HF850

SLOTTING

Material Group ISO 513	P4 M4 K4			P4 P5 M4 M5 K4 S1			P5 P6 M5 K4 S2 S3			H1 H4 H5		
Hardness/Rm	800-1000 N/mm²			900-1200 N/mm²			35-45 HRC			≤ 55 HRC		
ap x ae	**0.5D x D**			**0.5D x D**			**0.3D x D**			**0.3D x D**		
Vc (m/min)	**80-100**			**60-80**			**40-60**			**30-50**		
D (mm)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)
3	9550	0.012	450	7430	0.011	320	5310	0.009	190	4250	0.008	140
4	7170	0.016	450	5570	0.014	320	3980	0.012	190	3180	0.011	140
5	5730	0.020	450	4460	0.018	310	3180	0.015	190	2550	0.014	140
6	4780	0.023	440	3720	0.021	310	2650	0.017	180	2120	0.016	140
8	3580	0.030	430	2790	0.027	300	1990	0.022	180	1590	0.021	130
10	2870	0.036	410	2230	0.032	290	1590	0.027	170	1270	0.025	130
12	2390	0.041	390	1860	0.037	270	1330	0.031	160	1060	0.029	120
14	2050	0.046	380	1590	0.041	260	1140	0.034	160	910	0.032	120
16	1790	0.051	370	1390	0.046	260	1000	0.038	150	800	0.036	110
20	1430	0.062	350	1110	0.056	250	800	0.047	150	640	0.043	110

ap x ae	**≤ D5**	0.3D x D	0.3D x D	0.2D x D	0.1D x D

SIDE MILLING

Material Group ISO 513	P4 M4 K4			P4 P5 M4 M5 K4 S1			P5 P6 M5 K4 S2 S3			H1 H4 H5		
Hardness/Rm	800-1000 N/mm²			900-1200 N/mm²			35-45 HRC			≤ 55 HRC		
ap x ae	**1.5D x 0.3D**			**1.5D x 0.2D**			**1.2D x 0.2D**			**1.2D x 0.1D**		
Vc (m/min)	**100-120**			**70-90**			**50-70**			**40-60**		
D (mm)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)
3	11680	0.014	670	8490	0.013	440	6370	0.011	290	5310	0.016	330
4	8760	0.019	660	6370	0.017	430	4780	0.015	290	3980	0.021	330
5	7010	0.023	660	5100	0.021	430	3820	0.019	290	3180	0.026	330
6	5840	0.028	640	4250	0.025	420	3180	0.022	280	2650	0.030	320
8	4380	0.036	630	3180	0.032	410	2390	0.029	270	1990	0.039	310
10	3500	0.043	600	2550	0.039	390	1910	0.034	260	1590	0.047	300
12	2920	0.049	570	2120	0.044	370	1590	0.039	250	1330	0.054	290
14	2500	0.055	550	1820	0.050	360	1360	0.044	240	1140	0.061	280
16	2190	0.061	540	1590	0.055	350	1190	0.049	230	1000	0.067	270
20	1750	0.074	520	1270	0.067	340	960	0.060	230	800	0.082	260

ap x ae	**≤ D5**	1.2D x 0.2D	1.2D x 0.1D	D x 0.2D	D x 0.1D

HELICAL

Material Group ISO 513	P4 M4 K4			P4 P5 M4 M5 K4 S1			P5 P6 M5 K4 S2 S3			H1 H4 H5		
Hardness/Rm	800-1000 N/mm²			900-1200 N/mm²			35-45 HRC			≤ 55 HRC		
α° x ae	**5° x 0.4D**			**4° x 0.4D**			**3° x 0.4D**			**2° x 0.4D**		
Vc (m/min)	**80-100**			**60-80**			**40-60**			**30-50**		
D (mm)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)
3	9550	0.009	330	7430	0.008	240	5310	0.007	152	4250	0.008	128
4	7170	0.011	330	5570	0.011	240	3980	0.009	150	3180	0.010	126
5	5730	0.014	325	4460	0.013	235	3180	0.012	149	2550	0.012	126
6	4780	0.017	320	3720	0.016	230	2650	0.014	146	2120	0.015	123
8	3580	0.022	310	2790	0.020	225	1990	0.018	142	1590	0.019	120
10	2870	0.026	300	2230	0.024	215	1590	0.021	136	1270	0.023	115
12	2390	0.030	285	1860	0.028	205	1330	0.024	130	1060	0.026	109
14	2050	0.033	275	1590	0.031	200	1140	0.028	126	910	0.029	106
16	1790	0.037	265	1390	0.035	190	1000	0.031	122	800	0.032	103
20	1430	0.045	260	1110	0.042	185	800	0.037	119	640	0.039	100

α°	**≤ D5**	2°	2°	1°	1°

PARAMETERS SUGGESTED WITH HIGH POWER MILLING CHUCK AND STABLE MACHINING CONDITION

CUTTING PARAMETERS

HF850

RAMPING

Material Group ISO 513	P4 M4 K4			P4 P5 M4 M5 K4 S1			P5 P6 M5 K4 S2 S3			H1 H4 H5		
Hardness/Rm	800-1000 N/mm²			900-1200 N/mm²			35-45 HRC			≤ 55 HRC		
α° x ae	**5° x D**			**4° x D**			**3° x D**			**2° x D**		
Vc (m/min)	**80-100**			**60-80**			**40-60**			**30-50**		
D (mm)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)
6	4780	0.020	385	3720	0.019	280	2650	0.018	187	2120	0.027	232
8	3580	0.026	370	2790	0.024	270	1990	0.023	182	1590	0.035	226
10	2870	0.031	360	2230	0.029	260	1590	0.027	175	1270	0.043	216
12	2390	0.036	340	1860	0.033	245	1330	0.031	167	1060	0.049	206
14	2050	0.040	330	1590	0.037	240	1140	0.035	161	910	0.055	199
16	1790	0.045	320	1390	0.042	230	1000	0.039	157	800	0.061	195
20	1430	0.054	310	1110	0.051	225	800	0.048	153	640	0.074	189

VERTICAL

Material Group ISO 513	P4 M4 K4			P4 P5 M4 M5 K4 S1			P5 P6 M5 K4 S2 S3			H1 H4 H5		
Hardness/Rm	800-1000 N/mm²			900-1200 N/mm²			35-45 HRC			≤ 55 HRC		
ap x ae	**D x 0.4D**			**D x 0.4D**			**D x 0.25D**			**D x 0.25D**		
Vc (m/min)	**80-100**			**60-80**			**40-60**			**30-50**		
D (mm)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)
6	4780	0.023	440	3720	0.021	310	2650	0.017	180	2120	0.016	140
8	3580	0.030	430	2790	0.027	300	1990	0.022	180	1590	0.021	130
10	2870	0.036	410	2230	0.032	290	1590	0.027	170	1270	0.025	130
12	2390	0.041	390	1860	0.037	270	1330	0.031	160	1060	0.029	120
14	2050	0.046	380	1590	0.041	260	1140	0.034	160	910	0.032	120
16	1790	0.051	370	1390	0.046	260	1000	0.038	150	800	0.036	110
20	1430	0.062	350	1110	0.056	250	800	0.047	150	640	0.043	110

PARAMETERS SUGGESTED WITH HIGH POWER MILLING CHUCK AND STABLE MACHINING CONDITION

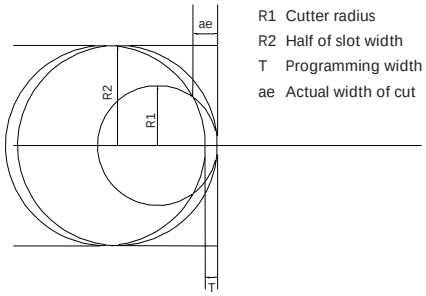
CUTTING PARAMETERS

HF850

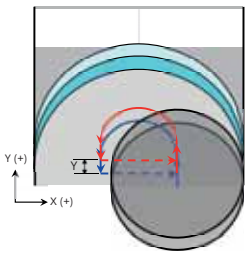
	Material Group ISO 513	P4 M4 K4			P4 P5 M4 M5 K4 S1			P5 P6 M5 K4 S2 S3			H1 H4 H5		
	Hardness/Rm	800-1000 N/mm²			900-1200 N/mm²			35-45 HRC			≤ 55 HRC		
	ap x ae	**2D x 0.2D**			**2D x 0.1D**			**1.5D x 0.1D**			**1.5D x 0.1D**		
	Vc (m/min)	**130-150**			**100-120**			**70-90**			**50-70**		
TROCHOIDAL	D (mm)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)	n (rpm)	fn (mm/rev)	Vf (mm/min)
	3	7430	0.030	880	5840	0.027	630	4250	0.024	400	3180	0.033	420
	4	5570	0.039	880	4380	0.035	620	3180	0.031	400	2390	0.043	410
	5	4460	0.049	870	3500	0.044	620	2550	0.039	400	1910	0.054	410
	6	3720	0.057	850	2920	0.052	600	2120	0.046	390	1590	0.063	400
	8	2790	0.074	830	2190	0.067	590	1590	0.060	380	1190	0.082	390
	10	2230	0.089	800	1750	0.080	560	1270	0.071	360	960	0.098	380
	12	1860	0.102	760	1460	0.092	540	1060	0.082	350	800	0.112	360
	14	1590	0.115	730	1250	0.103	520	910	0.092	330	680	0.126	340
	16	1390	0.128	710	1090	0.115	500	800	0.102	330	600	0.140	340
	20	1110	0.155	690	880	0.140	490	640	0.124	320	480	0.171	330

ap x ae	**≤ D5**	1.5D x 0.1D	1.5D x 0.1D	D x 0.1D	D x 0.05D

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.



R1 Cutter radius
R2 Half of slot width
T Programming width of cut
ae Actual width of cut



PARAMETERS SUGGESTED WITH HIGH POWER MILLING CHUCK AND STABLE MACHINING CONDITION