

**NEW
PRODUCT!**

M121, M125

Achteck Universal Solid Carbide End Mills – XP Line

For high performance machining in ISO P, M, K and S material

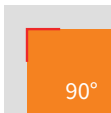
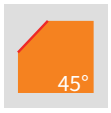


• Solid carbide end mills-XP Line

Series	Picture	Catagory	Tooth	Helix angles	Application	Cutting edge tolerance mm	Diameter mm	Material	Information
M121-4CSP		XP line	Z=4	35°/38°		$\leq 12+0.00/-0.02$ $> 12+0.00/-0.03$	4-20	P, M, K, S	Used in stainless steel, soft steel and cast iron. Special flute geometry and differential helix eliminate vibration. Extended edge. The workpiece hardness is up to HRC40.
M121-4CS		XP line	Z=4	35°/38°		$\leq 12+0.00/-0.02$ $> 12+0.00/-0.03$	4-20	P, M, K, S	Used in stainless steel, soft steel and cast iron. Special flute geometry and differential helix eliminate vibration. The workpiece hardness is up to HRC40.
M121-4ESP		XP line	Z=4	35°/38°		$\leq 12+0.00/-0.02$ $> 12+0.00/-0.03$	4-20	P, M, K, S	Used in stainless steel, soft steel and cast iron. Special flute geometry and differential helix eliminate vibration, with extended 4 cutting edges design. The workpiece hardness is up to HRC40.
M125-6ES		XP line	Z=6	45°		$\leq 12+0.00/-0.02$ $> 12+0.00/-0.03$	6-20	P, M, K, S	Used in stainless steel, soft steel and cast iron. It has close pitch to provide a better surface finish and tool life under the condition of high speed milling and cycloid milling.

Icon description

Icons	Description
	Slot milling and shoulder milling applications
	Shoulder milling Rough machining
	Shoulder milling Finish machining
	High feed milling
	Dynamic milling cycloid milling
	Profile milling
	Chamfering and deburring
	AlTiN coating
	AlCrN coating
	Uncoated

Icons	Description
	30° Helix angles
	35° Helix angles
	35°/38° Helix angles
	45° Helix angles
	Cylinder shank
	Square
	Corner radius
	Ball-nose End Mill
	Corner chamfer
	Chamfer
	Waved edge

• XP line of solid carbide end mills offer complete product range and high performance

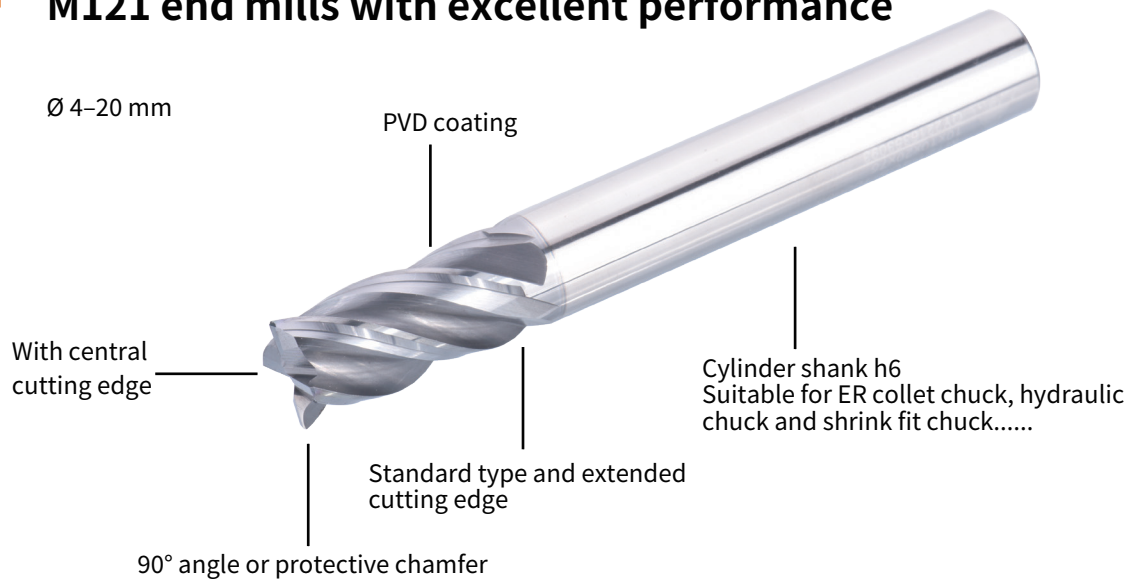
Tool

- Solid carbide end mills--XP series
- Metric
- 4 series with 30 dimensions
- Flat bottom, close pitch
- With 4 or 6 cutting edges
- Ø 4mm to 20 mm

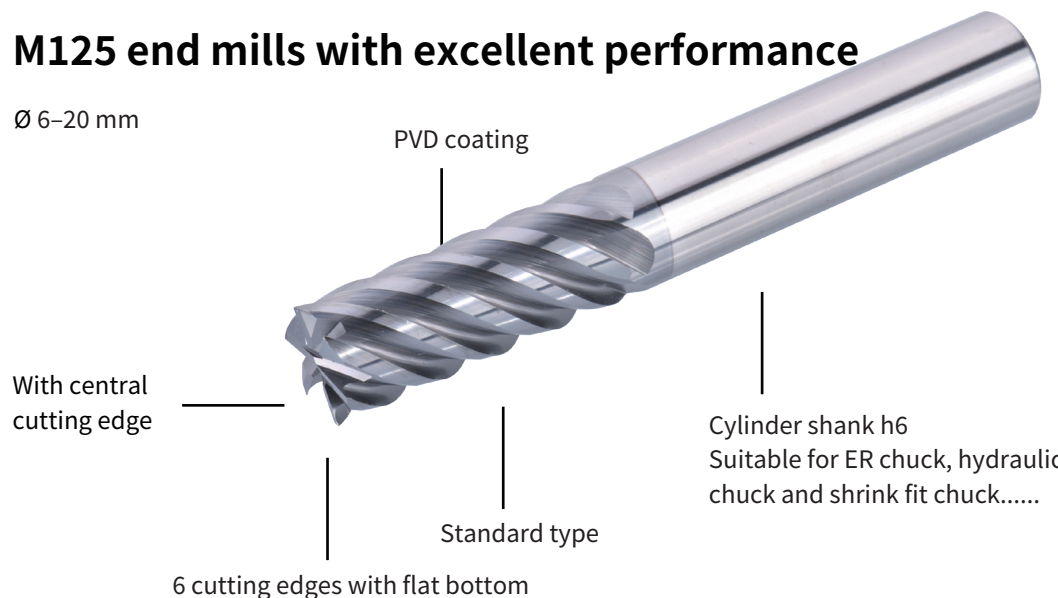
Application

- ISO workpiece material groups: P, M, K and S
- Side milling, slot milling, pocket milling, circular interpolated milling, ramping and profile milling
- Application: general machinery, die and mold, aircraft and energy industry

• M121 end mills with excellent performance



• M125 end mills with excellent performance



• Solid carbide end mill denomination

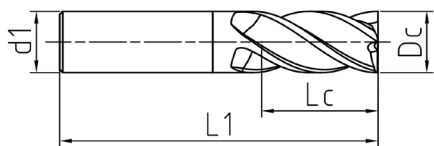
M	1	00	—	2	E	S	—	060	002	N
1	2	3		4	5	6		7	8	9
1	2	3				4	5			
Tool category	Generations	Series				Number of teeth	Tool type			
M milling	1	00 General purpose end mills HRC45				2, 3, 4, 5, 6.....	E Square			
		10 General purpose end mills HRC55					B Ball nose			
		16 Rough machining end mills					R Rounded corner			
		20 High performance end mills HRC40					C Chamfer			
		30 Designed for steel milling					P With waved edges			
		40 Designed for aluminium alloy milling					W Forming			
		50 Designed for stainless steel milling					T Taper milling			
		60 Designed for difficult machining material milling					H High feed milling			
		70 Designed for hardened material milling								
		80&90 others								
6		7		8		9				
Length standard		Tool diameter		Chamfer / nose radius size		Structure type				
S Standard total length		060=6.0mm		002=0.2mm		N Straight shank				
L Long type		200=20.0mm				C Conical necking				
XL Super long type						P Special shank				
XXL Extra long type						Default: No necking				
SN Short cutting edge										
SP Long cutting edge										

Solid carbide end mill M121

XP line

End mill with 4 cutting edges (with protective chamfers)

Material hardness HRC40



P	M	K	N	S	H	O
●●	●	●●		●		

Product code	Dc mm +0.00/-0.03	d1 mm	Chamfer mm	Lc mm	L1 mm	Z	Stock
M121-4CS-040002	4	4	0.2	8	50	4	●
M121-4CS-040002P	4	6	0.2	8	50	4	●
M121-4CS-060002	6	6	0.2	12	50	4	●
M121-4CS-080002	8	8	0.2	16	60	4	●
M121-4CS-100003	10	10	0.3	20	75	4	●
M121-4CS-120004	12	12	0.4	24	75	4	●
M121-4CS-160004	16	16	0.4	32	100	4	●
M121-4CS-200005	20	20	0.5	40	100	4	●

Product code	Dc mm +0.00/-0.03	d1 mm	Chamfer mm	Lc mm	L1 mm	Z	Stock
M121-4CSP-040002P	4	6	0.2	10	50	4	●
M121-4CSP-060002	6	6	0.2	15	60	4	●
M121-4CSP-080002	8	8	0.2	20	70	4	●
M121-4CSP-100003	10	10	0.3	25	75	4	●
M121-4CSP-120004	12	12	0.4	30	80	4	●
M121-4CSP-140004	14	14	0.4	35	100	4	●
M121-4CSP-160004	16	16	0.4	40	100	4	●
M121-4CSP-180005P	18	16	0.5	45	100	4	●
M121-4CSP-200005	20	20	0.5	45	100	4	●

Marked: ● Stocked ○ Non-stocked

The non-standard product can be ordered

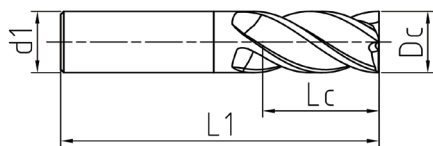


● Solid carbide end mill M121

XP line

4 cutting edges with a flat bottom

Material hardness HRC40



P	M	K	N	S	H	O
● ●	●	● ●		●		

Product code	Dc mm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M121-4ESP-040P	4	6	10	50	4	●
M121-4ESP-060	6	6	15	60	4	●
M121-4ESP-080	8	8	20	70	4	●
M121-4ESP-100	10	10	25	75	4	●
M121-4ESP-120	12	12	30	80	4	●
M121-4ESP-160	16	16	40	100	4	●
M121-4ESP-200	20	20	45	100	4	●

Marked: ● Stocked ○ Non-stocked
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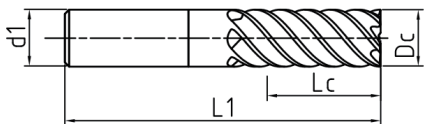


● Solid carbide end mill M125

XP line

6 cutting edges with a flat bottom

Material hardness HRC40



P	M	K	N	S	H	O
● ●	●	● ●		●		

Product code	Dc mm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M125-6ES-060	6	6	15	60	6	●
M125-6ES-080	8	8	20	70	6	●
M125-6ES-100	10	10	25	75	6	●
M125-6ES-120	12	12	30	80	6	●
M125-6ES-160	16	16	40	100	6	●
M125-6ES-200	20	20	45	100	6	●

Marked: ● Stocked ○ Non-stocked

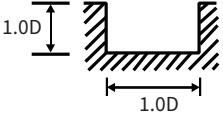
The non-standard product can be ordered

Solid carbide end mill XP Line cutting parameters

The recommended cutting parameters are theoretical values, it can be adjusted according to the application conditions.

Machining Materials					
ISO	Material classification			Brinell hardness (HB/HRC)	Tensile strength (N/mm ²)
P	Unalloyed steel	C≤0.25%	Annealed	125	428
		0.25<C≤0.55%	Annealed	190	639
		0.25<C≤0.55%	Heat-treated	210	708
		C>0.55%	Annealed	190	639
		C>0.55%	Heat-treated	300	1013
		Free-Cutting Steel (short chip)	Annealed	220	745
	Low-alloy steel	Annealing		175	591
		Heat-treated		300	1013
		Heat-treated		380	1282
		Heat-treated		430	1477
	High-alloy steel and high-alloy tool steel	Annealed		200	675
		Hardened and tempered		300	1013
		Hardened and tempered		400	1361
	Stainless steel	Ferritic/martensitic, annealed		200	675
		Martensitic, heat-treated		330	1114
M	Stainless steel	Austenitic, quench hardened		200	675
		Austenitic, precipitation hardened (PH)		300	1013
		Austenitic/ferritic, duplex		230	778
K	Malleable cast iron	Ferrite		200	400
		Pearlite		260	700
	Gray cast iron	Low tensile strength		180	200
		High tensile strength / austenite		245	350
	Nodular Cast iron	Ferrite		155	400
		Pearlite		265	700
N	Wrought aluminium alloys	GGV (CGI)		230	400
		Non-aging		30	-
		Aged		100	340
	Cast aluminium alloys	≤1.2% Si, Non-aging		75	260
		≤1.2% Si, aging		90	310
		>1.2% Si, Non-aging		130	450
	Magnesium alloys			70	250
		Unalloyed, electrolytic copper		100	340
		Brass, bronze, red brass		90	310
		Cu alloys, short-chipping		110	380
S	Fe base alloys	Fe based	Annealed	200	680
			Hardened	280	940
		Ni or Co based	Annealed	250	840
			Hardened	350	1180
			Cast	320	1080
	Titanium alloys	Pure titanium		200	680
		α and β alloys, hardened		375	1260
		β alloys		410	1400
	Tungsten alloys			300	1010
	Molybdenum alloys			300	1010
H	Hardened steel	Hardened and tempered		50HRC	
		Hardened and tempered		55HRC	
		Hardened and tempered		60HRC	
	Hardened cast steel	Hardened and tempered		50HRC	

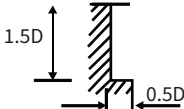


M121-4CSP M121-4CS M121-4ESP Slot milling 								
Cutting speed Vc(m/min)	fz[mm/tooth]							
	End mill diameter (mm)							
	4	6	8	10	12	14	16	20
152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
152~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
152~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
157~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
152~160	0.006	0.014	0.023	0.030	0.037	0.040	0.043	0.055
155~162	0.006	0.014	0.023	0.038	0.047	0.049	0.053	0.065
152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
87~107	0.005	0.013	0.019	0.027	0.035	0.036	0.038	0.050
64~70	0.006	0.011	0.019	0.027	0.032	0.034	0.037	0.045
60~64	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
60~64	0.004	0.007	0.013	0.017	0.019	0.020	0.022	0.030
50~55	0.005	0.011	0.019	0.027	0.032	0.034	0.037	0.045
45~50	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
95	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
96~112	0.006	0.014	0.026	0.036	0.046	0.048	0.052	0.066
112~120	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
26	0.007	0.012	0.019	0.033	0.038	0.040	0.043	0.054
24	0.007	0.012	0.017	0.029	0.033	0.034	0.037	0.046
24	0.007	0.012	0.017	0.029	0.033	0.034	0.037	0.046
22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041
22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041
58	0.007	0.016	0.025	0.042	0.050	0.053	0.055	0.068
45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041
22	0.006	0.010	0.015	0.027	0.030	0.031	0.033	0.041

● Solid carbide end mill XP Line cutting parameters

The recommended cutting parameters are theoretical values, it can be adjusted according to the application conditions.

Machining Materials					
ISO	Material classification			Brinell hardness (HB/HRC)	Tensile strength (N/mm ²)
P	Unalloyed steel	C ≤ 0.25%	Annealed	125	428
		0.25 < C ≤ 0.55%	Annealed	190	639
		0.25 < C ≤ 0.55%	Heat-treated	210	708
		C > 0.55%	Annealed	190	639
		C > 0.55%	Heat-treated	300	1013
		Free-Cutting Steel (short chip)	Annealed	220	745
	Low-alloy steel	Annealing		175	591
		Heat-treated		300	1013
		Heat-treated		380	1282
		Heat-treated		430	1477
	High-alloy steel and high-alloy tool steel	Annealed		200	675
		Hardened and tempered		300	1013
		Hardened and tempered		400	1361
	Stainless steel	Ferritic/martensitic, annealed		200	675
		Martensitic, heat-treated		330	1114
M	Stainless steel	Austenitic, quench hardened		200	675
		Austenitic, precipitation hardened (PH)		300	1013
		Austenitic/ferritic, duplex		230	778
K	Malleable cast iron	Ferrite		200	400
		Pearlite		260	700
	Gray cast iron	Low tensile strength		180	200
		High tensile strength / austenite		245	350
	Nodular Cast iron	Ferrite		155	400
		Pearlite		265	700
		GGV (CGI)		230	400
N	Wrought aluminium alloys	Non-aging		30	-
		Aged		100	340
	Cast aluminium alloys	≤ 12 % Si, Non-aging		75	260
		≤ 12 % Si, aging		90	310
		> 12 % Si, Non-aging		130	450
	Magnesium alloys			70	250
		Unalloyed, electrolytic copper		100	340
		Brass, bronze, red brass		90	310
		Cu alloys, short-chipping		110	380
S	Copper and copper alloys (bronze / brass)	High-tensile, Ampco alloy		300	1010
		Fe based	Annealed	200	680
			Hardened	280	940
		Ni or Co based	Annealed	250	840
			Hardened	350	1180
			Cast	320	1080
	Titanium alloys	Pure titanium		200	680
		α and β alloys, hardened		375	1260
		β alloys		410	1400
	Tungsten alloys			300	1010
	Molybdenum alloys			300	1010
H	Hardened steel	Hardened and tempered		50HRC	
		Hardened and tempered		55HRC	
		Hardened and tempered		60HRC	
	Hardened cast steel	Hardened and tempered		50HRC	

M121-4CSP M121-4CS M121-4ESP Shoulder milling 								
Cutting speed Vc(m/min)	fz[mm/tooth]							
	End mill diameter (mm)							
	4	6	8	10	12	14	16	20
152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
152~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
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157~166	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
152~160	0.006	0.014	0.023	0.030	0.037	0.040	0.043	0.055
155~162	0.006	0.014	0.023	0.038	0.047	0.049	0.053	0.065
152~168	0.008	0.016	0.027	0.038	0.047	0.049	0.053	0.065
107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
107~117	0.007	0.015	0.023	0.032	0.040	0.041	0.043	0.056
87~107	0.005	0.013	0.019	0.027	0.035	0.036	0.038	0.050
64~70	0.006	0.011	0.019	0.027	0.032	0.034	0.037	0.045
60~64	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
60~64	0.004	0.007	0.013	0.017	0.019	0.020	0.022	0.030
50~55	0.005	0.011	0.019	0.027	0.032	0.034	0.037	0.045
45~50	0.005	0.011	0.016	0.022	0.024	0.025	0.027	0.036
106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
95	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
106	0.008	0.018	0.028	0.048	0.055	0.059	0.062	0.077
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.010	0.020	0.034	0.048	0.058	0.064	0.065	0.081
112~123	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
96~112	0.006	0.014	0.026	0.036	0.046	0.048	0.052	0.066
112~120	0.008	0.016	0.029	0.040	0.050	0.052	0.057	0.071
26	0.007	0.012	0.019	0.033	0.038	0.040	0.043	0.054
24	0.007	0.012	0.017	0.029	0.033	0.034	0.036	0.045
24	0.007	0.012	0.017	0.029	0.033	0.034	0.036	0.045
22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038
22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038
58	0.007	0.016	0.025	0.042	0.050	0.053	0.055	0.068
45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
45	0.006	0.014	0.021	0.035	0.040	0.044	0.050	0.060
22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038
22	0.006	0.010	0.015	0.025	0.028	0.029	0.031	0.038

Solid carbide end mill XP Line cutting parameters

The recommended cutting parameters are theoretical values, it can be adjusted according to the application conditions.

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		C>0.55%	Heat-treated	300	1013	
		Free-Cutting Steel (short chip)	Annealed	220	745	
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		Heat-treated			300	1013
		Heat-treated			380	1282
		Heat-treated			430	1477
	High-alloy steel and high-alloy tool steel	Annealed			200	675
		Hardened and tempered			300	1013
		Hardened and tempered			400	1361
	Stainless steel	Ferritic/martensitic, annealed			200	675
		Martensitic, heat-treated			330	1114
M	Stainless steel	Austenitic, quench hardened		200	675	
		Austenitic, precipitation hardened (PH)		300	1013	
		Austenitic/ferritic, duplex		230	778	
K	Malleable cast iron	Ferrite		200	400	
		Pearlite		260	700	
	Gray cast iron	Low tensile strength		180	200	
		High tensile strength / austenite		245	350	
	Nodular Cast iron	Ferrite		155	400	
		Pearlite		265	700	
N	GGV(CGI)			230	400	
	Wrought aluminium alloys	Non-aging		30	-	
		Aged		100	340	
	Cast aluminium alloys	≤1 2 % Si, Non-aging		75	260	
		≤1 2 % Si, aging		90	310	
		> 1 2 % Si, Non-aging		130	450	
	Magnesium alloys			70	250	
	Copper and copper alloys (bronze / brass)	Unalloyed, electrolytic copper		100	340	
Brass, bronze, red brass		90	310			
Cu alloys, short-chipping		110	380			
High-tensile, Ampco alloy		300	1010			
S	Fe base alloys	Fe based	Annealed	200	680	
			Hardened	280	940	
		Ni or Co based	Annealed	250	840	
			Hardened	350	1180	
			Cast	320	1080	
	Titanium alloys	Pure titanium		200	680	
		α and β alloys, hardened		375	1260	
		β alloys		410	1400	
Tungsten alloys			300	1010		
Molybdenum alloys			300	1010		
H	Hardened steel	Hardened and tempered		50HRC		
		Hardened and tempered		55HRC		
		Hardened and tempered		60HRC		
	Hardened cast steel		Hardened and tempered		50HRC	



September 2022

M125-6ES

Shoulder milling
(Finish Machining)

Cutting speed Vc(m/min)	fz[mm/tooth]							
	End mill diameter (mm)							
	6	8	10	12	16	20		
300	0.068	0.116	0.144	0.173	0.202	0.225		
280	0.068	0.116	0.144	0.173	0.202	0.225		
280	0.068	0.116	0.144	0.173	0.202	0.225		
280	0.068	0.116	0.144	0.173	0.202	0.225		
260	0.065	0.110	0.136	0.164	0.161	0.211		
280	0.068	0.116	0.144	0.173	0.202	0.225		
300	0.068	0.116	0.144	0.173	0.202	0.225		
240	0.058	0.100	0.125	0.150	0.175	0.196		
240	0.058	0.100	0.125	0.150	0.175	0.196		
203	0.050	0.085	0.106	0.128	0.149	0.167		
100	0.041	0.071	0.088	0.105	0.123	0.137		
82	0.041	0.071	0.088	0.105	0.123	0.137		
70	0.033	0.061	0.076	0.092	0.119	0.121		
100	0.041	0.071	0.088	0.105	0.123	0.137		
82	0.041	0.067	0.082	0.095	0.111	0.119		
213	0.049	0.084	0.101	0.125	0.146	0.162		
170	0.037	0.070	0.096	0.110	0.130	0.145		
213	0.049	0.084	0.101	0.125	0.146	0.162		
225	0.082	0.139	0.173	0.208	0.242	0.270		
225	0.082	0.139	0.173	0.208	0.242	0.270		
225	0.082	0.139	0.173	0.208	0.242	0.270		
225	0.082	0.139	0.173	0.208	0.242	0.270		
75~85	0.075	0.130	0.163	0.196	0.228	0.253		
200	0.074	0.128	0.160	0.192	0.223	0.247		
75~85	0.075	0.130	0.163	0.196	0.228	0.253		
33	0.033	0.055	0.070	0.082	0.097	0.112		
30	0.031	0.052	0.064	0.074	0.087	0.100		
30	0.031	0.052	0.064	0.074	0.087	0.100		
27	0.031	0.050	0.061	0.070	0.082	0.091		
27	0.031	0.050	0.061	0.070	0.082	0.091		
116	0.033	0.055	0.070	0.083	0.097	0.113		
95	0.031	0.051	0.065	0.074	0.087	0.100		
95	0.031	0.051	0.065	0.074	0.087	0.100		
27	0.031	0.050	0.061	0.070	0.082	0.091		
27	0.031	0.050	0.061	0.070	0.082	0.091		