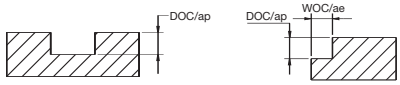
End Mill Series Includes HEC, DHEC, CRHEC, F..DK30, F..DK45, F..DL45, F..DL30, F..DN30

1) Starting parameters are based on using stub-length tools.

2) These guidelines may require possible variations to achieve optimum results.



Low & Plain Carbon, Alloy & Tool Steels (<286 HB) <30 HRC
AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20
DIN: 35S20, 9SMnPb28, C45, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2,

Cutting Speed	SFM	Vc	
K600	250-350	80-110	Reduce speed by 20% for slotting applications.
KC610M	300-500	90-150	
KC633M	350-450	100-140	
KC635M	350-550	100-140	

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0006	0,015	.0003	0,008
1/8	3	.001	0,025	.0005	0,013
3/16	4	.0012	0,030	.0007	0,018
1/4	6	.002	0,051	.001	0,025
5/16	8	.0022	0,056	.0017	0,043
3/8	10	.0025	0,064	.002	0,051
1/2	12	.003	0,076	.0024	0,061
5/8	16	.0035	0,089	.0028	0,071
3/4	20	.004	0,102	.003	0,076
1	25	.0045	0,114	.0035	0,089

Plain Carbon, Alloy & Tool Steels (294-371 HB) 31-40 HRC
Tool steels: H10, H11, Alloy steels AISI: 1335, 4140, 4150, 4320, 4340, 4422, 5120, 8620
Din: x32 CrMo V3 3, x38CrMoV5-1, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2

Cutting Speed	SFM	Vc	
KC610M	150-300	45-90	Reduce speed by 20% for slotting applications.
KC633M	175-325	50-100	
KC635M	175-325	50-100	

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0004	0,010	.0003	0,008
1/8	3	.0006	0,015	.0004	0,010
3/16	4	.001	0,025	.0005	0,013
1/4	6	.0012	0,030	.001	0,025
5/16	8	.002	0,051	.0011	0,028
3/8	10	.0022	0,056	.0013	0,030
1/2	12	.0025	0,064	.0015	0,033
5/8	16	.003	0,076	.0017	0,038
3/4	20	.0035	0,089	.002	0,051
1	25	.004	0,102	.0025	0,064

Austenitic Stainless Steels (200 & 300 Series) Including Duplex (135-275 HB) <28 HRC
AISI: 201, 209, 219, 302, 303, 304, 316, 321, 347, 329, ASTM: XM-1, XM-7, XM-21, CF-8M
DIN: x 8 CrNiS 18-9, X 5 CrNiMo 17-13-3, X6CrNiTi18 10, X6CrNiNb 18 10, GX5 CrNiM0 19-11-2

Cutting Speed	SFM	Vc	
KC610M	250-400	75-120	Reduce speed by 20% for slotting applications.
KC633M	275-500	80-150	
KC635M	275-500	80-150	

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0003	0,008	.0002	0,005
1/8	3	.0005	0,013	.0003	0,008
3/16	4	.0007	0,018	.0004	0,010
1/4	6	.001	0,025	.0007	0,018
5/16	8	.0015	0,033	.001	0,025
3/8	10	.002	0,051	.0015	0,033
1/2	12	.0025	0,064	.0017	0,038
5/8	16	.003	0,076	.0025	0,064
3/4	20	.0035	0,089	.003	0,076
1	25	.004	0,102	.0035	0,089

Ferritic, Martensitic (400 & 500 Series) & PH Stainless Steels (<371 HB) <40 HRC
AISI: 416, 416F, 416Se, 420F, PH Steels 15-5 PH, 17-4 H, 17-7 PH
DIN: X12CrS13, X20Cr13, X4CrNiCuNb164, X7CrNiMoAl157

Cutting Speed	SFM	Vc	
KC610M	200-375	60-115	Reduce speed by 20% for slotting applications.
KC633M	200-450	60-140	
KC635M	200-450	60-140	

Application Parameters

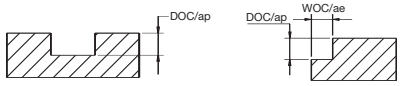
	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0006	0,015	.0003	0,008
1/8	3	.001	0,025	.0005	0,013
3/16	4	.0012	0,030	.0007	0,018
1/4	6	.002	0,051	.0015	0,033
5/16	8	.0022	0,056	.002	0,051
3/8	10	.0025	0,064	.0024	0,061
1/2	12	.003	0,076	.0028	0,071
5/8	16	.0035	0,089	.003	0,076
3/4	20	.004	0,102	.0035	0,089
1	25	.0045	0,114	.004	0,102

Recommended Starting Speed and Feeds

End Mill Series Includes HEC, DHEC, CRHEC, F..DK30, F..DK45, F..DL45, F..DL30, F..DN30

1) Starting parameters are based on using stub-length tools.
2) These guidelines may require possible variations to achieve optimum results.



Gray Cast Iron (120-220 HB) <18 HRC
ASTM A48: Class 20, 25, 30, 35, 40, 45, 50, 55, 60, SAE J431: grade G1800, G3000, G3500
DIN: GG10, GG15, GG20, GG25, GG30, GG40

Cutting Speed	SFM	Vc	
K600	350-450	110-140	Reduce speed by 20% for slotting applications.
KC633M	425-725	130-220	
KC635M	425-725	130-220	

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0007	0,018	.0005	0,013
1/8	3	.0015	0,033	.0007	0,018
3/16	4	.002	0,051	.0015	0,033
1/4	6	.0025	0,064	.002	0,051
5/16	8	.003	0,076	.0025	0,064
3/8	10	.004	0,102	.003	0,076
1/2	12	.005	0,127	.004	0,102
5/8	16	.006	0,152	.005	0,127
3/4	20	.007	0,178	.006	0,152
1	25	.008	0,203	.007	0,178

Gray Cast Iron (220-320 HB) 19-34 HRC
ASTM A48: Class 20, 25, 30, 35, 40, 45, 50, 55, 60, SAE J431: grade G1800, G3000, G3500
DIN: GG10, GG15, GG20, GG25, GG30, GG40

Cutting Speed	SFM	Vc	
K600	225-325	70-100	Reduce speed by 20% for slotting applications.
KC633M	350-500	110-150	
KC635M	350-500	110-150	

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.3 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0006	0,015	.0004	0,010
1/8	3	.001	0,025	.0007	0,018
3/16	4	.0012	0,030	.001	0,025
1/4	6	.002	0,051	.0015	0,033
5/16	8	.0022	0,056	.002	0,051
3/8	10	.003	0,076	.0024	0,061
1/2	12	.0035	0,089	.0028	0,071
5/8	16	.004	0,102	.003	0,076
3/4	20	.0045	0,114	.004	0,102
1	25	.0055	0,140	.0045	0,114

Titanium-alloyed
Commercially pure: Ti99.8, Alpha: TiSa12.5SN, Alpha/Beta: Ti-6Al-4V
DIN: Ti99.8, TiAl6V4

Cutting Speed	SFM	Vc	
KC633M	100-250	30-75	Reduce speed by 20% for slotting applications.
KC635M	100-250	30-75	

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0002	0,005	.0001	0,003
1/8	3	.0005	0,013	.0003	0,008
3/16	4	.0007	0,018	.0004	0,010
1/4	6	.001	0,025	.0006	0,015
5/16	8	.0012	0,030	.0009	0,023
3/8	10	.0015	0,033	.001	0,025
1/2	12	.0018	0,046	.0015	0,033
5/8	16	.0025	0,064	.0018	0,046
3/4	20	.0028	0,071	.0022	0,056
1	25	.003	0,076	.0025	0,064

Titanium-alloyed, Nickel Base
Inconel: 601, 617, 625, 718, X-750, 901, Waspaloy, Hastelloy
DIN: NiCr19Fe19NbMo, NiCr20Co14MoTi, NiCr17Mo17FeW

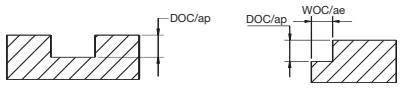
Cutting Speed	SFM	Vc	
KC633M	60-125	20-40	Reduce speed by 20% for slotting applications.
KC635M	60-125	20-40	

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.3 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/16	2	.0002	0,005	.0001	0,003
1/8	3	.0005	0,013	.0003	0,008
3/16	4	.0007	0,018	.0004	0,010
1/4	6	.001	0,025	.0006	0,015
5/16	8	.0012	0,030	.0009	0,023
3/8	10	.0015	0,033	.001	0,025
1/2	12	.0018	0,046	.0015	0,033
5/8	16	.0025	0,064	.0018	0,046
3/4	20	.0028	0,071	.0022	0,056
1	25	0.003	0,076	.0025	0,064

1) These guidelines may require possible variations to achieve optimum results.
2) For WOC equal to .5 x diameter on profiling applications, decrease feed by 25%.



Low & Plain Carbon, Alloy & Tool Steels (<286 HB) <30 HRC
AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20
DIN: 35S20, 9SMnPb28, C45, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2,

Cutting Speed	SFM	Vc	
KC633M	300-350	100-117	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.25 x dia.
Slotting	1 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.002	0,051	.0012	0,030
3/16	8	.0025	0,064	.0015	0,038
3/8	10	.003	0,076	.0025	0,064
1/2	12	.0035	0,089	.003	0,076
5/8	16	.004	0,089	.0035	0,089
3/4	20	.0045	0,114	.004	0,089
1	25	.0045	0,114	.004	0,089

Plain Carbon, Alloy & Tool Steels (294-371 HB) 31-40 HRC
Tool steels: H10, H11, Alloy steels AISI: 1335, 4140, 4150, 4320, 4340, 4422, 5120, 8620
Din: x32 CrMo V3 3, x38CrMoV5-1, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2

Cutting Speed	SFM	Vc	
KC633M	200-350	60-110	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.25 x dia.
Slotting	1 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.002	0,051	.0012	0,030
3/16	8	.0025	0,064	.0015	0,038
3/8	10	.003	0,076	.0025	0,064
1/2	12	.0035	0,089	.003	0,076
5/8	16	.004	0,089	.0035	0,089
3/4	20	.0045	0,114	.004	0,089
1	25	.0045	0,114	.004	0,089

Austenitic Stainless Steels (200 & 300 Series) Including Duplex (135-275 HB) <28 HRC
AISI: 201, 209, 219, 302, 303, 304, 316, 321, 347, 329, ASTM: XM-1, XM-7, XM-21, CF-8M
DIN: x 8 CrNiS 18-9, X 5 CrNiMo 17-13-3, X6CrNiTi18 10, X6CrNiNb 18 10, GX5 CrNiM0 19-11-2

Cutting Speed	SFM	Vc	
KC633M	100-200	30-60	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.25 x dia.
Slotting	1 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.0007	0,018	.0006	0,015
3/16	8	.001	0,025	.0008	0,020
3/8	10	.0015	0,033	.001	0,025
1/2	12	.002	0,051	.0012	0,030
5/8	16	.002	0,051	.0014	0,036
3/4	20	.0025	0,064	.0015	0,038
1	25	.0025	0,064	.0016	0,041

Ferritic, Martensitic (400 & 500 Series) & PH Stainless Steels (<371 HB) <40 HRC
AISI: 416, 416F, 416Se, 420F, PH Steels 15-5 PH, 17-4 H, 17-7 PH
DIN: X12CrS13, X20Cr13, X4CrNiCuNb164, X7CrNiMoAl157

Cutting Speed	SFM	Vc	
KC633M	100-200	30-60	Reduce speed by 20% for slotting applications.

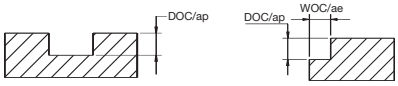
Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.25 x dia.
Slotting	1 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.0006	0,015	.0004	0,010
3/16	8	.0008	0,020	.0006	0,020
3/8	10	.001	0,025	.0008	0,020
1/2	12	.0012	0,030	.0008	0,020
5/8	16	.0014	0,036	.001	0,025
3/4	20	.0015	0,038	.001	0,025
1	25	.0016	0,041	.0012	0,030

Recommended Starting Speed and Feeds

End Mill Series MDRHEC, F.BH.BW.20..



1) These guidelines may require possible variations to achieve optimum results.
2) For WOC equal to .5 x diameter on profiling applications, decrease feed by 25%.

Gray Cast Iron (120-220 HB) <18 HRC
ASTM A48: Class 20, 25, 30, 35, 40, 45, 50, 55, 60, SAE J431: grade G1800, G3000, G3500
DIN: GG10, GG15, GG20, GG25, GG30, GG40

Cutting Speed	SFM	Vc	
KC633M	200-350	60-110	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.25 x dia.
Slotting	1 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.002	0,051	.0015	0,033
3/16	8	.0025	0,064	.002	0,051
3/8	10	.003	0,076	.0025	0,064
1/2	12	.0035	0,089	.003	0,076
5/8	16	.004	0,089	.0035	0,089
3/4	20	.0045	0,114	.004	0,089
1	25	.0045	0,114	.004	0,089

High-Temperature Alloys
Commercially pure: Ti99.8, Alpha: TiSa12.5SN, Alpha/Beta: Ti-6Al-4V
DIN: Ti99.8, TiAl6V4

Cutting Speed	SFM	Vc	
KC633M	80-100	25-35	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.25 x dia.
Slotting	1 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.001	0,025	.0006	0,015
3/16	8	.0012	0,030	.0008	0,020
3/8	10	.0015	0,033	.001	0,025
1/2	12	.0018	0,046	.0012	0,030
5/8	16	.0025	0,064	.0015	0,033
3/4	20	.003	0,076	.0025	0,064
1	25	.0035	0,089	.003	0,076

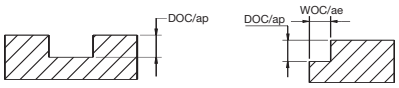
High-Temperature Alloys
Inconel: 601, 617, 625, 718, X-750, 901, Waspaloy, Hastelloy
DIN: NiCr19Fe19NbMo, NiCr20Co14MoTi, NiCr17Mo17FeW

Cutting Speed	SFM	Vc	
KC633M	30-175	10-50	Inconel materials are at lower end of speed range.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.25 x dia.
Slotting	1 x dia.	–

Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.001	0,025	.0006	0,015
3/16	8	.0015	0,038	.001	0,025
3/8	10	.002	0,051	.0015	0,038
1/2	12	.0025	0,064	.002	0,051
5/8	16	.003	0,076	.0025	0,064
3/4	20	.0035	0,089	.003	0,076
1	25	.004	0,089	.003	0,076



1) These guidelines may require possible variations to achieve optimum results.
2) For WOC equal to .5 x diameter on profiling applications, decrease feed by 25%.

Aluminum and Other Free-Machining, Non-Ferrous Materials, Low Silicon Aluminum, 6061, 6063, 7075,
DIN/ISO: AlMg1SiCu, AlMg0,5Mn, AlZn5,5MgCu

Cutting Speed	SFM	Vc	
K600 KC625M	600-1800 800-2000	180-550 240-775	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1.5 x dia.	.5 x dia
Slotting	1 x dia.	–

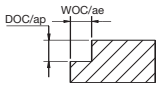
Diameter		Profiling Feed/tooth f_z		Slotting Feed/tooth f_z	
inch	mm	inch	mm	inch	mm
1/4	6	.002	0,051	.0015	0,038
3/16	8	.0025	0,064	.002	0,051
3/8	10	.003	0,076	.0025	0,064
1/2	12	.004	0,102	.003	0,076
5/8	16	.005	0,127	.004	0,102
3/4	20	.0055	0,140	.0045	0,114
1	25	.007	0,178	.006	0,152

To place an order, contact your authorized Kennametal distributor or visit www.kennametal.com.

Recommended Starting Speed and Feeds

End Mill Series — HHEC

1) These guidelines may require possible variations to achieve optimum results.



Austenitic Stainless Steels (200 & 300 Series) Including Duplex (135-275 HB) <28 HRC
AISI: 201, 209, 219, 302, 303, 304, 316, 321, 347, 329, ASTM: XM-1, XM-7, XM-21, CF-8M
DIN: x 8 CrNiS 18-9, X 5 CrNiMo 17-13-3, X6CrNiTi18 10, X6CrNiNb 18 10, GX5 CrNiM0 19-11-2

Cutting Speed	SFM	Vc
KC635M	275-500	80-150

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.

Diameter		Profiling Feed/tooth f_z	
inch	mm	inch	mm
1/8	3	.0005	0,013
3/16	4	.0007	0,018
1/4	6	.001	0,025
5/16	8	.0015	0,033
3/8	10	.002	0,051
1/2	12	.0025	0,064
5/8	16	.003	0,076
3/4	20	.0035	0,089
1	25	.004	0,102

Ferritic, Martensitic (400 & 500 Series) & PH Stainless Steels (<371 HB) <40 HRC
AISI: 416, 416F, 416Se, 420F, PH Steels 15-5 PH, 17-4 H, 17-7 PH
DIN: X12CrS13, X20Cr13, X4CrNiCuNb164, X7CrNiMoAl157

Cutting Speed	SFM	Vc
KC635M	200-450	60-140

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.

Diameter		Profiling Feed/tooth f_z	
inch	mm	inch	mm
1/8	3	.001	0,025
3/16	4	.0012	0,030
1/4	6	.002	0,051
5/16	8	.0022	0,056
3/8	10	.0025	0,064
1/2	12	.003	0,076
5/8	16	.0035	0,089
3/4	20	.004	0,102
1	25	.0045	0,114

Titanium-alloyed
Commercially pure: Ti99.8, Alpha: TiSa12.5SN, Alpha/Beta: Ti-6Al-4V
DIN: Ti99.8, TiAl6V4

Cutting Speed	SFM	Vc
KC635M	150-200	50-70

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.

Diameter		Profiling Feed/tooth f_z	
inch	mm	inch	mm
1/8	3	.0003	0,008
3/16	4	.0004	0,010
1/4	6	.0005	0,013
5/16	8	.0006	0,015
3/8	10	.0007	0,018
1/2	12	.001	0,025
5/8	16	.0015	0,033
3/4	20	.002	0,051
1	25	.003	0,076

Titanium-alloyed, Nickel Base
Inconel: 601, 617, 625, 718, X-750, 901, Waspaloy, Hastelloy
DIN: NiCr19Fe19NbMo, NiCr20Co14MoTi, NiCr17Mo17FeW

Cutting Speed	SFM	Vc
KC635M	75-100	25-35

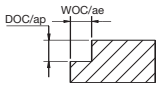
Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.

Diameter		Profiling Feed/tooth f_z	
inch	mm	inch	mm
1/8	3	.0003	0,008
3/16	4	.0004	0,010
1/4	6	.0005	0,013
5/16	8	.0006	0,015
3/8	10	.0007	0,018
1/2	12	.001	0,025
5/8	16	.0015	0,033
3/4	20	.0018	0,046
1	25	.002	0,051

End Mill Series Includes F.AV..ADL45

2) These guidelines may require possible variations to achieve optimum results.



Hardened Steels: (496-560 HB) 51-55HRc
AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20
DIN: 21NiCrMo2, 42CrMo4, 34CrNiMo6, C45

Cutting Speed	SFM	Vc
KC637M	120-500	40-150

Application Parameters

	DOC/ap	WOC/ae
Profiling	1.5 x dia.	.1 x dia.

Diameter mm	Profiling f_z mm
6	0,014
8	0,021
10	0,028
12	0,031
16	0,042
20	0,053
25	0,063

Hardened Steels: (560-654 HB) 56-60HRc
AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20
DIN: 21NiCrMo2, 42CrMo4, 34CrNiMo6, C45

Cutting Speed	SFM	Vc
KC637M	65-390	20-120

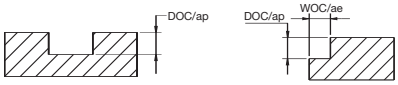
Application Parameters

	DOC/ap	WOC/ae
Profiling	1.5 x dia.	.1 x dia.

Diameter mm	Profiling f_z mm
6	0,011
8	0,014
10	0,021
12	0,025
16	0,035
20	0,042
25	0,049

End Mill Series F2AA..DL45

1) These guidelines may require possible variations to achieve optimum results.
2) For WOC equal to .5 x diameter on profiling applications, decrease feed by 25%.



Aluminum and Other Free-Machining, Non-Ferrous Materials, Low Silicon Aluminum, 6061, 6063, 7075,
DIN/ISO: AlMg1SiCu, AlMg0,5Mn, AlZn5,5MgCu

Cutting Speed	SFM	Vc	
K600 KC625M	600-1800 800-2000	180-550 240-775	Reduce speed by 20% for slotting applications.

Application Parameters

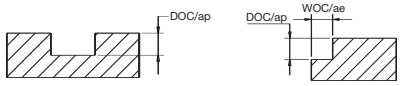
	DOC/ap	WOC/ae
Profiling Slotting	<1 x dia. 1 x dia.	<1 x dia. –

Diameter mm	Profiling f_z mm	Slotting f_z mm
4	0,043	0,038
6	0,051	0,043
8	0,076	0,064
10	0,102	0,076
12	0,127	0,102
16	0,152	0,127
20	0,178	0,152

Recommended Starting Speed and Feeds

End Mill Series Includes F3AS..BDK35

1) Starting parameters are based on using stub-length tools.
2) These guidelines may require possible variations to achieve optimum results.



Low & Plain Carbon, Alloy & Tool Steels (<286 HB) <30 HRC
AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20
DIN: 35S20, 9SMnPb28, C45, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2,

Cutting Speed	SFM	Vc	
KC633M	350-450	100-140	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
3	0,025	0,018
4	0,030	0,025
6	0,051	0,033
8	0,056	0,043
10	0,064	0,051
12	0,089	0,076
16	0,102	0,089
20	0,127	0,102

Plain Carbon, Alloy & Tool Steels (294-371 HB) 31-40 HRC
Tool steels: H10, H11, Alloy steels AISI: 1335, 4140, 4150, 4320, 4340, 4422, 5120, 8620
Din: x32 CrMo V3 3, x38CrMoV5-1, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2

Cutting Speed	SFM	Vc	
KC633M	175-325	50-100	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
3	0,025	0,015
4	0,030	0,023
6	0,051	0,033
8	0,056	0,038
10	0,064	0,051
12	0,076	0,064
16	0,089	0,076
20	0,114	0,102

Austenitic Stainless Steels (200 & 300 Series) Including Duplex (135-275 HB) <28 HRC
AISI: 201, 209, 219, 302, 303, 304, 316, 321, 347, 329, ASTM: XM-1, XM-7, XM-21, CF-8M
DIN: x 8 CrNiS 18-9, X 5 CrNiMo 17-13-3, X6CrNiTi18 10, X6CrNiNb 18 10, GX5 CrNiM0 19-11-2

Cutting Speed	SFM	Vc	
KC633M	350-450	105-140	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
3	0,025	0,018
4	0,030	0,025
6	0,033	0,030
8	0,051	0,033
10	0,064	0,051
12	0,076	0,064
16	0,089	0,076
20	0,114	0,102

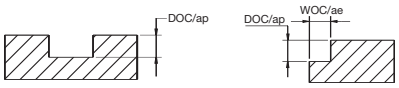
Ferritic, Martensitic (400 & 500 Series) & PH Stainless Steels (<371 HB) <40 HRC
AISI: 416, 416F, 416Se, 420F, PH Steels 15-5 PH, 17-4 H, 17-7 PH
DIN: X12CrS13, X20Cr13, X4CrNiCuNb164, X7CrNiMoAl157

Cutting Speed	SFM	Vc	
KC633M	200-400	60-120	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
3	0,025	0,013
4	0,030	0,018
6	0,051	0,033
8	0,056	0,051
10	0,064	0,061
12	0,076	0,071
16	0,089	0,076
20	0,102	0,089



1) Starting parameters are based on using stub-length tools.
2) These guidelines may require possible variations to achieve optimum results.

Titanium-alloyed
Commercially pure: Ti99.8, Alpha: TiSa12.5SN, Alpha/Beta: Ti-6AI-4V
DIN: Ti99.8, TiAl6V4

Cutting Speed	SFM	Vc	
KC633M	100-250	30-75	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.5 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
3	0,013	0,008
4	0,018	0,010
6	0,025	0,015
8	0,030	0,023
10	0,033	0,025
12	0,046	0,033
16	0,064	0,046
20	0,071	0,056

Titanium-alloyed, Nickel Base
Inconel: 601, 617, 625, 718, X-750, 901, Waspaloy, Hastelloy
DIN: NiCr19Fe19NbMo, NiCr20Co14MoTi, NiCr17Mo17FeW

Cutting Speed	SFM	Vc	
KC633M	60-150	20-45	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.1 x dia.
Slotting	.3 x dia.	–

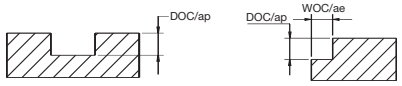
Diameter mm	Profiling f_z mm	Slotting f_z mm
3	0,013	0,008
4	0,018	0,013
6	0,030	0,023
8	0,033	0,025
10	0,046	0,033
12	0,051	0,046
16	0,089	0,076
20	0,101	0,089

To place an order, contact your authorized
Kennametal distributor or visit www.kennametal.com.

Recommended Starting Speed and Feeds

End Mill Series Includes F3BS..BD.35

1) Starting parameters are based on using stub-length tools.
2) These guidelines may require possible variations to achieve optimum results.



Low & Plain Carbon, Alloy & Tool Steels (<286 HB) <30 HRC
AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20
DIN: 35S20, 9SMnPb28, C45, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2,

Cutting Speed	SFM	Vc	
KC633M	400-550	120-170	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.4 x dia.
Slotting	1 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
6	0,036	0,025
8	0,033	0,036
10	0,041	0,033
12	0,076	0,061
16	0,076	0,061
20	0,081	0,071

Titanium-alloyed, Nickel Base
Inconel: 601, 617, 625, 718, X-750, 901, Waspaloy, Hastelloy
DIN: NiCr19Fe19NbMo, NiCr20Co14MoTi, NiCr17Mo17FeW

Cutting Speed	SFM	Vc	
KC633M	75-125	20-40	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.4 x dia.
Slotting	1 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
6	0,018	0,013
8	0,023	0,018
10	0,028	0,023
12	0,033	0,028
16	0,046	0,033
20	0,064	0,051

Austenitic Stainless Steels (200 & 300 Series) Including Duplex (135-275 HB) <28 HRC
AISI: 201, 209, 219, 302, 303, 304, 316, 321, 347, 329, ASTM: XM-1, XM-7, XM-21, CF-8M
DIN: x 8 CrNiS 18-9, X 5 CrNiMo 17-13-3, X6CrNiTi18 10, X6CrNiNb 18 10, GX5 CrNiM0 19-11-2

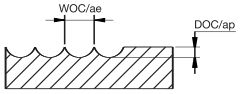
Cutting Speed	SFM	Vc	
KC633M	300-425	90-130	Reduce speed by 20% for slotting applications.

Application Parameters

	DOC/ap	WOC/ae
Profiling	1 x dia.	.4 x dia.
Slotting	1 x dia.	–

Diameter mm	Profiling f_z mm	Slotting f_z mm
6	0,025	0,018
8	0,033	0,025
10	0,051	0,033
12	0,064	0,038
16	0,076	0,064
20	0,089	0,076

1) These guidelines may require possible variations to achieve optimum results.



Low & Plain Carbon, Alloy & Tool Steels (<286 HB) <30 HRC
AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20
DIN: 35S20, 9SMnPb28, C45, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2,

Cutting Speed	SFM	Vc
K600	250-300	83-100
KC610M	300-400	100-133
KC633M	350-450	117-150
KC635M	350-450	117-150

Application Parameters

	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Diameter inch	Diameter mm	Contouring Feed/tooth f_z inch	f_z mm
1/16	2	.0003	0,008
1/8	3	.0006	0,015
3/16	4	.001	0,025
1/4	6	.0014	0,036
5/16	8	.0017	0,043
3/8	10	.002	0,051
1/2	12	.0024	0,061
5/8	16	.003	0,076
3/4	20	.0035	0,089
1	25	.0045	0,114

Plain Carbon, Alloy & Tool Steels (294-371 HB) 31-40 HRC
Tool steels: H10, H11, Alloy steels AISI: 1335, 4140, 4150, 4320, 4340, 4422, 5120, 8620
Din: x32 CrMo V3 3, x38CrMoV5-1, 36Mn5, 42CrMo4, 34CrNiMo6, 21NiCrMo2

Cutting Speed	SFM	Vc
KC610M	250-300	83-100
KC633M	300-350	100-117
KC635M	300-350	100-117

Application Parameters

	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Diameter inch	Diameter mm	Contouring Feed/tooth f_z inch	f_z mm
1/16	2	.0003	0,008
1/8	3	.0004	0,010
3/16	4	.0007	0,018
1/4	6	.001	0,025
5/16	8	.0013	0,030
3/8	10	.0015	0,033
1/2	12	.002	0,051
5/8	16	.0025	0,064
3/4	20	.003	0,076
1	25	.004	0,102

Austenitic Stainless Steels (200 & 300 Series) Including Duplex (135-275 HB) <28 HRC
AISI: 201, 209, 219, 302, 303, 304, 316, 321, 347, 329, ASTM: XM-1, XM-7, XM-21, CF-8M
DIN: x 8 CrNiS 18-9, X 5 CrNiMo 17-13-3, X6CrNiTi18 10, X6CrNiNb 18 10, GX5 CrNiM0 19-11-2

Cutting Speed	SFM	Vc
KC610M	250-350	83-117
KC633M	300-400	100-130
KC635M	300-400	100-130

Application Parameters

	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Diameter inch	Diameter mm	Contouring Feed/tooth f_z inch	f_z mm
1/16	2	.0003	0,008
1/8	3	.0005	0,013
3/16	4	.001	0,025
1/4	6	.0015	0,033
5/16	8	.0017	0,043
3/8	10	.002	0,051
1/2	12	.0025	0,064
5/8	16	.003	0,076
3/4	20	.0035	0,089
1	25	.004	0,102

Ferritic, Martensitic (400 & 500 Series) & PH Stainless Steels (<371 HB) <40 HRC
AISI: 416, 416F, 416Se, 420F, PH Steels 15-5 PH, 17-4 H, 17-7 PH
DIN: X12CrS13, X20Cr13, X4CrNiCuNb164, X7CrNiMoAl157

Cutting Speed	SFM	Vc
KC610M	200-275	70-95
KC633M	275-350	90-120
KC635M	275-350	90-120

Application Parameters

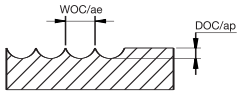
	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Diameter inch	Diameter mm	Contouring Feed/tooth f_z inch	f_z mm
1/16	2	.0003	0,008
1/8	3	.0004	0,010
3/16	4	.0007	0,018
1/4	6	.001	0,025
5/16	8	.0013	0,030
3/8	10	.0015	0,033
1/2	12	.002	0,051
5/8	16	.0025	0,064
3/4	20	.003	0,076
1	25	.004	0,102

Recommended Starting Speed and Feeds

End Mill Series BNEC, DBNEC, F.AL..DL30

1) These guidelines may require possible variations to achieve optimum results.



Gray Cast Iron (120-220 HB) <18 HRC
ASTM A48: Class 20, 25, 30, 35, 40, 45, 50, 55, 60, SAE J431: grade G1800, G3000, G3500
DIN: GG10, GG15, GG20, GG25, GG30, GG40

Cutting Speed	SFM	Vc
K600	300-400	100-130
KC633M	450-550	150-183
KC635M	450-550	150-183

Application Parameters

	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Contouring

Diameter inch	Diameter mm	Feed/tooth f_z inch	Feed/tooth f_z mm
1/16	2	.0003	0,008
1/8	3	.0005	0,013
3/16	4	.001	0,025
1/4	6	.002	0,051
5/16	8	.003	0,076
3/8	10	.0035	0,089
1/2	12	.004	0,102
5/8	16	.0045	0,114
3/4	20	.005	0,127
1	25	.0055	0,140

Gray Cast Iron (220-320 HB) 19-34 HRC
ASTM A48: Class 20, 25, 30, 35, 40, 45, 50, 55, 60, SAE J431: grade G1800, G3000, G3500
DIN: GG10, GG15, GG20, GG25, GG30, GG40

Cutting Speed	SFM	Vc
K600	250-325	83-110
KC633M	350-450	117-150
KC635M	350-450	117-150

Application Parameters

	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Profiling

Diameter inch	Diameter mm	Feed/tooth f_z inch	Feed/tooth f_z mm
1/16	2	.0003	0,008
1/8	3	.0005	0,013
3/16	4	.001	0,025
1/4	6	.002	0,051
5/16	8	.003	0,076
3/8	10	.0035	0,089
1/2	12	.004	0,102
5/8	16	.0045	0,114
3/4	20	.005	0,127
1	25	.0055	0,140

Titanium-alloyed
Commercially pure: Ti99.8, Alpha: TiSa12.5SN, Alpha/Beta: Ti-6Al-4V
DIN: Ti99.8, TiAl6V4

Cutting Speed	SFM	Vc
KC633M	100-200	35-70
KC635M	100-200	35-70

Application Parameters

	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Contouring

Diameter inch	Diameter mm	Feed/tooth f_z inch	Feed/tooth f_z mm
1/16	2	.0002	0,005
1/8	3	.0004	0,010
3/16	4	.0007	0,018
1/4	6	.001	0,025
5/16	8	.0013	0,030
3/8	10	.0015	0,033
1/2	12	.0018	0,046
5/8	16	.002	0,051
3/4	20	.0025	0,064
1	25	.003	0,076

Titanium-alloyed, Nickel Base
Inconel: 601, 617, 625, 718, X-750, 901, Waspaloy, Hastelloy
DIN: NiCr19Fe19NbMo, NiCr20Co14MoTi, NiCr17Mo17FeW

Cutting Speed	SFM	Vc
KC633M	75-150	25-50
KC635M	75-150	25-50

Application Parameters

	DOC/ap	WOC/ae
Contouring	.2 x dia.	.5 x dia.

Contouring

Diameter inch	Diameter mm	Feed/tooth f_z inch	Feed/tooth f_z mm
1/16	2	.0002	0,005
1/8	3	.0004	0,010
3/16	4	.0007	0,018
1/4	6	.001	0,025
5/16	8	.0013	0,030
3/8	10	.0015	0,033
1/2	12	.0018	0,046
5/8	16	.002	0,051
3/4	20	.0025	0,064
1	25	.003	0,076