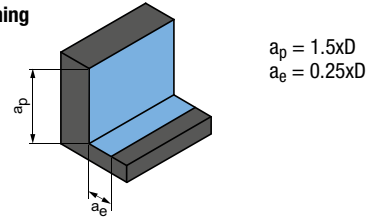


Cutting data recommendations for shoulder milling cutters

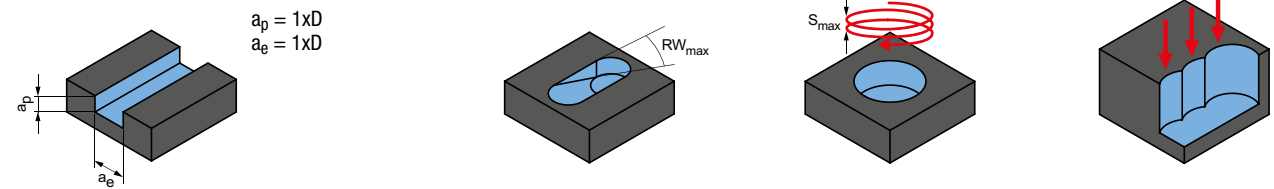
Feed and cutting speed

Tool length/correction factor:	
Length	f_z & v_c
Short	1
Long	1
Overlong	0.8
Extra long	-

Roughing



Groove milling



OptiMill-Uni-HPC-Pocket | M3993, M3990, M3991

MMG*		Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cooling			v_c [m/min]	f_z [mm]							v_c [m/min]	f_z [mm]							Ramps	Helix milling		Drilling		
				MQL/Air	Dry	KSS		Diameter of milling cutter [mm]								Diameter of milling cutter [mm]								RW _{max}	S _{max}		EW _{max}	
								3.80	6.00	8.00	10.00	12.00	16.00	20.00		3.80	6.00	8.00	10.00	12.00	16.00	20.00					G = 1.5	G = 1.8
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700	✓	✓	✓	465	0.053	0.079	0.101	0.122	0.140	0.171	0.195	230	0.031	0.047	0.060	0.072	0.082	0.101	0.115	45°	0.75xD	25°	16°	0.9
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	✓	✓	✓	380	0.049	0.074	0.095	0.113	0.130	0.159	0.182	185	0.029	0.044	0.056	0.067	0.077	0.094	0.107	45°	0.75xD	25°	16°	0.8
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900	✓	✓	✓	425	0.053	0.079	0.101	0.122	0.140	0.171	0.195	205	0.031	0.047	0.060	0.072	0.082	0.101	0.115	45°	0.75xD	25°	16°	0.8
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400	✓		✓	295	0.044	0.066	0.085	0.101	0.116	0.142	0.163	145	0.026	0.039	0.050	0.060	0.069	0.084	0.096	45°	0.75xD	25°	16°	0.7
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	✓	✓	✓	275	0.051	0.077	0.098	0.117	0.135	0.165	0.189	135	0.030	0.045	0.058	0.069	0.080	0.097	0.111	30°	0.5xD	18°	11°	0.8
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000	✓		✓	255	0.048	0.073	0.093	0.111	0.128	0.156	0.179	125	0.029	0.043	0.055	0.066	0.075	0.092	0.105	30°	0.5xD	18°	11°	0.7
	P3.3	Tool, bearing, spring and high-speed steels**	< 1,500	✓		✓	235	0.046	0.069	0.088	0.105	0.121	0.148	0.169	115	0.027	0.041	0.052	0.062	0.071	0.087	0.100	30°	0.5xD	18°	11°	0.7	
P4	P4.1	Stainless steels, ferritic and martensitic		✓		✓	190	0.035	0.053	0.068	0.081	0.093	0.114	0.130	95	0.021	0.031	0.040	0.048	0.055	0.067	0.077	15°	0.5xD	18°	11°		
P5	P5.1	Cast steel				✓	285	0.051	0.077	0.098	0.117	0.135	0.165	0.189	140	0.030	0.045	0.058	0.069	0.080	0.097	0.111	30°	0.5xD	18°	11°		
P6	P6.1	Stainless cast steels, ferritic and martensitic				✓	190	0.025	0.037	0.047	0.057	0.065	0.080	0.091	95	0.015	0.022	0.028	0.033	0.038	0.047	0.054	15°	0.5xD	18°	11°		
M	M1	M1.1	Stainless steels, austenitic	< 700	✓		✓	125	0.031	0.046	0.059	0.071	0.081	0.100	0.114	60	0.018	0.027	0.035	0.042	0.048	0.059	0.067	15°	0.5xD	18°	11°	
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000			✓	120	0.025	0.038	0.049	0.059	0.068	0.082	0.094	60	0.015	0.023	0.029	0.035	0.040	0.049	0.056	15°	0.5xD	18°	11°	
	M2	M2.1	Stainless cast steel, austenitic	< 700	✓		✓	140	0.033	0.050	0.064	0.077	0.088	0.108	0.124	70	0.020	0.030	0.038	0.045	0.052	0.064	0.073	15°	0.5xD	18°	11°	
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000			✓	125	0.026	0.040	0.051	0.061	0.070	0.085	0.098	60	0.016	0.023	0.030	0.036	0.041	0.050	0.058	15°	0.5xD	18°	11°	
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	✓	✓	✓	510	0.088	0.132	0.169	0.203	0.233	0.284	0.325	250	0.052	0.078	0.100	0.119	0.137	0.168	0.192	45°	0.75xD	25°	16°	0.8
		K2.1	Cast iron with spheroidal graphite, GJS	< 500	✓	✓	✓	465	0.075	0.113	0.144	0.172	0.198	0.242	0.276	230	0.044	0.066	0.085	0.102	0.117	0.143	0.163	45°	0.75xD	25°	16°	0.8
	K2	K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	✓	✓	✓	380	0.062	0.093	0.118	0.142	0.163	0.199	0.228	185	0.036	0.055	0.070	0.084	0.096	0.117	0.134	45°	0.75xD	25°	16°	0.8
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	✓	✓	✓	210	0.035	0.053	0.068	0.081	0.093	0.114	0.130	105	0.021	0.031	0.040	0.048	0.055	0.067	0.077	45°	0.75xD	25°	16°	0.8
	K3	K3.1	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	< 500	✓	✓	✓	340	0.062	0.093	0.118	0.142	0.163	0.199	0.228	165	0.036	0.055	0.070	0.084	0.096	0.117	0.134	45°	0.75xD	25°	16°	0.8
		K3.2	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	> 500	✓	✓	✓	315	0.053	0.079	0.101	0.122	0.140	0.171	0.195	155	0.031	0.047	0.060	0.072	0.082	0.101	0.115	45°	0.75xD	25°	16°	0.8