Cutting data recommendations for shoulder milling cutters

Feed and cutting speed

| Tool length/correction factor:	
Length	f_z & v_c
short	1
long	0.9

OptiMill–Uni–HPC–Rough | SCM700, 710

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cooling		
					MQL/Air	Dry	Coolant
P	P1	P1.1	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 700	✔	✔	✔
		P1.2	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 1200	✔	✔	✔
	P2	P2.1	Nitrided, case hardened and heat-treated steels, alloy	< 900	✔	✔	✔
		P2.2	Nitrided, case hardened and heat-treated steels, alloy	< 1400	✔		✔
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	✔	✔	✔
		P3.2	Tool, bearing, spring and high-speed steels**	< 1000	✔		✔
		P3.3	Tool, bearing, spring and high-speed steels**	< 1500	✔		✔
	P4	P4.1	Stainless steels, ferritic and martensitic		✔		✔
	P5	P5.1	Cast steel				✔
	P6	P6.1	Stainless cast steel, ferritic and martensitic				✔
M	M1	M1.1	Stainless steels, austenitic	< 700	✔		✔
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1000			✔
	M2	M2.1	Stainless/heat-resistant cast steel, austenitic	< 700	✔		✔
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1000			✔
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	✔	✔	✔
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500	✔	✔	✔
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	✔	✔	✔
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	✔	✔	✔
	K3	K3.1	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	< 500	✔	✔	✔
		K3.2	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	> 500	✔	✔	✔

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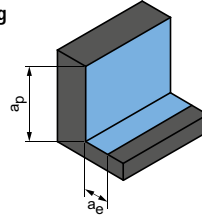** If the alloy parts Cr, Mo, Ni, V, W in total > 8%, then select the next highest MAPAL machining group.

Groove milling
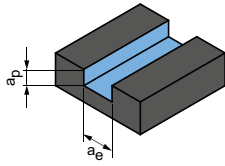
$a_p = 1 \times D$
$a_e = 1 \times D$

Roughing

$a_p = 1.5 \times D$
$a_e = 0.25 \times D$

v_c [m/min]	f_z [mm] Diameter of milling cutter [mm]							v_c [m/min]	f_z [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
200	0.035	0.044	0.053	0.061	0.075	0.085	0.095	355	0.059	0.075	0.090	0.103	0.126	0.145	0.161
165	0.032	0.041	0.050	0.057	0.070	0.080	0.089	290	0.055	0.070	0.084	0.097	0.118	0.135	0.151
180	0.035	0.044	0.053	0.061	0.075	0.085	0.095	325	0.059	0.075	0.090	0.103	0.126	0.145	0.161
125	0.029	0.037	0.044	0.051	0.062	0.071	0.079	225	0.049	0.063	0.075	0.086	0.105	0.120	0.134
120	0.034	0.043	0.051	0.059	0.072	0.082	0.092	210	0.057	0.073	0.087	0.100	0.122	0.140	0.156
110	0.032	0.041	0.049	0.056	0.068	0.078	0.087	195	0.054	0.069	0.083	0.095	0.116	0.132	0.148
100	0.030	0.038	0.046	0.053	0.065	0.074	0.082	180	0.051	0.065	0.078	0.090	0.110	0.125	0.140
80	0.023	0.030	0.035	0.041	0.050	0.057	0.063	145	0.039	0.050	0.060	0.069	0.084	0.096	0.108
120	0.034	0.043	0.051	0.059	0.072	0.082	0.092	215	0.057	0.073	0.087	0.100	0.122	0.140	0.156
80	0.016	0.021	0.025	0.028	0.035	0.040	0.044	145	0.027	0.035	0.042	0.048	0.059	0.067	0.075
55	0.020	0.026	0.031	0.036	0.043	0.050	0.055	110	0.034	0.044	0.053	0.060	0.074	0.084	0.094
50	0.017	0.021	0.026	0.029	0.036	0.041	0.046	105	0.028	0.036	0.044	0.050	0.061	0.070	0.078
60	0.022	0.028	0.034	0.039	0.047	0.054	0.060	120	0.037	0.048	0.057	0.066	0.080	0.092	0.102
55	0.017	0.022	0.027	0.031	0.037	0.043	0.048	110	0.029	0.038	0.045	0.052	0.063	0.072	0.081
215	0.058	0.074	0.088	0.102	0.124	0.142	0.158	440	0.098	0.125	0.150	0.172	0.211	0.241	0.269
200	0.049	0.063	0.075	0.086	0.106	0.121	0.135	405	0.083	0.106	0.128	0.147	0.179	0.205	0.228
160	0.040	0.052	0.062	0.071	0.087	0.099	0.111	330	0.069	0.088	0.105	0.121	0.147	0.169	0.188
90	0.023	0.030	0.035	0.041	0.050	0.057	0.063	185	0.039	0.050	0.060	0.069	0.084	0.096	0.108
145	0.040	0.052	0.062	0.071	0.087	0.099	0.111	295	0.069	0.088	0.105	0.121	0.147	0.169	0.188
135	0.035	0.044	0.053	0.061	0.075	0.085	0.095	275	0.059	0.075	0.090	0.103	0.126	0.145	0.161

The specified machining values are guide values.
The optimum data for the respective machining task should be determined during the test or machining.