

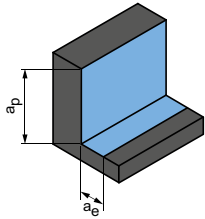
Cutting data recommendations for shoulder milling cutters

Feed and cutting speed

OptiMill-Hardened | M3274, M3271

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cooling			a _p [mm] in % of D	a _e [mm] in % of D	v _c [m/min]	f _z [mm]							
					MQL/Air	Dry	KSS				Diameter of milling cutter [mm]							
											4.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700	✓	✓	✓	50	8	180 - 200	0.032	0.040	0.048	0.055	0.075	0.095	0.110	0.140
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	✓	✓	✓	50	8	160 - 180	0.030	0.038	0.046	0.052	0.071	0.090	0.105	0.133
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900	✓	✓	✓	50	8	170 - 190	0.032	0.040	0.048	0.055	0.075	0.095	0.110	0.140
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400	✓	✓	✓	50	8	150 - 170	0.030	0.038	0.046	0.052	0.071	0.090	0.105	0.133
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	✓	✓	✓	50	8	170 - 190	0.032	0.040	0.048	0.055	0.075	0.095	0.110	0.140
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000	✓	✓	✓	50	7	150 - 170	0.030	0.038	0.046	0.052	0.071	0.090	0.105	0.133
		P3.3	Tool, bearing, spring and high-speed steels**	< 1,500	✓	✓	✓	50	7	130 - 150	0.027	0.034	0.041	0.047	0.064	0.081	0.094	0.119
	P4	P4.1	Stainless steels, ferritic and martensitic		✓		✓	50	7	130 - 150	0.027	0.034	0.041	0.047	0.064	0.081	0.094	0.119
	P5	P5.1	Cast steel		✓		✓	50	7	130 - 150	0.027	0.034	0.041	0.047	0.064	0.081	0.094	0.119
	P6	P6.1	Stainless cast steels, ferritic and martensitic		✓		✓	50	8	140 - 160	0.029	0.036	0.043	0.050	0.068	0.086	0.099	0.126
H	H1	H1.1	Hardened steel/cast steel	< 44	✓	✓		50	2	100 - 125	0.027	0.034	0.041	0.047	0.064	0.081	0.094	0.119
		H1.2	Hardened steel/cast steel	< 55	✓	✓		50	1.5	80 - 100	0.022	0.028	0.034	0.039	0.053	0.067	0.077	0.098
	H2	H2.1	Hardened steel/cast steel	< 60	✓			50	1.2	60 - 80	0.019	0.024	0.029	0.033	0.045	0.057	0.066	0.084

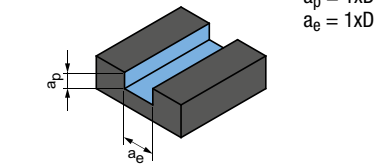
Roughing



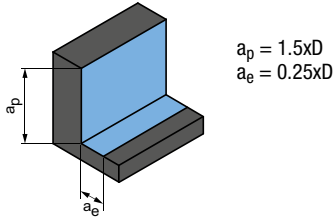
OptiMill-Inox-HPC | M3644

MMG*			Workpiece material	Strength/ hardness [N/mm²] [HRC]	Cooling			v _c [m/min]	f _z [mm]								v _c [m/min]	f _z [mm]								v _c [m/min]	f _z [mm]							
					MQL/Air	Dry	kSS		Diameter of milling cutter [mm]									Diameter of milling cutter [mm]									Diameter of milling cutter [mm]							
									3.00	4.00	6.00	8.00	10.00	12.00	16.00	20.00		3.00	4.00	6.00	8.00	10.00	12.00	16.00	20.00		3.00	4.00	6.00	8.00	10.00	12.00	16.00	20.00
M	M1	M1.1	Stainless steels, austenitic	< 700	✓		✓	70	0.011	0.013	0.019	0.025	0.030	0.035	0.044	0.051	110	0.018	0.023	0.033	0.042	0.051	0.059	0.074	0.086	160	0.028	0.036	0.051	0.066	0.080	0.093	0.117	0.135
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000			✓	65	0.009	0.011	0.016	0.020	0.025	0.029	0.036	0.042	105	0.015	0.019	0.027	0.035	0.042	0.049	0.061	0.071	150	0.023	0.030	0.043	0.055	0.066	0.077	0.097	0.112
	M2	M2.1	Stainless cast steel, austenitic	< 700	✓		✓	75	0.011	0.015	0.021	0.027	0.032	0.038	0.047	0.055	120	0.019	0.025	0.035	0.045	0.055	0.064	0.080	0.093	180	0.031	0.039	0.056	0.072	0.087	0.101	0.127	0.147
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000			✓	70	0.009	0.012	0.016	0.021	0.026	0.030	0.037	0.043	110	0.015	0.020	0.028	0.036	0.043	0.051	0.063	0.073	160	0.024	0.031	0.044	0.057	0.069	0.080	0.100	0.116

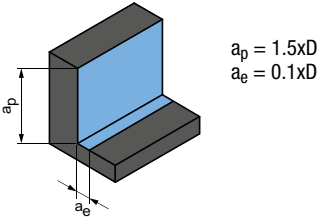
Groove milling



Roughing



Finishing



OptiMill-Titan-HPC | M3614

MMG*			Workpiece material	Strength/ hardness [N/mm²] [HRC]	Cooling			v _c [m/min]	f _z [mm/tooth]							v _c [m/min]	f _z [mm/tooth]							v _c [m/min]	f _z [mm/tooth]						
					MQL/Air	Dry	KSS		Diameter of milling cutter [mm]								Diameter of milling cutter [mm]								Diameter of milling cutter [mm]						
									6.00	8.00	10.00	12.00	16.00	20.00	25.00		6.00	8.00	10.00	12.00	16.00	20.00	25.00		6.00	8.00	10.00	12.00	16.00	20.00	25.00
S	S1	S1.1	Titanium, titanium alloys	< 400			✓	85	0.035	0.045	0.054	0.062	0.075	0.086	0.096	135	0.059	0.076	0.091	0.104	0.127	0.146	0.163	160	0.094	0.120	0.144	0.165	0.202	0.230	0.257
		S2.1	Titanium, titanium alloys	< 1,200			✓	80	0.029	0.037	0.044	0.050	0.061	0.070	0.078	120	0.049	0.062	0.074	0.085	0.104	0.119	0.133	145	0.077	0.098	0.117	0.135	0.165	0.189	0.210
		S2.2	Titanium, titanium alloys	> 1,200			✓	50	0.025	0.033	0.039	0.045	0.055	0.062	0.070	80	0.043	0.055	0.066	0.076	0.093	0.106	0.118	95	0.068	0.087	0.104	0.120	0.147	0.168	0.187

* MILLER machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MILLER machining group.

The specified machining values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.