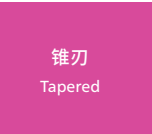
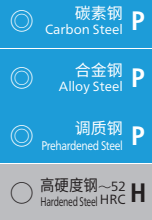


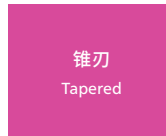
切削参数参考表

Recommended Milling Conditions

加工材料 Work Material		碳素钢·合金钢·调质钢 Carbon Steels · Alloy Steels · Prehardened Steels S50C · SKD · NAK			高硬度钢 Hardened Steels (52HRC)			铝合金·铜合金 Aluminium Alloy · Copper		
		沟槽 Slotting			沟槽 Slotting			沟槽 Slotting		
球头半径 Radius	锥度半角 Taper Angle	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
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
R0.1	1°	40,000	90	0.005	40,000	60	0.003	40,000	100	0.006
	2°	40,000	100	0.006	40,000	70	0.004	40,000	110	0.007
	3°	40,000	120	0.006	40,000	80	0.004	40,000	140	0.007
	5°	40,000	130	0.007	40,000	90	0.005	40,000	140	0.008
	7°	40,000	160	0.007	40,000	100	0.005	40,000	180	0.008
	10°	40,000	180	0.008	40,000	120	0.005	40,000	200	0.01
R0.15	1°	40,000	120	0.005	40,000	80	0.004	40,000	140	0.006
	2°	40,000	130	0.005	40,000	90	0.004	40,000	140	0.006
	3°	40,000	140	0.006	40,000	100	0.004	40,000	160	0.007
	5°	40,000	150	0.006	40,000	100	0.005	40,000	170	0.007
	7°	40,000	180	0.007	40,000	120	0.005	40,000	200	0.008
	10°	40,000	210	0.008	40,000	140	0.005	40,000	230	0.01
R0.2	1°	40,000	390	0.015	40,000	260	0.01	40,000	430	0.018
	2°	40,000	400	0.015	40,000	260	0.01	40,000	440	0.018
	3°	40,000	420	0.02	40,000	280	0.013	40,000	460	0.024
	5°	40,000	430	0.02	40,000	290	0.013	40,000	470	0.024
	7°	40,000	450	0.02	40,000	300	0.013	40,000	500	0.024
	10°	40,000	470	0.02	40,000	310	0.013	40,000	520	0.024
R0.25	1°	40,000	500	0.02	37,000	310	0.013	40,000	550	0.024
	2°	40,000	420	0.015	38,000	260	0.01	40,000	460	0.018
	3°	40,000	430	0.02	37,000	260	0.013	40,000	470	0.024
	5°	40,000	440	0.02	36,000	260	0.013	40,000	490	0.024
	7°	40,000	450	0.025	35,000	260	0.017	40,000	500	0.03
	10°	40,000	480	0.03	34,000	270	0.02	40,000	530	0.036
R0.3	1°	40,000	510	0.03	32,000	270	0.02	40,000	560	0.036
	2°	40,000	540	0.03	29,000	270	0.02	40,000	600	0.036
	3°	40,000	500	0.03	31,000	260	0.02	40,000	550	0.036
	5°	40,000	520	0.035	30,500	260	0.023	40,000	580	0.042
	7°	40,000	530	0.04	30,000	260	0.026	40,000	580	0.05
	10°	40,000	550	0.045	29,000	270	0.03	40,000	610	0.055
R0.35	1°	38,000	570	0.05	28,000	280	0.033	40,000	660	0.06
	2°	35,000	580	0.05	27,000	300	0.033	40,000	730	0.06
	3°	32,000	600	0.05	24,000	300	0.033	40,000	820	0.06
	5°	36,000	720	0.06	27,000	360	0.04	40,000	880	0.07
	7°	35,000	720	0.065	26,500	360	0.043	40,000	900	0.08
	10°	34,000	720	0.07	26,000	360	0.046	40,000	940	0.085
R0.4	1°	33,000	720	0.075	25,000	360	0.05	40,000	960	0.09
	2°	32,000	720	0.08	24,000	360	0.053	40,000	990	0.095
	3°	30,000	720	0.085	23,000	360	0.056	40,000	1,060	0.1
	5°	28,000	720	0.09	21,000	360	0.06	40,000	1,140	0.11
	7°	32,000	900	0.065	23,500	460	0.043	40,000	1,240	0.08
	10°	31,000	900	0.07	23,000	460	0.046	40,000	1,280	0.085
R0.4	1°	30,000	900	0.075	22,500	460	0.05	40,000	1,320	0.09
	2°	29,000	900	0.08	22,000	460	0.053	40,000	1,370	0.095
	3°	28,000	900	0.09	21,000	460	0.06	40,000	1,420	0.11
	5°	27,000	900	0.1	20,000	460	0.066	40,000	1,470	0.12
	7°	25,000	900	0.11	18,500	460	0.073	37,000	1,470	0.13
	15°	25,000	900	0.11	18,500	460	0.073	37,000	1,470	0.13



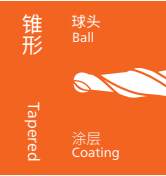
加工材料 Work Material		碳素钢·合金钢·调质钢 Carbon Steels · Alloy Steels · Prehardened Steels S50C · SKD · NAK			高硬度钢 Hardened Steels (52HRC)			铝合金·铜合金 Aluminium Alloy · Copper		
		沟槽 Slotting			沟槽 Slotting			沟槽 Slotting		
球头半径 Radius	锥度半角 Taper Angle	主轴转速 Spindle Speed	进给速度 Feed	切深量 Depth of Cut	主轴转速 Spindle Speed	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
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
R0.45	1°	28,000	1,100	0.1	21,000	550	0.065	40,000	1,730	0.12
	2°	27,500	1,100	0.1	20,500	550	0.067	40,000	1,760	0.125
	3°	27,000	1,100	0.11	20,000	550	0.073	40,000	1,790	0.13
	5°	26,000	1,100	0.12	19,500	550	0.08	39,000	1,820	0.145
	7°	25,000	1,100	0.13	19,000	550	0.086	37,500	1,820	0.16
	10°	24,000	1,100	0.14	18,000	550	0.092	36,000	1,820	0.17
R0.5	15°	22,000	1,100	0.15	16,500	550	0.1	33,000	1,820	0.18
	1°	25,000	1,200	0.12	19,000	570	0.08	38,000	2,000	0.145
	2°	24,500	1,200	0.13	18,500	570	0.085	37,000	2,000	0.16
	3°	24,000	1,200	0.14	18,000	570	0.09	36,000	2,000	0.17
	5°	23,000	1,200	0.15	17,500	570	0.1	35,000	2,000	0.18
	7°	22,500	1,200	0.16	17,000	570	0.105	34,000	2,000	0.19
R0.6	10°	21,000	1,200	0.17	16,000	570	0.11	32,000	2,000	0.2
	15°	20,000	1,200	0.18	15,000	570	0.12	29,000	2,000	0.21
	1°	21,000	1,300	0.13	16,000	590	0.085	32,000	2,100	0.16
	2°	20,500	1,300	0.15	15,500	590	0.1	31,000	2,100	0.18
	3°	20,000	1,300	0.16	15,000	590	0.11	30,000	2,100	0.2
	5°	19,500	1,300	0.18	14,500	590	0.12	29,000	2,100	0.22
R0.75	7°	19,000	1,300	0.2	14,000	590	0.13	28,000	2,100	0.24
	10°	18,000	1,300	0.22	13,000	590	0.145	27,000	2,100	0.26
	15°	16,000	1,300	0.23	12,000	590	0.15	25,000	2,100	0.28
	1°	17,000	1,300	0.15	13,000	600	0.1	25,000	2,100	0.17
	2°	16,500	1,300	0.17	12,500	600	0.11	24,500	2,100	0.2
	3°	16,000	1,300	0.18	12,000	600	0.12	24,000	2,100	0.22
R0.8	5°	15,500	1,300	0.2	11,500	600	0.13	23,000	2,100	0.24
	7°	15,000	1,300	0.22	11,000	600	0.145	22,500	2,100	0.25
	10°	14,000	1,300	0.24	10,500	600	0.16	21,000	2,100	0.27
	15°	13,000	1,300	0.25	10,000	600	0.165	20,000	2,100	0.29
	1°	16,000	1,400	0.15	12,500	620	0.105	23,500	2,300	0.19
	2°	15,500	1,400	0.17	12,000	620	0.11	23,000	2,300	0.22
R1	3°	15,000	1,400	0.18	11,500	620	0.12	22,500	2,300	0.23
	5°	14,500	1,400	0.2	11,000	620	0.13	22,000	2,300	0.25
	7°	14,000	1,400	0.22	10,500	620	0.145	21,000	2,300	0.26
	10°	13,000	1,400	0.24	10,000	620	0.16	20,000	2,300	0.29
	15°	12,000	1,400	0.25	9,500	620	0.165	18,000	2,300	0.3
	1°	13,000	1,200	0.18	10,000	600	0.12	19,000	2,000	0.21
R1.25	2°	12,500	1,200	0.2	9,500	600	0.13	18,500	2,000	0.24
	3°	12,000	1,200	0.22	9,000	600	0.145	18,000	2,000	0.26
	5°	11,500	1,200	0.24	8,500	600	0.16	17,500	2,000	0.29
	7°	11,000	1,200	0.26	8,000	600	0.17	17,000	2,000	0.31
	10°	10,500	1,200	0.28	7,500	600	0.185	16,000	2,000	0.33
	15°	10,000	1,200	0.3	7,000	600	0.195	15,000	2,000	0.36
R1.25	1°	10,000	1,200	0.2	7,500	600	0.13	15,500	2,000	0.24
	2°	10,000	1,200	0.22	7,500	600	0.145	15,000	2,000	0.26
	3°	9,500	1,200	0.24	7,000	600	0.16	14,500	2,000	0.29
	5°	9,500	1,200	0.26	7,000	600	0.17	14,000	2,000	0.31
	7°	9,000	1,200	0.28	6,500	600	0.185	13,500	2,000	0.33
	10°	8,500	1,200	0.3	6,500	600	0.2	13,000	2,000	0.36
15°	8,000	1,200	0.32	6,000	600	0.21	12,000	2,000	0.38	



切削参数参考表

Recommended Milling Conditions

加工材料 Work Material		碳素钢·合金钢·调质钢 Carbon Steels · Alloy Steels · Prehardened Steels S50C · SKD · NAK			高硬度钢 Hardened Steels (52HRC)			铝合金·铜合金 Aluminium Alloy · Copper		
		沟槽 Slotting			沟槽 Slotting			沟槽 Slotting		
球头半径 Radius	锥度半角 Taper Angle	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
		min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm	min ⁻¹	mm/min	ap mm
R1.5	1°	8,300	1,200	0.22	6,300	600	0.145	13,000	2,000	0.26
	2°	8,200	1,200	0.24	6,100	600	0.16	12,500	2,000	0.29
	3°	8,100	1,200	0.26	6,000	600	0.17	12,000	2,000	0.31
	5°	7,800	1,200	0.28	5,800	600	0.185	11,500	2,000	0.33
	7°	7,500	1,200	0.3	5,600	600	0.2	11,000	2,000	0.36
	10°	7,100	1,200	0.32	5,300	600	0.21	10,500	2,000	0.38
	15°	6,500	1,200	0.35	4,900	600	0.23	10,000	2,000	0.42
R2	1°	6,300	1,100	0.25	4,700	550	0.165	9,400	1,800	0.3
	2°	6,100	1,100	0.27	4,600	550	0.18	9,200	1,800	0.32
	3°	6,000	1,100	0.29	4,500	550	0.19	9,100	1,800	0.35
	5°	5,800	1,100	0.32	4,400	550	0.21	8,800	1,800	0.38
	7°	5,600	1,100	0.35	4,200	550	0.23	8,400	1,800	0.42
	10°	5,300	1,100	0.37	4,000	550	0.245	8,000	1,800	0.44
	15°	4,900	1,100	0.4	3,700	550	0.265	7,300	1,800	0.48
备注 Notes		※1 本切削参数仅供参考。请根据实际的加工形状和所使用的机床等调整切削参数。 ※2 本切削参数以距离刀具前端R×2的加工深度为假定条件。 深度超出该值的沟槽加工请调整转速或进给速度。 ※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，主轴转速过低时，也以相同的比率降低。 ※4 建议采用来回切削加工方式。 ※5 加工高硬度钢时，建议使用油雾冷却方式。 ※1 Recommend to use the milling condition as just reference. Adjust milling conditions according to machining shape and machine status. ※2 This cutting condition assumes cutting depth of R×2 from the tip of the tool. Please adjust both spindle speed and feed when the slotting depth is over 2×R. ※3 Reduce both spindle speed and feed at same rate for chattering and also for insufficient spindle speed of a machine. ※4 Recommend reciprocating cutting. ※5 Oil mist coolant is recommended for the machining of hardened steels.								



- 碳素钢 P
Carbon Steel
- 合金钢 P
Alloy Steel
- 调质钢 P
Prehardened Steel
- 高硬度钢~52 HRC H
Hardened Steel

- 铝合金 N
Aluminium Alloy
- 铜合金 N
Copper
- 树脂 O
Resin

