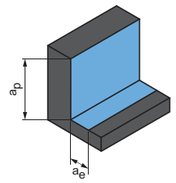
Cutting data recommendations for corner radius milling cutters

Feed and cutting speed

Roughing



Plunge angle
1.0° - 3.0°

Next page:
Finishing (3D, face milling)

OptiMill-3D-CR | MCR100, 101, 102, 103, 104, 105

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				0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	1.80	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700	✓	✓	✓	0.15xD	0.45xD	**250–300**	0.003	0.004	0.006	0.008	0.010	0.012	0.016	0.020	0.028	0.035	0.040	0.050	0.061	0.084	0.107	0.125	0.165	0.200	0.235
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	✓	✓	✓	0.15xD	0.45xD	**240–280**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.031	0.035	0.044	0.054	0.074	0.094	0.110	0.145	0.176	0.207
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900	✓	✓	✓	0.15xD	0.45xD	**250–300**	0.003	0.004	0.006	0.008	0.010	0.012	0.016	0.020	0.028	0.035	0.040	0.050	0.061	0.084	0.107	0.125	0.165	0.200	0.235
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400	✓	✓	✓	0.15xD	0.45xD	**240–280**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.031	0.035	0.044	0.054	0.074	0.094	0.110	0.145	0.176	0.207
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	✓	✓	✓	0.15xD	0.45xD	**250–300**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000	✓	✓	✓	0.15xD	0.45xD	**240–280**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.031	0.035	0.044	0.054	0.074	0.094	0.110	0.145	0.176	0.207
		P3.3	Tool, bearing, spring and high-speed steels**	< 1,500	✓	✓	✓	0.15xD	0.45xD	**220–260**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.015	0.020	0.026	0.029	0.037	0.045	0.061	0.078	0.091	0.120	0.146	0.172
	P4	P4.1	Stainless steels, ferritic and martensitic			✓	✓	0.15xD	0.45xD	**240–280**	0.003	0.004	0.006	0.008	0.010	0.012	0.016	0.020	0.028	0.035	0.040	0.050	0.061	0.084	0.107	0.125	0.165	0.200	0.235
	P5	P5.1	Cast steel			✓	✓	0.15xD	0.45xD	**240–280**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.031	0.035	0.044	0.054	0.074	0.094	0.110	0.145	0.176	0.207
	P6	P6.1	Stainless cast steels, ferritic and martensitic			✓	✓	0.15xD	0.45xD	**200–250**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.015	0.020	0.026	0.029	0.037	0.045	0.061	0.078	0.091	0.120	0.146	0.172
M	M1	M1.1	Stainless steels, austenitic	< 700			✓	0.1xD	0.4xD	**85–110**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.031	0.035	0.044	0.054	0.074	0.094	0.110	0.145	0.176	0.207
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000			✓	0.1xD	0.4xD	**60–85**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.015	0.020	0.026	0.029	0.037	0.045	0.061	0.078	0.091	0.120	0.146	0.172
	M2	M2.1	Stainless cast steel, austenitic	< 700			✓	0.1xD	0.4xD	**85–110**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.031	0.035	0.044	0.054	0.074	0.094	0.110	0.145	0.176	0.207
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000			✓	0.1xD	0.4xD	**60–85**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.015	0.020	0.026	0.029	0.037	0.045	0.061	0.078	0.091	0.120	0.146	0.172
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	✓	✓	✓	0.15xD	0.55xD	**250–300**	0.004	0.005	0.007	0.010	0.012	0.014	0.019	0.024	0.034	0.042	0.048	0.060	0.073	0.101	0.128	0.150	0.198	0.240	0.282
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500	✓	✓	✓	0.15xD	0.55xD	**250–300**	0.003	0.004	0.006	0.008	0.010	0.012	0.016	0.020	0.028	0.035	0.040	0.050	0.061	0.084	0.107	0.125	0.165	0.200	0.235
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	✓	✓	✓	0.15xD	0.55xD	**240–280**	0.003	0.004	0.006	0.008	0.010	0.012	0.016	0.020	0.028	0.035	0.040	0.050	0.061	0.084	0.107	0.125	0.165	0.200	0.235
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	✓	✓	✓	0.15xD	0.55xD	**240–280**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.031	0.035	0.044	0.054	0.074	0.094	0.110	0.145	0.176	0.207
	K3	K3.1	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	< 500	✓	✓	✓	0.15xD	0.55xD	**250–300**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.015	0.020	0.026	0.029	0.037	0.045	0.061	0.078	0.091	0.120	0.146	0.172
		K3.2	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	> 500	✓	✓	✓	0.15xD	0.55xD	**240–280**	0.002	0.002	0.004	0.005	0.006	0.007	0.010	0.012	0.017	0.022	0.025	0.031	0.038	0.052	0.066	0.078	0.102	0.124	0.146
H	H1	H1.1	Hardened steel / cast steel	< 44 HRC	✓	✓		0.06xD	0.35xD	**200–240**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.015	0.020	0.026	0.029	0.037	0.045	0.061	0.078	0.091	0.120	0.146	0.172
		H1.2	Hardened steel / cast steel	< 55 HRC	✓	✓		0.05xD	0.3xD	**140–200**	0.002	0.002	0.004	0.005	0.006	0.007	0.010	0.012	0.017	0.021	0.024	0.030	0.037	0.050	0.064	0.075	0.099	0.120	0.141
	H2	H2.1	Hardened steel / cast steel	< 60 HRC		✓		0.025xD	0.25xD	**100–140**	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.008	0.011	0.014	0.016	0.020	0.024	0.034	0.043	0.050	0.066	0.080	0.094

Working depth correction factor – k_{AT}

AT	k_{AT}		
	a_p	n	v_f
≤ 3xD	1,00	1,00	1,00
≤ 5xD	0,80	0,90	0,90
≤ 6xD	0,70	0,85	0,85
≤ 8xD	0,60	0,75	0,75
≤ 10xD	0,50	0,70	0,70
≤ 12xD	0,45***	0,65	0,65
≤ 15xD	0,40***	0,60	0,60
≤ 20xD	0,35***	0,60	0,60
≤ 25xD	0,35***	0,50	0,50
≤ 30xD	0,30***	0,50	0,50
≤ 35xD	0,30***	0,50	0,50

Cone angle correction factor – k_{KW}

φ [°]	k_{KW}		
	a_p	n	v_f
0	1,00	1,00	1,00
0,5	1,01	1,01	1,01
1	1,02	1,02	1,02
1,5	1,03	1,03	1,03
3	1,06	1,06	1,06

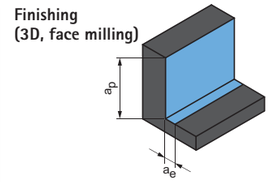
Note:
To determine cutting data, please observe the notes on page 548-551.

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

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

Cutting data recommendations for corner radius milling cutters

Feed and cutting speed



Next page:
Finishing (flat areas)

OptiMill-3D-CR | MCR100, 101, 102, 103, 104, 105

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				0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	1.80	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700	✓	✓	✓	0.012xD	0.022xD	**280–340**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	✓	✓	✓	0.012xD	0.022xD	**280–320**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900	✓	✓	✓	0.012xD	0.022xD	**270–320**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400	✓	✓	✓	0.012xD	0.022xD	**260–300**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	✓	✓	✓	0.012xD	0.022xD	**280–320**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.032	0.036	0.045	0.055	0.076	0.097	0.113	0.149	0.181	0.212
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000	✓	✓	✓	0.012xD	0.022xD	**260–300**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		P3.3	Tool, bearing, spring and high-speed steels**	< 1,500	✓	✓	✓	0.012xD	0.022xD	**240–280**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
	P4	P4.1	Stainless steels, ferritic and martensitic			✓	✓	0.012xD	0.022xD	**260–300**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
	P5	P5.1	Cast steel			✓	✓	0.012xD	0.022xD	**260–300**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	P6	P6.1	Stainless cast steels, ferritic and martensitic			✓	✓	0.012xD	0.022xD	**220–270**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
M	M1	M1.1	Stainless steels, austenitic	< 700			✓	0.013xD	0.023xD	**90–120**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000			✓	0.012xD	0.022xD	**70–90**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
	M2	M2.1	Stainless cast steel, austenitic	< 700			✓	0.013xD	0.023xD	**90–120**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000			✓	0.012xD	0.022xD	**70–90**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	✓	✓	✓	0.012xD	0.022xD	**280–340**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500	✓	✓	✓	0.012xD	0.022xD	**280–320**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	✓	✓	✓	0.012xD	0.022xD	**270–320**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	✓	✓	✓	0.012xD	0.022xD	**260–300**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	K3	K3.1	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	< 500	✓	✓	✓	0.012xD	0.022xD	**280–320**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
		K3.2	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	> 500	✓	✓	✓	0.012xD	0.022xD	**260–300**	0.002	0.002	0.004	0.005	0.006	0.007	0.009	0.012	0.017	0.021	0.024	0.029	0.036	0.050	0.063	0.074	0.097	0.118	0.139
H	H1	H1.1	Hardened steel / cast steel	< 44 HRC	✓	✓		0.012xD	0.022xD	**220–250**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.014	0.020	0.025	0.029	0.036	0.044	0.061	0.077	0.090	0.119	0.144	0.170
		H1.2	Hardened steel / cast steel	< 55 HRC	✓	✓		0.01xD	0.02xD	**170–220**	0.002	0.003	0.004	0.005	0.007	0.008	0.011	0.014	0.019	0.024	0.027	0.034	0.042	0.058	0.073	0.086	0.113	0.137	0.161
	H2	H2.1	Hardened steel / cast steel	< 60 HRC		✓		0.01xD	0.02xD	**120–170**	0.001	0.002	0.003	0.004	0.005	0.006	0.008	0.010	0.013	0.017	0.019	0.024	0.029	0.040	0.051	0.060	0.079	0.096	0.113

Working depth correction factor – k_{AT}

AT	k_{AT}		
	a_p	n	v_f
≤ 3xD	1,00	1,00	1,00
≤ 5xD	0,80	0,90	0,90
≤ 6xD	0,70	0,85	0,85
≤ 8xD	0,60	0,75	0,75
≤ 10xD	0,50	0,70	0,70
≤ 12xD	0,45***	0,65	0,65
≤ 15xD	0,40***	0,60	0,60
≤ 20xD	0,35***	0,60	0,60
≤ 25xD	0,35***	0,50	0,50
≤ 30xD	0,30***	0,50	0,50
≤ 35xD	0,30***	0,50	0,50

Cone angle correction factor – k_{KW}

φ [°]	k_{KW}		
	a_p	n	v_f
0	1,00	1,00	1,00
0,5	1,01	1,01	1,01
1	1,02	1,02	1,02
1,5	1,03	1,03	1,03
3	1,06	1,06	1,06

Note:
To determine cutting data, please observe the notes on page 548-551.

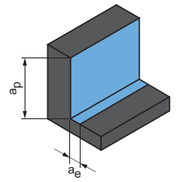
* MAPAL machining groups
** If the alloy parts Cr, Mo, Ni, V, W in total > 8%, then select the next highest MAPAL machining group.
*** Consultation with a MAPAL application engineer.

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

Cutting data recommendations for corner radius milling cutters

Feed and cutting speed

Finishing (flat areas)



Plunge angle
0.5° - 1.0°

OptiMill-3D-CR | MCR100, 101, 102, 103, 104, 105

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				0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	1.80	2.00	2.50	3.00	4.00	5.00	6.00	8.00	10.00	12.00
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700	✓	✓	✓	0.012xD	0.65xD	**200–250**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	✓	✓	✓	0.012xD	0.65xD	**190–240**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900	✓	✓	✓	0.012xD	0.65xD	**200–250**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400	✓	✓	✓	0.012xD	0.65xD	**190–240**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	✓	✓	✓	0.012xD	0.65xD	**200–250**	0.003	0.004	0.005	0.007	0.009	0.011	0.014	0.018	0.025	0.032	0.036	0.045	0.055	0.076	0.097	0.113	0.149	0.181	0.212
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000	✓	✓	✓	0.012xD	0.65xD	**190–240**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		P3.3	Tool, bearing, spring and high-speed steels**	< 1,500	✓	✓	✓	0.012xD	0.65xD	**180–230**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
	P4	P4.1	Stainless steels, ferritic and martensitic			✓	✓	0.012xD	0.65xD	**180–230**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
	P5	P5.1	Cast steel			✓	✓	0.012xD	0.65xD	**180–230**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	P6	P6.1	Stainless cast steels, ferritic and martensitic			✓	✓	0.012xD	0.65xD	**180–230**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
M	M1	M1.1	Stainless steels, austenitic	< 700			✓	0.013xD	0.4xD	**90–120**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000			✓	0.012xD	0.4xD	**70–90**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
	M2	M2.1	Stainless cast steel, austenitic	< 700			✓	0.013xD	0.4xD	**90–120**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000			✓	0.012xD	0.4xD	**70–90**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	✓	✓	✓	0.012xD	0.65xD	**200–250**	0.003	0.004	0.006	0.008	0.010	0.011	0.015	0.019	0.027	0.033	0.038	0.048	0.058	0.080	0.102	0.119	0.157	0.190	0.223
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500	✓	✓	✓	0.012xD	0.65xD	**200–250**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	✓	✓	✓	0.012xD	0.65xD	**200–250**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	✓	✓	✓	0.012xD	0.65xD	**190–240**	0.003	0.003	0.005	0.007	0.008	0.010	0.013	0.017	0.023	0.029	0.033	0.042	0.051	0.070	0.089	0.105	0.138	0.167	0.196
	K3	K3.1	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	< 500	✓	✓	✓	0.012xD	0.65xD	**200–250**	0.002	0.003	0.004	0.006	0.007	0.008	0.011	0.014	0.019	0.024	0.028	0.035	0.042	0.058	0.074	0.087	0.114	0.139	0.163
		K3.2	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	> 500	✓	✓	✓	0.012xD	0.65xD	**190–240**	0.002	0.002	0.004	0.005	0.006	0.007	0.009	0.012	0.017	0.021	0.024	0.029	0.036	0.050	0.063	0.074	0.097	0.118	0.139
H	H1	H1.1	Hardened steel / cast steel	< 44 HRC	✓	✓		0.012xD	0.65xD	**160–200**	0.002	0.003	0.004	0.006	0.007	0.009	0.012	0.014	0.020	0.025	0.029	0.036	0.044	0.061	0.077	0.090	0.119	0.144	0.170
		H1.2	Hardened steel / cast steel	< 55 HRC	✓	✓		0.01xD	0.65xD	**120–160**	0.002	0.003	0.004	0.005	0.007	0.008	0.011	0.014	0.019	0.024	0.027	0.034	0.042	0.058	0.073	0.086	0.113	0.137	0.161
	H2	H2.1	Hardened steel / cast steel	< 60 HRC		✓		0.01xD	0.65xD	**80–120**	0.001	0.002	0.003	0.004	0.005	0.006	0.008	0.010	0.013	0.017	0.019	0.024	0.029	0.040	0.051	0.060	0.079	0.096	0.113

Working depth correction factor – k_{AT}

AT	k_{AT}		
	a_p	n	v_f
≤ 3xD	1,00	1,00	1,00
≤ 5xD	0,80	0,90	0,90
≤ 6xD	0,70	0,85	0,85
≤ 8xD	0,60	0,75	0,75
≤ 10xD	0,50	0,70	0,70
≤ 12xD	0,45***	0,65	0,65
≤ 15xD	0,40***	0,60	0,60
≤ 20xD	0,35***	0,60	0,60
≤ 25xD	0,35***	0,50	0,50
≤ 30xD	0,30***	0,50	0,50
≤ 35xD	0,30***	0,50	0,50

Cone angle correction factor – k_{KW}

φ [°]	k_{KW}		
	a_p	n	v_f
0	1,00	1,00	1,00
0,5	1,01	1,01	1,01
1	1,02	1,02	1,02
1,5	1,03	1,03	1,03
3	1,06	1,06	1,06

Note:
To determine cutting data, please observe the notes on page 548-551.

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

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