

HF871

	Material Group ISO 513													
	Hardness/Rm	≤ 700 N/mm ²			700-1000 N/mm ²			≤ 35 HRC				≤ 40 HRC		
	ap x ae	D x D			D x D			0.5D x D				0.5D x D		
	Vc (m/min)	130-150			80-100			60-80				30-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
	1	30000	0.005	600	28660	0.005	520	22290	0.004	330	12740	0.004	180	
	1.5	29720	0.008	890	19110	0.007	520	14860	0.006	330	8490	0.005	180	
	2	22290	0.010	890	14330	0.009	520	11150	0.008	330	6370	0.007	180	
	3	14860	0.014	830	9550	0.013	480	7430	0.011	310	4250	0.010	170	
	4	11150	0.019	830	7170	0.017	480	5570	0.014	310	3180	0.013	160	
	5	8920	0.023	820	5730	0.021	470	4460	0.017	310	2550	0.016	160	
	6	7430	0.027	800	4780	0.024	460	3720	0.020	300	2120	0.019	160	
	8	5570	0.035	780	3580	0.032	450	2790	0.026	290	1590	0.025	160	
	10	4460	0.042	750	2870	0.038	430	2230	0.032	280	1270	0.029	150	
	12	3720	0.048	710	2390	0.043	410	1860	0.036	270	1060	0.034	140	
14	3180	0.054	690	2050	0.049	400	1590	0.041	260	910	0.038	140		
16	2790	0.060	670	1790	0.054	390	1390	0.045	250	800	0.042	130		
18	2480	0.066	650	1590	0.059	380	1240	0.050	250	710	0.046	130		
20	2230	0.073	650	1430	0.066	380	1110	0.055	240	640	0.051	130		
ap x ae	D1	0.25D x D												
ap x ae	≤ D3	0.5D x D												

	Material Group ISO 513												
	Hardness/Rm	≤ 700 N/mm ²			700-1000 N/mm ²								
	ap x ae	1.5D x D			1.5D x D								
	Vc (m/min)	100-120			60-80								
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)						
	8	4380	0.028	490	2790	0.025	280						
	10	3500	0.034	470	2230	0.030	270						
	12	2920	0.038	450	1860	0.035	260						
	14	2500	0.043	430	1590	0.039	250						
	16	2190	0.048	420	1390	0.043	240						
18	1950	0.053	410	1240	0.048	240							
20	1750	0.058	410	1110	0.053	230							

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	Hardness/Rm	≤ 700 N/mm ²											
	ap x ae	2D x D											
	Vc (m/min)	75-95											
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)									
	10	2710	0.025	270									
	12	2260	0.029	260									
	14	1930	0.032	250									
	16	1690	0.036	240									
	18	1500	0.040	240									
20	1350	0.044	240										

PARAMETERS SUGGESTED WITH HIGH PRECISION WELDON CHUCK AND STABLE MACHINING CONDITION.
FOR APPLICATION ON HIGH POWER MILLING CHUCK, PLEASE REFER TO HF840 PARAMETERS.

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	Hardness/Rm	≤ 700 N/mm ²				700-1000 N/mm ²			≤ 35 HRC				≤ 40 HRC		
	ap x ae	1.5D x 0.5D				1.5D x 0.5D			1.2D x 0.3D				1.2D x 0.3D		
	Vc (m/min)	160-180				100-120			70-90				40-60		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)		
	1	30000	0.006	720	30000	0.005	650	25480	0.005	490	15920	0.007	420		
	1.5	36090	0.009	1300	23350	0.008	760	16990	0.007	490	10620	0.010	420		
	2	27070	0.012	1300	17520	0.011	760	12740	0.010	490	7960	0.013	420		
	3	18050	0.017	1210	11680	0.015	710	8490	0.013	460	5310	0.018	390		
	4	13540	0.022	1200	8760	0.020	700	6370	0.018	450	3980	0.024	390		
	5	10830	0.028	1200	7010	0.025	700	5100	0.022	450	3180	0.030	390		
	6	9020	0.032	1170	5840	0.029	680	4250	0.026	440	2650	0.036	380		
	8	6770	0.042	1140	4380	0.038	660	3180	0.034	430	1990	0.046	370		
	10	5410	0.050	1090	3500	0.045	640	2550	0.040	410	1590	0.055	350		
12	4510	0.058	1040	2920	0.052	610	2120	0.046	390	1330	0.063	340			
14	3870	0.065	1000	2500	0.058	580	1820	0.052	380	1140	0.071	330			
16	3380	0.072	970	2190	0.065	570	1590	0.058	370	1000	0.079	320			
18	3010	0.079	950	1950	0.071	560	1420	0.063	360	880	0.087	310			
20	2710	0.088	950	1750	0.079	550	1270	0.070	360	800	0.096	310			
ap x ae	≤ D3		1.5D x 0.1D												

	Material Group ISO 513														
	Hardness/Rm	≤ 700 N/mm ²				700-1000 N/mm ²			≤ 35 HRC				≤ 40 HRC		
	α° x ae	5° x 0.4D				4° x 0.4D			3° x 0.4D				3° x 0.4D		
	Vc (m/min)	130-150				80-100			60-80				30-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)		
	1	30000	0.004	435	28660	0.003	390	22290	0.003	268	12740	0.003	143		
	1.5	29720	0.005	650	19110	0.005	390	14860	0.005	268	8490	0.004	143		
	2	22290	0.007	650	14330	0.007	390	11150	0.006	268	6370	0.006	143		
	3	14860	0.010	605	9550	0.010	365	7430	0.008	250	4250	0.008	133		
	4	11150	0.013	600	7170	0.013	360	5570	0.011	247	3180	0.010	132		
	5	8920	0.017	600	5730	0.016	360	4460	0.014	246	2550	0.013	131		
	6	7430	0.020	585	4780	0.018	350	3720	0.016	241	2120	0.015	128		
	8	5570	0.025	570	3580	0.024	340	2790	0.021	235	1590	0.020	125		
	10	4460	0.031	545	2870	0.029	325	2230	0.025	225	1270	0.024	120		
12	3720	0.035	520	2390	0.033	310	1860	0.029	214	1060	0.027	114			
14	3180	0.039	500	2050	0.037	300	1590	0.032	206	910	0.030	110			
16	2790	0.044	490	1790	0.041	290	1390	0.036	200	800	0.034	108			
18	2480	0.048	475	1590	0.045	285	1240	0.040	197	710	0.037	105			
20	2230	0.053	475	1430	0.050	285	1110	0.044	195	640	0.041	105			
α° max	≤ D3		1°												

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	Material Group ISO 513	P1 P2 M1 K1			P3 P4 M2 K2 K3			P5 M3 M4 K4 S1 S4				S2 S3 S5		
	Hardness/Rm	≤ 700 N/mm ²			700-1000 N/mm ²			≤ 35 HRC				≤ 40 HRC		
	α° x ae	15° x D			10° x D			5° x D				5° x D		
	Vc (m/min)	130-150			80-100			60-80				30-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
	6	7430	0.022	640	4780	0.020	380	3720	0.019	281	2120	0.026	220	
	8	5570	0.028	620	3580	0.026	370	2790	0.024	273	1590	0.034	214	
	10	4460	0.034	600	2870	0.031	355	2230	0.029	262	1270	0.040	205	
	12	3720	0.038	570	2390	0.035	335	1860	0.034	250	1060	0.046	196	
	14	3180	0.043	550	2050	0.040	325	1590	0.038	240	910	0.052	189	
16	2790	0.048	535	1790	0.044	315	1390	0.042	233	800	0.058	185		
18	2480	0.053	520	1590	0.048	310	1240	0.046	229	710	0.063	180		
20	2230	0.058	520	1430	0.054	305	1110	0.051	227	640	0.070	180		

	Material Group ISO 513	P1 P2 M1 K1			P3 P4 M2 K2 K3			P5 M3 M4 K4 S1 S4				S2 S3 S5		
	Hardness/Rm	≤ 700 N/mm ²			700-1000 N/mm ²			≤ 35 HRC				≤ 40 HRC		
	ap x ae	D x 0.4D			D x 0.4D			D x 0.25D				D x 0.25D		
	Vc (m/min)	130-150			80-100			60-80				30-50		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
	6	7430	0.027	800	4780	0.024	460	3720	0.020	300	2120	0.019	160	
	8	5570	0.035	780	3580	0.032	450	2790	0.026	290	1590	0.025	160	
	10	4460	0.042	750	2870	0.038	430	2230	0.032	280	1270	0.029	150	
	12	3720	0.048	710	2390	0.043	410	1860	0.036	270	1060	0.034	140	
	14	3180	0.054	690	2050	0.049	400	1590	0.041	260	910	0.038	140	
16	2790	0.060	670	1790	0.054	390	1390	0.045	250	800	0.042	130		
18	2480	0.066	650	1590	0.059	380	1240	0.050	250	710	0.046	130		
20	2230	0.073	650	1430	0.066	380	1110	0.055	240	640	0.051	130		

	Material Group ISO 513	P1 P2 M1 K1			P3 P4 M2 K2 K3			P5 M3 M4 K4 S1 S4				S2 S3 S5		
	Hardness/Rm	≤ 700 N/mm ²			700-1000 N/mm ²			≤ 35 HRC				≤ 40 HRC		
	ap x ae	D x D			D x D			0.5D x D				0.5D x D		
	Vc (m/min)	100-120			60-80			45-65				20-40		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
	1	30000	0.003	300	22290	0.002	200	17520	0.002	140	9550	0.003	110	
	1.5	23350	0.004	350	14860	0.003	200	11680	0.003	140	6370	0.004	110	
	2	17520	0.005	350	11150	0.005	200	8760	0.004	140	4780	0.006	110	
	3	11680	0.007	330	7430	0.006	190	5840	0.006	130	3180	0.008	100	
	4	8760	0.009	320	5570	0.008	190	4380	0.007	130	2390	0.010	100	
5	7010	0.012	320	4460	0.010	180	3500	0.009	130	1910	0.013	100		
6	5840	0.014	320	3720	0.012	180	2920	0.011	130	1590	0.015	90		
8	4380	0.018	310	2790	0.016	180	2190	0.014	120	1190	0.019	90		
10	3500	0.021	290	2230	0.019	170	1750	0.017	120	960	0.023	90		
12	2920	0.024	280	1860	0.022	160	1460	0.019	110	800	0.026	80		
14	2500	0.027	270	1590	0.024	150	1250	0.022	110	680	0.030	80		
16	2190	0.030	260	1390	0.027	150	1090	0.024	100	600	0.033	80		
18	1950	0.033	260	1240	0.030	150	970	0.026	100	530	0.036	80		
20	1750	0.037	260	1110	0.033	150	880	0.029	100	480	0.040	80		
ap x ae	≤ D3	0.5D x D												

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TROCHOIDAL	Material Group ISO 513	P1 P2 M1 K1			P3 P4 M2 K2 K3			P5 M3 M4 K4 S1 S4				S2 S3 S5		
	Hardness/Rm	≤ 700 N/mm ²			700-1000 N/mm ²			≤ 35 HRC				≤ 40 HRC		
	ap x ae	2D x 0.2D			2D x 0.1D			1.5D x 0.1D				1.5D x 0.1D		
	Vc (m/min)	190-230			130-150			100-120				50-70		
	D (mm)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	n (rpm)	fz (mm/z)	Vf (mm/min)	
1	30000	0.013	1500	30000	0.011	1350	30000	0.010	1200	19110	0.014	1050		
1.5	23350	0.019	1750	29720	0.017	2010	23350	0.015	1400	12740	0.021	1050		
2	30000	0.025	3000	22290	0.023	2010	17520	0.020	1400	9550	0.028	1050		
3	22290	0.035	3120	14860	0.032	1870	11680	0.028	1310	6370	0.039	980		
4	16720	0.046	3090	11150	0.042	1860	8760	0.037	1300	4780	0.051	970		
5	13380	0.058	3080	8920	0.052	1850	7010	0.046	1290	3820	0.063	970		
6	11150	0.068	3010	7430	0.061	1810	5840	0.054	1260	3180	0.074	940		
8	8360	0.088	2930	5570	0.079	1750	4380	0.070	1230	2390	0.096	920		
10	6690	0.105	2810	4460	0.095	1690	3500	0.084	1180	1910	0.116	880		
12	5570	0.120	2670	3720	0.108	1610	2920	0.096	1120	1590	0.132	840		
14	4780	0.135	2580	3180	0.122	1550	2500	0.108	1080	1360	0.149	810		
16	4180	0.150	2510	2790	0.135	1510	2190	0.120	1050	1190	0.165	790		
18	3720	0.165	2460	2480	0.149	1470	1950	0.132	1030	1060	0.182	770		
20	3340	0.183	2440	2230	0.164	1470	1750	0.146	1020	960	0.201	770		

ap x ae	D1	D x 0.1D	D x 0.1D	D x 0.1D	D x 0.1D
ap x ae	≤ D3	1.5D x 0.1D	1.5D x 0.1D	D x 0.1D	D x 0.1D

NOTES:

Down milling CNC programming is required.

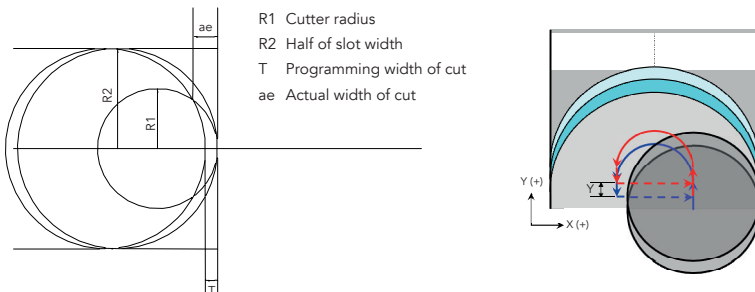
"ae" value max 0.2xD - "T" value max 0.1xD.

The use of end mill with diameter 30-40% smaller than the width of the slot is recommended.

The cutting conditions are based on CNC programming with medium dynamic speed.

With lower CNC dynamic speed, use the same cutting conditions or reduce the cutting speed Vc.

With higher CNC dynamic speed, reduce the "T" value by approximately -30 -50% and apply the maximum available cutting speed Vc.



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