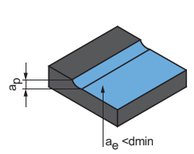
Cutting data recommendations for high-feed milling cutters

Feed and cutting speed

Roughing



OptiMill-3D-HF | MHF100

MMG*		Workpiece material	Strength/hardness [N/mm²] [HRC]	Cooling			a_p [mm]	a_e [mm]	v_c [m/min]	f_z [mm] Diameter of milling cutter [mm]								
				Dry	Air/MQL	KSS				2.00	3.00	4.00	5.00	6.00	8.00	10.00	12.00	16.00
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700	✓	✓		0.038xD	0.6xD	**200–250**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	✓	✓		0.038xD	0.6xD	**150–200**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900	✓	✓		0.038xD	0.6xD	**200–250**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400	✓	✓		0.038xD	0.65xD	**150–200**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	✓	✓		0.038xD	0.6xD	**180–220**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000	✓	✓		0.038xD	0.65xD	**150–180**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
		P3.3	Tool, bearing, spring and high-speed steels**	< 1,500	✓	✓		0.038xD	0.65xD	**120–150**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	P4	P4.1	Stainless steels, ferritic and martensitic			✓	✓	0.038xD	0.6xD	**90–110**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	P5	P5.1	Cast steel			✓	✓	0.038xD	0.6xD	**90–110**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	P6	P6.1	Stainless cast steels, ferritic and martensitic			✓	✓	0.038xD	0.6xD	**70–90**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
M	M1	M1.1	Stainless steels, austenitic	< 700			✓	0.038xD	0.45xD	**90–110**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000			✓	0.038xD	0.45xD	**70–90**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	M2	M2.1	Stainless cast steel, austenitic	< 700			✓	0.038xD	0.45xD	**90–110**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000			✓	0.038xD	0.45xD	**70–90**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	✓	✓		0.038xD	0.7xD	**250–300**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500	✓	✓		0.038xD	0.7xD	**250–300**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	✓	✓		0.038xD	0.7xD	**150–200**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	✓	✓		0.038xD	0.7xD	**150–200**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	K3	K3.1	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	< 500	✓	✓		0.038xD	0.7xD	**150–200**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
		K3.2	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	> 500	✓	✓		0.038xD	0.7xD	**150–200**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
S	S1	S1.1	Titanium, titanium alloys	< 400			✓	0.038xD	0.45xD	**40–50**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
	S2	S2.1	Titanium, titanium alloys	< 1,200			✓	0.038xD	0.45xD	**35–40**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
		S2.2	Titanium, titanium alloys	> 1,200			✓	0.038xD	0.45xD	**30–35**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
H	H1	H1.1	Hardened steel / cast steel	< 44 HRC	✓	✓		0.035xD	0.7xD	**150–190**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
		H1.2	Hardened steel / cast steel	< 55 HRC	✓	✓		0.032xD	0.65xD	**120–150**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	H2	H2.1	Hardened steel / cast steel	< 60 HRC	✓	✓		0.028xD	0.55xD	**100–120**	0.100	0.150	0.175	0.200	0.250	0.250	0.300	0.350	0.400

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

The specified machining values are guide values.
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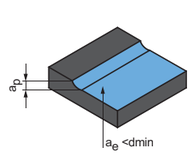
Cutting data recommendations for high-feed milling cutters

Feed and cutting speed

OptiMill-3D-HF | MHF101

Roughing



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		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	✓	✓		0.038xD	0.6xD	**150–200**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
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H	H1	H1.1	Hardened steel/cast steel	< 44	✓	✓		0.035xD	0.7xD	**150–190**	0.100	0.150	0.200	0.225	0.287	0.400	0.550	0.625	0.625
		H1.2	Hardened steel/cast steel	< 55	✓	✓		0.032xD	0.65xD	**120–150**	0.100	0.150	0.200	0.225	0.287	0.325	0.325	0.475	0.475
	H2	H2.1	Hardened steel/cast steel	< 60	✓	✓		0.028xD	0.55xD	**100–120**	0.100	0.150	0.175	0.200	0.250	0.250	0.300	0.350	0.400

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