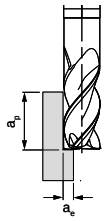
Cutting data recommendation for shoulder milling cutters

Feed and cutting speed

Part-contact cutting



a_p = 1.5xD
a_e = 0.25xD

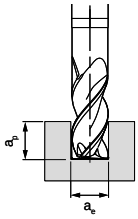
OptiMill-Alu-HPC-Pocket | SCM85

MMG*			Material	Strength/hardness [N/mm²] [HRC]	Cooling			v_c [m/min]	f_z [mm/tooth]					
									Milling cutter diameter [mm]					
					MQL/air	Dry	Wet		5.00	8.00	10.00	12.00	16.00	20.00
N	N1	N1.1	Aluminium, non-alloy and alloy < 3 % Si		✓	✓	✓	**945**	0.080	0.120	0.145	0.169	0.210	0.243
		N1.2	Aluminium, alloy ≤ 7 % Si		✓	✓	✓	**625**	0.084	0.126	0.152	0.177	0.221	0.256
		N1.3	Aluminium, alloy > 7-12 % Si		✓	✓	✓	**500**	0.088	0.132	0.160	0.186	0.231	0.268
		N1.4	Aluminium, alloy > 12 % Si		✓	✓	✓	**360**	0.096	0.144	0.174	0.202	0.252	0.292
	N2	N2.1	Copper, non-alloy and low-alloy	< 300 N/mm²	✓	✓	✓	**360**	0.064	0.096	0.116	0.135	0.168	0.195
		N2.2	Copper, alloy	> 300 N/mm²	✓	✓	✓	**270**	0.064	0.096	0.116	0.135	0.168	0.195
		N2.3	Brass, bronze, gunmetal	< 1200 N/mm²	✓	✓	✓	**450**	0.040	0.060	0.073	0.084	0.105	0.122
	N3	N3.1	Graphite											
	N4	N4.1	Plastic, thermoplastics		✓	✓	✓	**125**	0.040	0.060	0.073	0.084	0.105	0.122
		N4.2	Plastic, thermosets		✓	✓	✓	**185**	0.040	0.060	0.073	0.084	0.105	0.122
		N4.3	Plastic, foams		✓	✓		**565**	0.024	0.036	0.044	0.051	0.063	0.073

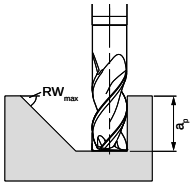
Note:
The cutting data stated are indicative.
The optimal data for the specific machining case should be determined in trials or during the machining.

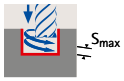
* MAPAL machining groups

Full cut



a_p = 1xD
a_e = 1xD





v_c [m/min]	f_z [mm/tooth]						Ramping	Helix milling			Drilling
	Milling cutter diameter [mm]						RW_{max}	S_{max}	EW_{max}		f_z factor
	5.00	8.00	10.00	12.00	16.00	20.00			G = 1.5	G = 1.8	
610	0.047	0.071	0.086	0.099	0.124	0.144	45°	0.75xD	25°	16°	0.8
405	0.049	0.074	0.090	0.104	0.130	0.151	45°	0.75xD	25°	16°	0.8
325	0.052	0.078	0.094	0.109	0.136	0.158	45°	0.75xD	25°	16°	0.8
235	0.057	0.085	0.103	0.119	0.149	0.172	45°	0.75xD	25°	16°	0.8
235	0.038	0.057	0.068	0.080	0.099	0.115	45°	0.75xD	25°	16°	0.8
175	0.038	0.057	0.068	0.080	0.099	0.115	45°	0.75xD	25°	16°	0.8
295	0.024	0.035	0.043	0.050	0.062	0.072	45°	0.75xD	25°	16°	0.8
80	0.024	0.035	0.043	0.050	0.062	0.072	45°	0.75xD	25°	16°	0.8
120	0.024	0.035	0.043	0.050	0.062	0.072	45°	0.75xD	25°	16°	0.8
365	0.014	0.021	0.026	0.030	0.037	0.043	45°	0.75xD	25°	16°	0.8