5.80	6.08	6.72	
07-00110-10206			6	2	0.95	12°	4	45	11,500	6.37	6.64	6.94	7.28	8.05	
07-00110-10208			8	2	0.95	12°	4	50	11,700	8.45	8.82	9.23	9.67	10.71	
07-00110-10210			10	2	0.95	12°	4	50	12,000	10.54	11.00	11.51	12.06	13.36	
07-00110-15105		1.5	R0.1	5	3	1.45	12°	4	45	11,400	5.33	5.56	5.82	6.10	6.76
07-00110-15110				10	3	1.45	12°	4	50	11,500	10.54	11.01	11.52	12.08	13.39
07-00110-15115				15	3	1.45	12°	4	50	11,600	15.76	16.46	17.22	18.07	20.03
07-00110-15205			R0.2	5	3	1.45	12°	4	45	11,400	5.32	5.55	5.80	6.08	6.72
07-00110-15210				10	3	1.45	12°	4	50	11,500	10.54	11.00	11.51	12.06	13.36
07-00110-15215			15	3	1.45	12°	4	50	11,600	15.75	16.45	17.21	18.05	20.00	
07-00110-15305	R0.3		5	3	1.45	12°	4	45	10,900	5.32	5.54	5.79	6.06	6.69	
07-00110-15310			10	3	1.45	12°	4	50	11,500	10.53	10.99	11.49	12.04	13.33	
07-00110-15315			15	3	1.45	12°	4	50	11,600	15.75	16.44	17.20	18.03	19.96	
07-00110-15505	R0.5		5	3	1.45	12°	4	45	11,000	5.31	5.53	5.76	6.02	6.63	
07-00110-15510			10	3	1.45	12°	4	50	11,500	10.52	10.97	11.46	12.01	13.26	
07-00110-15515			15	3	1.45	12°	4	50	11,600	15.74	16.42	17.17	17.99	19.90	
07-00110-15520			20	3	1.45	12°	4	60	11,800	20.95	21.87	22.87	23.97	Free	
07-00110-20105	2		R0.1	5	4	1.94	12°	4	45	10,600	5.35	5.59	5.84	6.13	6.79
07-00110-20108				8	4	1.94	12°	4	50	11,000	8.48	8.86	9.27	9.72	10.77
07-00110-20110				10	4	1.94	12°	4	50	11,100	10.57	11.03	11.55	12.11	13.42
07-00110-20115				15	4	1.94	12°	4	50	11,200	15.78	16.48	17.25	18.09	Free
07-00110-20120			20	4	1.94	12°	4	60	11,400	20.99	21.93	22.95	24.08	Free	
07-00110-20205		R0.2	5	4	1.94	12°	4	45	10,600	5.35	5.58	5.83	6.11	6.75	
07-00110-20208			8	4	1.94	12°	4	50	11,000	8.48	8.85	9.25	9.70	10.74	
07-00110-20210			10	4	1.94	12°	4	50	11,100	10.56	11.03	11.53	12.09	13.39	
07-00110-20215			15	4	1.94	12°	4	50	11,200	15.78	16.47	17.24	18.07	Free	
07-00110-20220		R0.3	20	4	1.94	12°	4	60	11,400	20.99	21.92	22.94	24.06	Free	
07-00110-20305			5	4	1.94	12°	4	45	10,600	5.34	5.57	5.82	6.09	6.72	
07-00110-20308			8	4	1.94	12°	4	50	11,000	8.47	8.84	9.24	9.68	10.70	
07-00110-20310	10		4	1.94	12°	4	50	11,100	10.56	11.02	11.52	12.07	13.36		
07-00110-20315	R0.5	15	4	1.94	12°	4	50	11,200	15.77	16.46	17.22	18.05	Free		
07-00110-20320		20	4	1.94	12°	4	60	11,400	20.99	21.91	22.92	24.04	Free		
07-00110-20505		5	4	1.94	12°	4	45	10,600	5.33	5.55	5.79	6.05	6.66		
07-00110-20508		8	4	1.94	12°	4	50	11,000	8.46	8.82	9.21	9.64	10.64		
07-00110-20510	R0.5	10	4	1.94	12°	4	50	11,100	10.55	11.00	11.49	12.03	13.30		
07-00110-20515		15	4	1.94	12°	4	50	11,200	15.76	16.45	17.19	18.02	Free		
07-00110-20520		20	4	1.94	12°	4	60	11,400	20.98	21.89	22.90	24.00	Free		

DHR237R

铜电极加工用长颈圆鼻铣刀
Long Neck Radius End Mill for Copper Electrode

单位 [尺寸 : mm / 价格 : 日元]
Unit [Size : mm / Retail price : JPY]

产品代码 Code No.	(D)刃径 Dia.	(R)角半径 Corner radius	(ℓ ₁)颈长 Under neck length	(ℓ)刃长 Length of cut	(d ₂)颈径 Neck Dia.	(γ)颈角 Neck taper angle	(d)柄径 Shank Dia.	(L)全长 Overall length	标准价格 Retail price	相对于工件斜度的有效长 Actual effective length depending on inclined angle of workpiece.					
										30°	1°	1°30'	2°	3°	
07-00110-25208	2.5	R0.2	8	5	2.4	12°	4	50	11,000	8.57	8.95	9.36	9.81	10.86	
07-00110-25214			14	5	2.4	12°	4	50	11,200	14.83	15.49	16.20	16.99	Free	
07-00110-25220			20	5	2.4	12°	4	60	11,400	21.09	22.02	23.05	Free	Free	
07-00110-25508		R0.5	8	5	2.4	12°	4	50	11,000	8.56	8.92	9.32	9.75	10.77	
07-00110-25514			14	5	2.4	12°	4	50	11,200	14.82	15.46	16.16	16.93	Free	
07-00110-25520			20	5	2.4	12°	4	60	11,400	21.08	22.00	23.00	Free	Free	
07-00110-30112	3	R0.1	12	6	2.85	12°	6	50	12,000	12.87	13.44	14.07	14.76	16.36	
07-00110-30118			18	6	2.85	12°	6	60	12,300	19.13	19.98	20.91	21.94	24.32	
07-00110-30124			24	6	2.85	12°	6	70	13,000	25.39	26.52	27.76	29.12	Free	
07-00110-30212		R0.2	12	6	2.85	12°	6	50	12,000	12.87	13.44	14.06	14.74	16.33	
07-00110-30218			18	6	2.85	12°	6	60	12,300	19.13	19.97	20.90	21.92	24.29	
07-00110-30224			24	6	2.85	12°	6	70	13,000	25.38	26.51	27.74	29.10	Free	
07-00110-30312		R0.3	12	6	2.85	12°	6	50	12,000	12.86	13.43	14.04	14.72	16.29	
07-00110-30318			18	6	2.85	12°	6	60	12,300	19.12	19.96	20.88	21.90	24.26	
07-00110-30324			24	6	2.85	12°	6	70	13,000	25.38	26.50	27.73	29.08	Free	
07-00110-30512		R0.5	12	6	2.85	12°	6	50	12,000	12.86	13.41	14.01	14.68	16.23	
07-00110-30515			15	6	2.85	12°	6	60	12,200	15.98	16.68	17.44	18.27	20.21	
07-00110-30518			18	6	2.85	12°	6	60	12,300	19.11	19.95	20.86	21.86	24.19	
07-00110-30524			24	6	2.85	12°	6	70	13,800	25.37	26.48	27.70	29.04	Free	
07-00110-30530			30	6	2.85	12°	6	70	14,200	31.63	33.02	34.54	36.22	Free	
07-00110-40116			4	R0.1	16	8	3.8	12°	6	60	12,000	17.17	17.93	18.77	19.68
07-00110-40124	24	8			3.8	12°	6	60	12,300	25.51	26.65	27.89	Free	Free	
07-00110-40132	32	8			3.8	12°	6	70	13,000	33.85	35.36	37.01	Free	Free	
07-00110-40216	R0.2	16		8	3.8	12°	6	60	12,000	17.16	17.92	18.75	19.66	Free	
07-00110-40224		24		8	3.8	12°	6	60	12,300	25.50	26.64	27.88	Free	Free	
07-00110-40232		32		8	3.8	12°	6	70	13,000	33.85	35.35	37.00	Free	Free	
07-00110-40316	R0.3	16		8	3.8	12°	6	60	12,000	17.16	17.91	18.74	19.65	Free	
07-00110-40324		24		8	3.8	12°	6	60	12,300	25.50	26.63	27.86	Free	Free	
07-00110-40332		32		8	3.8	12°	6	70	13,000	33.84	35.34	36.99	Free	Free	
07-00110-40516	R0.5	16		8	3.8	12°	6	60	12,000	17.15	17.89	18.71	19.61	Free	
07-00110-40524		24		8	3.8	12°	6	60	12,300	25.49	26.61	27.83	Free	Free	
07-00110-40532		32		8	3.8	12°	6	70	13,800	33.83	35.33	36.96	Free	Free	
07-00110-41016	R1	16		8	3.8	12°	6	60	12,000	17.13	17.85	18.64	19.51	Free	
07-00110-41024		24		8	3.8	12°	6	60	12,300	25.47	26.57	27.77	29.08	Free	
07-00110-41032		32		8	3.8	12°	6	70	13,800	33.81	35.28	36.89	Free	Free	
07-00110-50120	5	R0.1		20	10	4.8	12°	6	60	12,200	21.34	22.29	Free	Free	Free
07-00110-50140				40	10	4.8	12°	6	80	17,800	42.19	Free	Free	Free	Free
07-00110-60124	6	R0.1		24	12	5.8	—	6	60	13,800	Free	Free	Free	Free	Free
07-00110-60148			48	12	5.8	—	6	90	21,600	Free	Free	Free	Free	Free	
07-00110-60224		R0.2	24	12	5.8	—	6	60	13,800	Free	Free	Free	Free	Free	
07-00110-60248			48	12	5.8	—	6	90	21,600	Free	Free	Free	Free	Free	
07-00110-60324		R0.3	24	12	5.8	—	6	60	13,800	Free	Free	Free	Free	Free	
07-00110-60348			48	12	5.8	—	6	90	21,600	Free	Free	Free	Free	Free	
07-00110-60524		R0.5	24	12	5.8	—	6	60	13,800	Free	Free	Free	Free	Free	
07-00110-60530			30	12	5.8	—	6	70	14,500	Free	Free	Free	Free	Free	
07-00110-60548		48	12	5.8	—	6	90	21,600	Free	Free	Free	Free	Free		
07-00110-61024		R1	24	12	5.8	—	6	60	13,800	Free	Free	Free	Free	Free	
07-00110-61048	48		12	5.8	—	6	90	21,600	Free	Free	Free	Free	Free		

订购方式

请指定DHR237R 刃径(D) × 角半径(R) × 颈长(ℓ₁)。
When you order, indicate DHR237R (D) × (R) × (ℓ₁).

※(γ)为参考值。
※(γ) is reference value.

加工材料 Work material				铜 Copper				钨铜 Copper tungsten (W70%-Cu30%)			
刃径 Dia.	(R)角半径 Corner radius	颈长 Under neck length	L(颈长)/ D(刃径) L/D	主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut		主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut	
				min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
0.2	0.02	0.5	2.5	40,000	400	0.01	0.1	36,000	360	0.009	0.09
		1	5	40,000	320	0.008	0.1	36,000	280	0.007	0.09
		1.5	7.5	30,000	180	0.005	0.1	27,000	160	0.005	0.09
	0.05	0.5	2.5	40,000	400	0.03	0.1	36,000	360	0.027	0.09
		1	5	40,000	320	0.02	0.1	36,000	280	0.018	0.09
		1.5	7.5	30,000	180	0.01	0.1	27,000	160	0.009	0.09
0.3	0.02	1	3.3	40,000	480	0.01	0.15	36,000	420	0.009	0.14
		1.5	5	40,000	360	0.008	0.15	36,000	320	0.007	0.14
		2	6.7	30,000	240	0.005	0.15	27,000	210	0.005	0.14
	0.05	1	3.3	40,000	480	0.03	0.15	36,000	420	0.027	0.14
		1.5	5	40,000	360	0.024	0.15	36,000	320	0.022	0.14
		2	6.7	30,000	240	0.018	0.15	27,000	210	0.016	0.14
0.4	0.02	1	2.5	40,000	640	0.01	0.2	36,000	580	0.009	0.18
		2	5	40,000	560	0.01	0.2	36,000	500	0.009	0.18
		3	7.5	30,000	420	0.008	0.2	27,000	380	0.007	0.18
		4	10	30,000	360	0.005	0.2	27,000	320	0.005	0.18
	0.05	1	2.5	40,000	640	0.03	0.2	36,000	580	0.027	0.18
		2	5	40,000	560	0.024	0.2	36,000	500	0.022	0.18
		3	7.5	30,000	420	0.018	0.2	27,000	380	0.016	0.18
		4	10	30,000	360	0.012	0.2	27,000	320	0.01	0.18
	0.1	1	2.5	40,000	640	0.06	0.2	36,000	580	0.054	0.18
		2	5	40,000	560	0.05	0.2	36,000	500	0.045	0.18
		3	7.5	30,000	420	0.036	0.2	27,000	380	0.032	0.18
		4	10	30,000	360	0.024	0.2	27,000	320	0.022	0.18
0.5	0.02	2	4	40,000	800	0.01	0.25	36,000	720	0.009	0.23
		3	6	35,000	640	0.01	0.25	32,000	580	0.009	0.23
		4	8	30,000	480	0.008	0.25	27,000	420	0.007	0.23
		5	10	25,000	400	0.005	0.25	23,000	360	0.005	0.23
	0.05	2	4	40,000	800	0.03	0.25	36,000	720	0.027	0.23
		3	6	35,000	640	0.024	0.25	32,000	580	0.022	0.23
		4	8	30,000	480	0.018	0.25	27,000	420	0.016	0.23
		5	10	25,000	400	0.012	0.25	23,000	360	0.01	0.23
	0.1	2	4	40,000	800	0.06	0.25	36,000	720	0.054	0.23
		3	6	35,000	640	0.05	0.25	32,000	580	0.045	0.23
		4	8	30,000	480	0.036	0.25	27,000	420	0.032	0.23
		5	10	25,000	400	0.024	0.25	23,000	360	0.022	0.23
0.6	0.02	2	3.3	30,000	1,000	0.01	0.3	27,000	900	0.009	0.27
		4	6.7	25,000	800	0.01	0.3	23,000	720	0.009	0.27
		6	10	20,000	600	0.008	0.3	18,000	540	0.007	0.27
	0.05	2	3.3	30,000	1,000	0.03	0.3	27,000	900	0.027	0.27
		4	6.7	25,000	800	0.02	0.3	23,000	720	0.018	0.27
		6	10	20,000	600	0.012	0.3	18,000	540	0.01	0.27
	0.1	2	3.3	30,000	1,000	0.06	0.3	27,000	900	0.054	0.27
		4	6.7	25,000	800	0.05	0.3	23,000	720	0.045	0.27
		6	10	20,000	600	0.036	0.3	18,000	540	0.032	0.27
0.8	0.02	4	5	25,000	1,600	0.01	0.4	23,000	1,400	0.009	0.36
		6	7.5	20,000	1,200	0.01	0.4	18,000	1,100	0.009	0.36
		8	10	16,000	800	0.01	0.4	14,000	720	0.009	0.36
	0.05	4	5	25,000	1,600	0.03	0.4	23,000	1,400	0.027	0.36
		6	7.5	20,000	1,200	0.024	0.4	18,000	1,100	0.022	0.36
		8	10	16,000	800	0.02	0.4	14,000	720	0.018	0.36
	0.1	4	5	25,000	1,600	0.06	0.4	23,000	1,400	0.054	0.36
		6	7.5	20,000	1,200	0.05	0.4	18,000	1,100	0.045	0.36
		8	10	16,000	800	0.04	0.4	14,000	720	0.036	0.36

加工材料 Work material				铜 Copper				钨铜 Copper tungsten (W70%-Cu30%)			
刃径 Dia.	(R)角半径 Corner radius	颈长 Under neck length	L(颈长)/ D(刃径) L/D	主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut		主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut	
				min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
1	0.05	3	3	25,000	2,400	0.03	0.6	23,000	2,200	0.027	0.55
		4	4	25,000	2,200	0.03	0.6	23,000	2,000	0.027	0.55
		5	5	22,000	2,000	0.024	0.6	20,000	1,800	0.022	0.55
		6	6	20,000	1,800	0.024	0.6	18,000	1,600	0.022	0.55
		8	8	16,000	1,400	0.02	0.6	14,000	1,200	0.018	0.55
		10	10	12,000	1,000	0.02	0.6	11,000	900	0.018	0.55
	0.1	3	3	25,000	2,400	0.06	0.6	23,000	2,200	0.054	0.55
		4	4	25,000	2,200	0.055	0.6	23,000	2,000	0.05	0.55
		5	5	22,000	2,000	0.05	0.6	20,000	1,800	0.045	0.55
		6	6	20,000	1,800	0.045	0.6	18,000	1,600	0.04	0.55
		8	8	16,000	1,400	0.04	0.6	14,000	1,200	0.036	0.55
		10	10	12,000	1,000	0.03	0.6	11,000	900	0.027	0.55
	0.2	3	3	25,000	2,400	0.12	0.6	23,000	2,200	0.11	0.55
		4	4	25,000	2,200	0.11	0.6	23,000	2,000	0.1	0.55
		5	5	22,000	2,000	0.1	0.6	20,000	1,800	0.09	0.55
		6	6	20,000	1,800	0.09	0.6	18,000	1,600	0.08	0.55
		8	8	16,000	1,400	0.08	0.6	14,000	1,200	0.07	0.55
		10	10	12,000	1,000	0.06	0.6	11,000	900	0.054	0.55
1.5	0.1	5	3.3	20,000	2,400	0.06	0.9	18,000	2,200	0.054	0.8
		10	6.6	16,000	1,600	0.05	0.9	14,000	1,400	0.045	0.8
		15	10	12,000	1,000	0.04	0.9	11,000	900	0.036	0.8
	0.2	5	3.3	20,000	2,400	0.12	0.9	18,000	2,200	0.11	0.8
		10	6.6	16,000	1,600	0.1	0.9	14,000	1,400	0.09	0.8
		15	10	12,000	1,000	0.08	0.9	11,000	900	0.07	0.8
	0.3	5	3.3	20,000	2,400	0.18	0.9	18,000	2,200	0.16	0.8
		10	6.6	16,000	1,600	0.15	0.9	14,000	1,400	0.14	0.8
		15	10	12,000	1,000	0.12	0.9	11,000	900	0.11	0.8
	0.5	5	3.3	20,000	2,400	0.25	0.5	18,000	2,200	0.23	0.8
		10	6.6	16,000	1,600	0.2	0.5	14,000	1,400	0.18	0.8
		15	10	12,000	1,000	0.12	0.5	11,000	900	0.11	0.8
2	0.1	5	2.5	16,000	3,000	0.06	1.2	14,000	2,700	0.054	1.1
		8	4	14,000	2,600	0.06	1.2	13,000	2,400	0.054	1.1
		10	5	12,000	2,000	0.06	1.2	11,000	1,800	0.054	1.1
		15	7.5	10,000	1,600	0.05	1.2	9,000	1,400	0.045	1.1
		20	10	8,000	1,200	0.04	1.2	7,000	1,100	0.036	1.1
	0.2	5	2.5	16,000	3,000	0.12	1.2	14,000	2,700	0.11	1.1
		8	4	14,000	2,600	0.12	1.2	13,000	2,400	0.11	1.1
		10	5	12,000	2,000	0.12	1.2	11,000	1,800	0.11	1.1
		15	7.5	10,000	1,600	0.1	1.2	9,000	1,400	0.09	1.1
		20	10	8,000	1,200	0.08	1.2	7,000	1,100	0.07	1.1
	0.3	5	2.5	16,000	3,000	0.18	1.2	14,000	2,700	0.16	1.1
		8	4	14,000	2,600	0.18	1.2	13,000	2,400	0.16	1.1
		10	5	12,000	2,000	0.18	1.2	11,000	1,800	0.16	1.1
		15	7.5	10,000	1,600	0.14	1.2	9,000	1,400	0.13	1.1
		20	10	8,000	1,200	0.1	1.2	7,000	1,100	0.09	1.1
	0.5	5	2.5	16,000	3,000	0.3	1.2	14,000	2,700	0.27	1.1
		8	4	14,000	2,600	0.3	1.2	13,000	2,400	0.27	1.1
		10	5	12,000	2,000	0.3	1.2	11,000	1,800	0.27	1.1
		15	7.5	10,000	1,600	0.2	1.2	9,000	1,400	0.18	1.1
		20	10	8,000	1,200	0.15	1.2	7,000	1,100	0.14	1.1
2.5	0.2	8	3.2	15,000	3,000	0.12	1.5	13,500	2,700	0.11	1.4
		14	5.6	12,000	2,200	0.1	1.5	11,000	2,000	0.09	1.4
		20	8	10,000	1,600	0.08	1.5	9,000	1,400	0.04	1.4
	0.5	8	3.2	15,000	3,000	0.3	1.5	13,500	2,700	0.027	1.4
		14	5.6	12,000	2,200	0.25	1.5	11,000	2,000	0.23	1.4
		20	8	10,000	1,600	0.2	1.5	9,000	1,400	0.18	1.4

加工材料 Work material				铜 Copper				钨铜 Copper tungsten (W70%-Cu30%)			
刃径 Dia.	(R)角半径 Corner radius	颈长 Under neck length	L(颈长)/ D(刃径) L/D	主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut		主轴转速 Spindle speed	进给速度 Feed	切深量 Depth of cut	
				min ⁻¹	mm/min	ap mm	ae mm	min ⁻¹	mm/min	ap mm	ae mm
3	0.1	12	4	14,000	3,000	0.06	1.8	13,000	2,700	0.054	1.6
		18	6	12,000	2,400	0.05	1.8	11,000	2,200	0.045	1.6
		24	8	10,000	1,800	0.04	1.8	9,000	1,600	0.036	1.6
	0.2	12	4	14,000	3,000	0.12	1.8	13,000	2,700	0.11	1.6
		18	6	12,000	2,400	0.1	1.8	11,000	2,200	0.09	1.6
		24	8	10,000	1,800	0.08	1.8	9,000	1,600	0.07	1.6
	0.3	12	4	14,000	3,000	0.18	1.8	13,000	2,700	0.16	1.6
		18	6	12,000	2,400	0.15	1.8	11,000	2,200	0.14	1.6
		24	8	10,000	1,800	0.12	1.8	9,000	1,600	0.11	1.6
	0.5	12	4	14,000	3,000	0.3	1.8	13,000	2,700	0.27	1.6
		15	5	13,000	2,600	0.3	1.8	12,000	2,400	0.27	1.6
		18	6	12,000	2,400	0.25	1.8	11,000	2,200	0.23	1.6
24		8	10,000	1,800	0.2	1.8	9,000	1,600	0.18	1.6	
30		10	8,000	1,400	0.16	1.8	7,000	1,200	0.14	1.6	
4	0.1	16	4	10,000	2,800	0.06	2.8	9,000	2,500	0.054	2.5
		24	6	8,000	2,200	0.05	2.8	7,000	1,900	0.045	2.5
		32	8	6,000	1,600	0.04	2.8	5,500	1,400	0.036	2.5
	0.2	16	4	10,000	2,800	0.14	2.8	9,000	2,500	0.13	2.5
		24	6	8,000	2,200	0.12	2.8	7,000	1,900	0.11	2.5
		32	8	6,000	1,600	0.1	2.8	5,500	1,400	0.09	2.5
	0.3	16	4	10,000	2,800	0.18	2.8	9,000	2,500	0.16	2.5
		24	6	8,000	2,200	0.15	2.8	7,000	1,900	0.14	2.5
		32	8	6,000	1,600	0.12	2.8	5,500	1,400	0.11	2.5
	0.5	16	4	10,000	2,800	0.3	2.4	9,000	2,500	0.27	2.2
		24	6	8,000	2,200	0.24	2.4	7,000	1,900	0.22	2.2
		32	8	6,000	1,600	0.18	2.4	5,500	1,400	0.16	2.2
	1	16	4	10,000	2,800	0.6	2	9,000	2,500	0.54	1.8
		24	6	8,000	2,200	0.48	2	7,000	1,900	0.43	1.8
		32	8	6,000	1,600	0.36	2	5,500	1,400	0.32	1.8
5	0.1	20	4	8,000	2,700	0.06	3.5	7,000	2,400	0.054	3.2
		40	8	5,000	1,600	0.04	3.5	4,500	1,400	0.036	3.2
6	0.1	24	4	6,000	2,600	0.06	4.2	5,500	2,300	0.054	3.8
		48	8	4,000	1,600	0.03	4.2	3,500	1,400	0.027	3.8
	0.2	24	4	6,000	2,600	0.12	4.2	5,500	2,300	0.11	3.8
		48	8	4,000	1,600	0.06	4.2	3,500	1,400	0.054	3.8
	0.3	24	4	6,000	2,600	0.18	4.2	5,500	2,300	0.16	3.8
		48	8	4,000	1,600	0.09	4.2	3,500	1,400	0.08	3.8
	0.5	24	4	6,000	2,600	0.3	3.6	5,500	2,300	0.27	3.2
		30	5	5,000	2,200	0.24	3.6	4,500	1,900	0.22	3.2
		48	8	4,000	1,600	0.16	3.6	3,500	1,400	0.14	3.2
	1	24	4	6,000	2,600	0.6	3	5,500	2,300	0.54	2.7
		48	8	4,000	1,600	0.3	3	3,500	1,400	0.27	2.7
	备注 Notes				※1 上方切削参数参考表仅为参考值。请根据实际的加工形状及使用设备调整切削参数。 ※2 切深量的ap表示轴向切入量，ae表示步距量。 ※3 轴向进刀建议采用螺旋进刀及倾斜进刀方式。 ※4 加工沟槽时进给速度需要降低，降低量请根据切削参数参考表的60%左右并采用来回切削加工方式。 ※5 发生振刀时，请以相同的比率降低主轴转速和进给速度。此外，主轴转速不足时，也请以相同的比率调整。 ※6 建议使用油冷冷却方式。 ※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 Recommend to apply helical or ramping for approaching into axial direction. ※4 For slotting, recommend reciprocating milling by adjusting feed & ap in below 60% of recommended milling condition. ※5 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine. ※6 Water-insoluble fluid is recommended.						

即使是难加工的钨铜材料, DRB230也能实现长时间的稳定加工, 得到良好的加工精度与加工面

DRB230 realizes long time machining and achieves stable high precision machining surface even on tough material of copper tungsten.

加工材料：**钨铜 (W70%-Cu30%)**

Material: Copper tungsten (W70%-Cu30%)

工件尺寸：**22 × 22 mm / 1 个**

Work size: 22 × 22 mm / 1pc

加工深度：**16 mm**

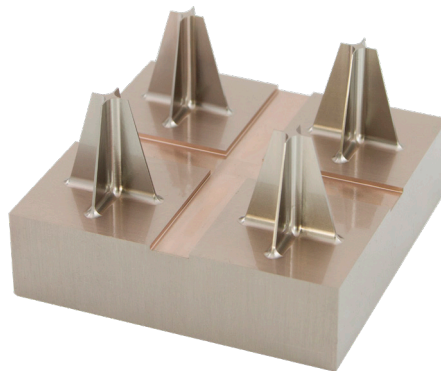
Cutting depth

冷却方式：**油冷**

Coolant: Water-insoluble fluid

总加工时间：**12 小时 52 分 / 1 个**

Total machining time: 12hr 52min/1pc

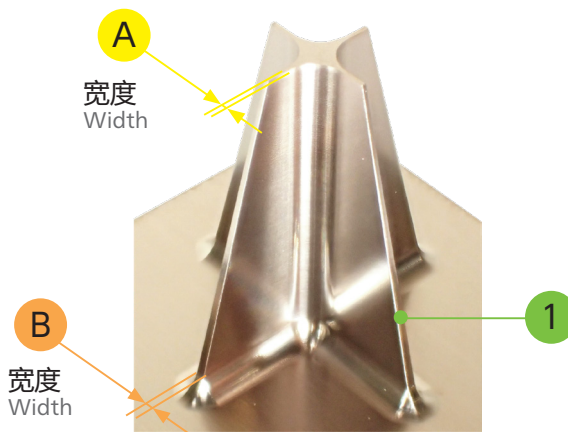


DRB230



精度 Accuracy

	单位 Unit [mm]	
	宽度 Width A	宽度 Width B
骨位宽度 目标值 Rib width Target	0.200	0.444
实测值 第1个 Actual 1 st work	0.202	0.448
实测值 第4个 Actual 4 th work	0.203	0.450



面粗度 Roughness

	单位 Unit [μm]
	1
第1个 1 st work	Ra : 0.082 Rz : 0.783
第4个 4 th work	Ra : 0.089 Rz : 0.854

测定器: 三鹰光器
非接触式三次元测定器 NH-3SP
Measuring instrument:
Mitaka Kohki point autofocus probe
3D measuring instrument NH-3SP

测定器: 尼康制 测定显微镜 MM-60

Measuring instrument: Nikon microscope MM-60

加工工序 Process	粗加工 Roughing		精加工 Finishing		
	上面·底面 Top·Bottom	侧面 Side	上面 Top	侧面 Side	底面 Bottom
使用刀具 Tool	DRB230 R1×16		DRB230 R1×16		
主轴转速 [min ⁻¹] Spindle speed	7,000		7,000		
进给速度 [mm/min] Feed	800		500	100	500
切深量 ap × ae [mm] Depth of cut	0.15 × 0.25		0.05 × 0.03	0.015 × 1.3	0.05 × 0.03
余量 [mm] Stock	0.05	1.3	-		
加工时间 Machining time	4 小时 37 分 4 hr 37 min		6 分 6 min	7 小时 7 hr	1 小时 9 分 1 hr 9 min

采用提高切削性能的刀刃造型,即使是加工骨位形状,也能得到良好的加工精度

Adopt cutting edge with high shearing ability to realize high precision machining even at ribs in thin plates.

加工材料: 紫铜 (TPC)

Material: Tough pitch copper

工件尺寸: 35 × 35 mm

Work size

加工深度: 10 mm

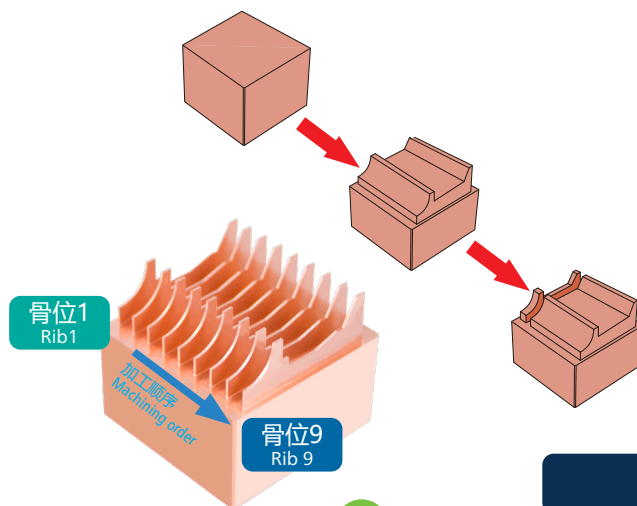
Cutting depth

冷却方式: 水溶性切削油

Coolant: Water-soluble fluid

总加工时间: 5 小时 31 分

Total machining time: 5hr 31min



DHR237R

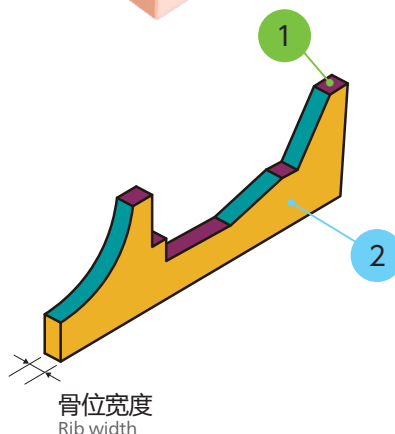


精度
Accuracy

	单位 Unit [mm]	
	骨位1 Rib 1	骨位9 Rib 9
骨位宽度 目标值 Rib width target	0.500	
实测值 Actual	0.500	0.501

测定器: 尼康 显微镜 MM-60

Measuring instrument: Nikon microscope MM-60



骨位宽度
Rib width

面粗度
Roughness

	单位 Unit [μm]	
	1	2
Ra	0.100	0.126
Rz	0.824	0.797

测定器: 基恩士 激光显微镜 VK-X250
Measuring instrument: Keyence VK-X250

加工工序 Process	粗加工 1 Roughing 1	精加工 1 Finishing		粗加工 2 Roughing 2	精加工 2 Finishing 2
		平面 Flat	侧面 Side		侧面 Side
使用刀具 Tool	DHR237R φ3×R0.2×12	DHR237R φ2×R0.1×10		DHR237R φ2×R0.1×10	
主轴转速 [min ⁻¹] Spindle speed	14,000	12,000		12,000	
进给速度 [mm/min] Feed	2,000	1,000		1,000	
切深量 ap × ae [mm] Depth of cut	0.12 × 1.8	0.03 × 0.04	0.04 × 0.03	ap 0.06	0.04 × 0.75
余量 [mm] Stock	0.03	-		-	
加工时间 Machining time	1 小时 4 分 1 hr 4 min	1 小时 7 分 1 hr 7 min	47 分 47 min	47 分 47 min	2 小时 33 分 2 hr 33 min

日进工具株式会社

总公司·海外营业部

140-0014 东京都品川区大井 1-28-1 住友不动产大井町站前大厦 6 F
TEL. + 81(3)-6423-1191 FAX. + 81(3)-6423-1192
www.ns-tool.com

日进工具香港有限公司

香港九龙尖沙咀亚士厘道 33 号 九龙中心大厦 10 楼 1001-02 室
TEL. + 852-2736-8686 FAX. + 852-2736-0070
www.ns-tool.com.en

日进工具香港有限公司 深圳代表处

广东省深圳市罗湖区人民南路 2008 号 深圳嘉里中心大厦 1221 室
TEL. + 86(755)-2265-2275

日进工具香港有限公司 苏州办事处

江苏省苏州市工业园区星都街 80 号 凤凰国际公寓 2107 室
TEL. + 86(512)-6866-2275

www.ns-tool.com.cn (手机官网)



手机官网



公众号



ISO 9001

ISO 14001

JQA-QM5096

JQA-EM3712



警告 CAUTION 使用上的安全注意事项 Attention on Safety

- 1) 拿取刀具使用时, 请特别小心避免损坏刀刃。
- 2) 请勿空手触摸刀刃。
- 3) 为了安全, 使用刀具时请带防护眼镜。
- 4) 选用适合刀具和实际加工内容的刀柄。刀柄装夹后将刀柄的偏摆量控制最低。
- 5) 加工工件必须固定好。
- 6) 请预先测量刀具及加工材料的尺寸。
- 7) 请根据工件形状和使用设备情况来调节切削参数。
- 8) 根据实际用途请选择适合的冷却方式。使用切削油时, 请采取防火措施以免发生火花引起火灾等发生。
- 9) 加工过程中如发生异常现象(异常声音或烟雾)时, 请立即停止机床。
- 10) 请勿改造刀具。

- 1) When removing tools from cases, be careful of getting-out of tools and don't touch directly the cutting edges.
- 2) Never touch the cutting edges directly with bare hand.
- 3) Use safety covers and eye protection, as tools may be broken.
- 4) Use holders, etc. that match the tools and nature of the processing operations. The tool should be firmly attached to the holder to prevent shaking.
- 5) The work materials clamp firmly.
- 6) Make sure of dimensions of tools and work pieces before starting operation.
- 7) It is necessary to adjust conditions according to the dimensions of work materials and the machine.
- 8) Select a cutting fluid appropriate to the particular usage. Using a non-water cutting fluid could lead to fires due to sparks generated during processing or heat caused by breakage. Ensure that you take proper fire-prevention measures.
- 9) If abnormal sound, etc. occurs during processing, stop the machine immediately.
- 10) Don't modify tools.